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THE NATIONAL RESEARCH CENTER ON THE GIFTED AND TALENTED

The University of Connecticut
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Preservice Teacher Preparation in Meeting the Needs of Gifted and Other Academically Diverse Students

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ABSTRACT

The National Research Center on the Gifted and Talented (NRC/GT) at the University of Virginia conducted a three-year project to study how preservice teachers develop an awareness of the needs of academically diverse learners and implement and/or modify instruction to meet those needs. Participants from seven universities were included. As part of the design of the study, the participants were surveyed, interviewed, and observed to investigate (a) their attitudes and beliefs towards academically diverse learners; (b) the teaching practices they utilized in response to the academic diversity in their classrooms; and (c) the impact of the study's interventions on their attitudes, beliefs, and practice.

The study was divided into three phases. Phase 1 preservice teachers received no treatment ($n = 41$). This phase provided baseline data. The preservice teachers in Phase 2 were randomly assigned to one of two treatment groups: (a) those who participated in an interactive, full-day *workshop* on differentiation ($n = 22$), and (b) those who participated in the *workshop* and had a *curriculum coach* who worked with them throughout their student teacher placement ($n = 23$). Phase 3 followed a subsample of the participants from phases 1 and 2 through their first year assignments as regular classroom teachers (Phase 1: $n = 6$ and Phase 2: $n = 4$).

The qualitative study of a sub-sample of these teachers yielded a number of themes. First, preservice teachers used ambiguous criteria for identifying student differences and needs. Second, preservice teachers expressed limited knowledge concerning differentiating instruction and demonstrated limited strategies for differentiation. Third, preservice teachers were influenced by factors which complicated and discouraged understanding and addressing of student differences and needs. Last, the study suggested that intervention measures provided a starting point for changing practice. In order to develop teachers who are able to meet the varied needs of

academically diverse learners, changes are required in all levels of teacher preparation and enculturation.

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EXECUTIVE SUMMARY

Introduction

Research suggests that identifying student differences and providing instruction to accommodate those differences are among the most frequently cited problems of beginning teachers (Veenman, 1984). Current policies of inclusion and heterogeneous grouping exacerbate these problems by requiring classroom teachers to address the needs of an increasingly broad range of students in their classes (George & Rubin, 1992; Hallahan & Kaufman, 1994; Jenkins, Pious, & Jewell, 1990; Maheady & Algozzine, 1991). Although using knowledge of learners to shape classroom interactions is acknowledged as an important element in the development of teaching expertise (Berliner, 1986; Clark & Peterson, 1986; Copeland, Birmingham, DeMeulle, D'Emidio-Caston, & Natal, 1994), little research has addressed the issues surrounding learning to teach academically diverse students (Barnes, 1992).

Various models have been developed to describe the stages through which individuals pass as they learn to teach (Berliner, 1994; Fuller & Brown, 1975; Kagan, 1992; Lidstone & Hollingsworth, 1990). Common to these models is the progression of novices (used in this study to denote preservice and first-year teachers) that begins with a focus on themselves and their images of themselves as teachers. Only later, as they gain experience, do they focus on the learners in their classes. The beliefs novices hold about students and how to teach remain relatively unaffected by teacher education programs (Book, Byers, & Freeman, 1983; Feiman-Nemser & Buchmann, 1987; Florio-Ruane, 1989; Hollingsworth, 1989; Kagan, 1992; Rodriguez, 1993; Ross, 1988; Tabachnick & Zeichner, 1984). Past experience in schools likely serves as a filter that may limit novices' opportunities for professional growth unless, during their training, preservice teachers are encouraged to examine their fundamental beliefs about such important issues as the teacher's role, pedagogy, and diverse learners (Laboskey, 1994; McDiarmid, 1990).

Although one might hypothesize that addressing the needs of diverse learners may be a refinement that comes with time and the development of expertise, experience and expertise are not the same thing. In fact, time may entrench patterns of teaching that minimize attention to differentiated practices as teachers rely on their personal beliefs and experiences and those of their fellow teachers to solve instructional problems once they are in the field (Kagan, 1992). This process has a strong bearing on providing instruction for academically diverse learners because research indicates that even experienced teachers seldom implement practices that demonstrate an understanding of how to differentiate instruction in their classrooms (Archambault, et al., 1993; Cox, Daniel, & Boston, 1985; Tomlinson, Callahan, & Tomchin, 1994). We cannot assume, therefore, that beginning teachers will develop the skills needed to differentiate by modeling themselves after colleagues as they are inducted into the profession. Focusing attention on academic diversity and strategies to address student differences during preservice preparation may be critical to breaking the cycle that overlooks strategies for differentiating instruction.

The purpose of this study was to examine the attitudes and practices of novice teachers regarding academic diversity and to examine the impact of preservice interventions that focus attention on and provide support for practices that address learners' varied academic needs.

Preservice Teacher Preparation Project

The Preservice Teacher Preparation Project, a three-year study directed by The National Research Center on the Gifted and Talented (NRC/GT) at the University of Virginia, was designed to gain a better understanding of how those being inducted into the profession of teaching come to develop awareness of the needs of academically diverse learners[1] in their classes and implement and/or modify instruction to meet those needs. Participants from seven university and college settings were selected to represent a range of teacher education programs, including various geographical regions, program characteristics, and teaching level assignments.

Quantitative and qualitative methods were used to examine (a) attitudes and beliefs of preservice and beginning teachers related to academically diverse learners, (b) teaching practices that preservice and beginning teachers employ in response to the academic diversity in their classrooms, and (c) the impact of interventions, including staff development on academically diverse learners, their needs, and strategies for meeting those needs.

[1] Diverse learners are defined as gifted and talented, remedial, and special education or learning disabled students.

Research Questions

Data collection was designed to address the following research questions:

1. How will orientation to the nature and needs of academically diverse learners and strategies for meeting their needs affect attitudes and/or practices of novice teachers?
2. How will the interventions affect attitudes and practices of cooperating teachers?
3. How will preservice teachers identify students in their classes for whom differentiation may be appropriate?
4. How do preservice teachers assess the effectiveness of various instructional approaches for differentiating curriculum and instruction?
5. How do preservice teachers develop as problem-solvers capable of assessing and meeting the needs of academically diverse learners?

Design and Data Collection

This study was divided into three phases. Phases 1 and 2 followed preservice teachers during their student teaching experiences. Phase 1 preservice teachers ($n = 41$) received no treatment other than the formal teacher preparation courses stipulated by their respective universities. Preservice teachers in Phase 2 were randomly assigned to one of two treatment groups: (a) those who participated in an interactive full-day workshop on differentiation, hereafter referred to as workshop only ($n = 22$), and (b) those who participated in an interactive full-day workshop on differentiation and had a curriculum coach who worked with them throughout their student teaching placement, hereafter referred to as workshop and coaching ($n = 23$). Phase 3 was designed to extend the examination of attitudes, beliefs, and practices by following a small sample of those who had participated in Phases 1 ($n = 6$) and 2 ($n = 4$) through their experiences as first-year teachers.

Data were collected using various sources (preservice and beginning teachers, trained observers, curriculum coaches) and methods (self-report survey, interviews, observations, documents) to provide multiple viewpoints for interpretation and triangulation of data (Denzin, 1978, 1994). The Survey of Practices with Students of Varying Needs (SOP) was developed by the NRC/GT staff at the University of Virginia to assess attitudes and beliefs about academically diverse learners and differentiated instruction appropriate for meeting their needs. The Classroom Practices Record (CPR) was designed to systematically collect information about the student composition of classrooms and the types of instructional activities taking place during the observation period. The Classroom Practices Observation of Preservice Teachers (CPO) was a semi-structured observation protocol developed to systematically record the type of activity observed (e.g., differing content, process, product; differing assignments or tasks; preservice teacher awareness of differing needs) and the type of student for whom an activity was intended (i.e., gifted, special education, or remedial learners). Observers

who visited classrooms and interviewed participants received specific training as well as supporting printed materials to ensure consistency among observers.

Summary of Findings

Phase 1 served as baseline data, reflecting the views of novices who had no preparation for teaching academically diverse students other than that required by their respective teacher education programs. Interview data and quantitative analyses of survey responses indicated that preservice teachers were aware of students' differences and expressed beliefs that were compatible with principles of differentiated instruction. They recognized that students have differing needs and indicated that giving students assignments commensurate with those needs and evaluating them on the varying scales are appropriate. As we examined preservice teachers' depictions of how students differ and their approaches to addressing these student differences, several themes emerged: (a) stated beliefs in the existence and importance of recognizing student differences and concomitant needs; (b) used ambiguous criteria for identifying student differences and needs; (c) expressed incomplete views of differentiating instruction in response to student differences and needs; (d) exhibited shallow wells of strategies for enacting differentiation; and (e) were influenced by factors which complicated and discouraged understanding and addressing student differences and needs.

Preservice teachers exposed to the workshop or the workshop and coaching intervention in Phase 2 expressed a consistent concern with differentiation, and discussed it as a part of their teaching goals. Qualitative findings suggest that even the modest intervention of a workshop raised preservice teachers' awareness of academically diverse learners and sustained their commitment to implementing practices to address those needs. This suggests the potential impact interventions might have as impetus for change. Despite their good intentions, however, preservice teachers' efforts to implement appropriate strategies were often limited by their conception of teaching, the structure of the school curriculum, and the lack of adequate preparation and support. Learning how to translate beliefs into classroom practices was difficult when cooperating teachers seldom modeled differentiated strategies and often encouraged preservice teachers to keep students together, even to the point of suggesting that different classes stay on the same page in a subject area. The addition of a curriculum coach was intended to provide further support for developing novices' behavior. However, in many instances the coach was but one more voice, having neither the power nor authority of the cooperating teacher and university supervisor. In those instances when the coaching was compatible with the practices of the cooperating teacher or the university supervisor, coaching provided an opportunity for novices to explore varied teaching approaches, receive feedback needed to continue such practices, and obtain additional guidance in becoming problem-solvers.

Implications

Given the complexities of teaching, the difficulties novices have making sense of classroom events, and the amount of experience needed to develop competence in the classroom, it might seem unrealistic to expect preservice teachers to provide differentiated instruction. On the other hand, patterns of teaching that form early in a career may become entrenched and thus never change. Although all teachers may not reach higher levels of development as Berliner (1994) depicted them, it can be argued that introducing novices to student-centered views of instruction and giving them practice in implementing strategies may be necessary to break the one-size-fits-all conception of teaching. Findings from this study suggest that the intervention may have given preservice teachers a vocabulary to frame their thinking about academically diverse learners and their concomitant needs, thus forming an imprint that may affect their image of teaching and future instructional decisions. Shulman (1987) likened adapting or differentiating instruction to meet student needs to the process of tailoring a suit jacket so that it will fit well. Differentiation implies that several different suit sizes must be available so that each child in the class can have a close fit; tailoring after the jacket is made can only do so much. The workshop intervention challenged preservice teachers' conception of teaching one-size-fits-all lessons and introduced them to the notion that jackets in several sizes need to be available to properly fit both a size 10 child (a struggling learner) and a size 14 child (an advanced learner). Although the workshop heightened many preservice teachers' awareness that they may need to provide several suits of clothing, novices need more preparation and guidance to achieve this goal.

When we look at learning to teach through the lens of the belief system, we see novices whose practice is out of synch with their beliefs. Without opportunities to examine their belief system regarding diverse learners and explore options for meeting their students' needs, there is a wedge between belief and practice. Interventions may bring teaching behaviors into better harmony with novices' stated beliefs, rather than having novices "accept" the fact that they will not reach their advanced and struggling students.

The role of a novice teacher is a confounding one. Attempts to understand and meet needs of diverse learners complicate issues of planning and management and require subtle understandings and applications of both content and pedagogy. On one level, it is easy to suggest that novice teachers may not yet be ready for the task of creating classrooms appropriate for the needs of academic outliers such as gifted, special education, or remedial learners. Rather, one might argue that preservice teaching experiences are designed to develop basic pedagogical skills, the equivalent of *gross motor* skills. Differentiation may be considered a *fine motor* skill that will develop with time after the gross motor skills have been mastered. Findings based on the data from preservice teachers in this study call attention to the two dangers in that assumption, and suggest that the particular set of *gross motor skills of teaching* developed by novices will shape the subsequent options for developing the *fine motor skills* of teaching.

First, these novices appear to enter teaching with images of classrooms that perpetuate teacher-centered, coverage-driven practices in which the teacher is the transmitter of information. Thus the *gross motor* skills that the preservice teachers hone in on in the classroom maintain the status quo of schooling, which is dubious in its value even for the *typical* learner for whom schools are designed. The liability for academic outliers is that despite proclamations of the existence of individual differences and the responsibility of the teacher to meet them, basic practices may close off avenues necessary for addressing the needs of gifted, remedial, and special education students.

The second danger lies in the apparent reality that there is little support for novices in changing either their images of schooling or their single-size practice of it. These novices sense that differentiating instruction for diverse learners is a low priority for their teacher education institutions, cooperating teachers, and university supervisors. If that is the case, rather than being a time that encourages developing a deepening understanding of student differences and attention to diagnostic and prescriptive skills, novices gain tacit permission to dispense learning as though all students need the same prescription and establish routines for doing so.

Interventions such as a workshop can serve as a starting point for focusing novices' attention on the varied needs of academically diverse learners and shape their thinking about the learning environment. As they venture into the classroom, novices need support and guidance to model strategies and develop a repertoire of teaching skills that can facilitate meeting those varied needs. The academic diversity of today's classrooms calls for change in practice that should be recognized as a priority from preservice training through professional development. Like other forms of expert performance, the ability to differentiate instruction can develop over time; however, the process must be set in motion. Berliner (1994) suggested that we acknowledge the fact that pedagogical skills are gained slowly and urged teacher educators to create the most nurturing environments for novices, providing them with adequate practice and small numbers of students. He also cautioned that we refrain from the typical pattern of giving new teachers the most difficult classes in a school.

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CHAPTER 1: Introduction

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Research interest has centered on how beginning teachers make decisions about what and how to teach to the class as a whole, rather than on how they make decisions for different types of learners. This focus may rest on the assumption that basic content and pedagogical knowledge must come first and refinements such as learning to differentiate instruction for academically diverse learners will follow with experience. Various models have been developed to describe the stages through which individuals pass as they learn to teach (Berliner, 1994; Fuller & Brown, 1975; Kagan, 1992a; Lidstone & Hollingsworth, 1990). Common to these models is the progression of novices that begins with a focus on themselves and novices' images of themselves as teachers. Only later, as they gain experience, do they focus on the learners in their classes.

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Although it might appear that addressing the needs of diverse learners will result in refinement that comes with time, in fact, time may entrench patterns of teaching that minimize attention to differentiated practices as teachers rely on their personal beliefs and experiences and those of their fellow teachers to solve instructional problems once they are in the field (Kagan, 1992a). This process has a strong bearing on providing instruction for academically diverse learners because research indicates that even experienced teachers seldom implement practices that demonstrate an understanding of how to differentiate instruction in their classrooms (Archambault et al., 1993; Cox, Daniel, & Boston, 1985; Tomlinson, Callahan, & Tomchin, 1994). We cannot assume, therefore, that beginning teachers will develop the skills needed to differentiate by modeling themselves after colleagues as they are inducted into the profession. Focusing attention on academic diversity and strategies to address student differences during preservice preparation may be critical to breaking the cycle that overlooks strategies for differentiating instruction. The purpose of this study was to examine the attitudes and practices of novices regarding academic diversity and examine the impact of preservice interventions that focus attention on and provide support for practices that address learners' varied academic needs.

Preservice Teacher Preparation Project

The Preservice Teacher Preparation Project, a three-year study directed by The National Research Center on the Gifted and Talented (NRC/GT) at the University of Virginia, was designed to gain a better understanding of how those being inducted into the profession of teaching come to (a) develop awareness of the needs of academically diverse learners[2] in their classes and (b) implement and/or modify instruction to meet those needs. Participants from seven university and college settings were selected to provide a range of teacher education programs, including various geographical regions and program characteristics. These program characteristics included willingness to collaborate with the NRC/GT, to provide access to classrooms in which student teachers instruct a range of academically diverse learners, and to provide qualified university staff to serve as site directors for the study. Initially only six sites were selected, but when two sites withdrew prior to the conclusion of the study, a seventh site was added. The two sites that withdrew proved unable to provide personnel to observe and interview preservice teachers throughout their student teaching experience.

During the first phase of the three-phase study, preservice teachers were surveyed, observed, and interviewed. This cohort received no special treatment. In Phase 2, a second cohort of preservice teachers attended a full day workshop on differentiation just

[2] Diverse learners are defined as gifted and talented, remedial, and learning disabled students.

prior to their preservice field placement. Half of those attending the workshop were also assigned a curriculum coach who was to serve as a resource to assist them in differentiating instruction in their classrooms. Workshop participants in both treatments were given supplemental written materials explaining how to modify content, process, and products in order to develop differentiated lessons. A subsample of preservice teachers was followed through their first-year assignments as regular classroom teachers and constituted Phase 3.

Research Questions

The purpose of this study was to examine beliefs of preservice and first-year teachers about gifted, remedial, and special education learners as well as the impact of interventions, including staff development on academically diverse learners, their needs, and strategies for meeting those needs. The study's general qualitative question was, "How do novice teachers come to understand and meet the needs of academically diverse learners?" More focused questions addressed by quantitative and qualitative data were:

1. How will orientation to the nature and needs of academically diverse learners and strategies for meeting their needs affect attitudes and/or practices of novice teachers?
2. How will the interventions affect attitudes and practices of cooperating teachers?
3. How will preservice teachers seek out students in their classes for whom differentiation may be appropriate?
4. How do preservice teachers assess the effectiveness of various instructional approaches for differentiating curriculum and instruction?
5. How do preservice teachers develop as problem-solvers capable of assessing and meeting the needs of academically diverse learners?

Literature Review

Learning to Meet the Needs of Academically Diverse Learners

The process of learning to teach is a complicated one. Classrooms are complex, uncertain environments in which there are no absolutes or single right answers (Borko & Shavelson, 1990). Even greater responsibilities have been placed on the classroom teacher as inclusion of exceptional students has become more common (Hallahan & Kaufman, 1994; Jenkins, Pious, & Jewell, 1990; Maheady & Algozzine, 1991) and the trend away from homogeneous grouping (George & Rubin, 1992; Lake, 1988) has increased the academic diversity of the classroom. Professional judgment and decision-making are necessary for appropriate instruction. It is, therefore, important to understand how those being inducted into the profession of teaching come to understand the needs of academically diverse learners and make instructional decisions based on those needs.

Within the learning-to-teach literature, researchers and theorists have provided frameworks for depicting what teachers know and/or need to know in order to teach (Fenstermacher, 1986; Jackson, 1968; Schon, 1983; Shulman, 1987). Although much emphasis has been placed on understanding the development of content, pedagogical, and curricular knowledge for preservice and beginning teachers, understanding the development of knowledge of individual differences is among the domains that have not been addressed (Shulman, 1987). In fact, little research has examined issues surrounding learning to teach academically diverse students. Although understanding the learner may be implicit, research has centered on how teachers make decisions about what and how to teach to the whole, rather than making decisions for different types of learners. This review focuses on the beliefs, attitudes, and practices of experienced and novice (preservice and first-year) teachers regarding instruction of academically diverse learners. Because few studies address this issue directly, research from a variety of areas was considered. The first section of this review discusses the relationship between teacher beliefs and teaching behaviors, and then focuses more specifically on the role of preservice teachers' beliefs and their beliefs about academically diverse learners. The second section of the review discusses factors that influence teacher development, specifically the impact of teacher preparation and coaching. Because teacher education takes place in the field as well as in the university classroom, strategies used by in-service teachers to meet the needs of academically diverse populations are also discussed.

Role of Beliefs

Research on veteran and novice teachers' thought processes, or cognition, has focused attention on how teachers make sense of the world of teaching. The role beliefs play in understanding the process of teaching has become a major area of interest. Although the term *beliefs* has been interpreted in different ways, we discuss it broadly as the "implicit assumptions about students, learning, classrooms, and subject matter to be taught" (Kagan, 1992b, p. 66). Studies over the past 20 years examining teacher thinking have been based on the underlying assumption that teacher thinking, beliefs, and attitudes are linked to behaviors and actions (Clark & Peterson, 1986; Shulman, 1987). Research has examined how teachers interpret the events in the classroom (Berliner, 1987; Borko & Livingston, 1989; Nisbett & Ross, 1980) and make judgments about student abilities, effort, and progress (Ashton & Webb, 1986). The foundation laid by cognitive psychology and its application to development of experts in various fields has been used to gain insight into the development of teaching expertise (Berliner, 1986, 1994; Borko & Livingston, 1989; Borko & Shavelson, 1990; Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987; Peterson, Carpenter & Fenema, 1989; Shulman, 1987).

Connections Between Beliefs and Teaching Behaviors

In their extensive review of research on teacher cognition, Clark and Peterson (1986) explained that the connection between teacher beliefs and practices is grounded in the assumption that teachers' behaviors are based in personally held beliefs, values, and principles. Findings throughout the literature indicate that teachers' beliefs are associated with congruent styles of teaching (Kagan, 1992b). However this is not necessarily a

cause-effect relationship. The connection between belief and practice has been conceptually illustrated in the model developed by Clark and Peterson (1986), which describes the reciprocal relationship between teachers' (a) thought processes, including their beliefs and theories, and (b) teaching actions and their observable effects, including student achievement and behavior. One subcategory of teachers' thought processes affecting decisions is described as teachers' interactive thoughts. Interactive thoughts are those a teacher has while delivering instruction, as opposed to thoughts teachers may have when planning a lesson or assessing a lesson after having taught it. Interactive thoughts may be judgments made about whether a particular example was understood, whether to ask an additional question, or whether to change the pace of a lesson for the entire class. In each of the six studies reviewed by Clark and Peterson (1986), when actively involved in teaching, teachers spent the greatest amount of their time thinking about the learner. Comments such as the following depicting teachers' thoughts were typical: "I was thinking they don't understand what they are doing," or "I expected him to get that." Interactive decision-making may best characterize the kind of thinking teachers do when they decide to adjust questions or assignments to accommodate student differences. Two models of interactive decision-making that trace decisions based on learner cues provide insight into this process. In the Clark and Peterson model (1986), the most frequently observed path was followed if the teacher judged that the students are understanding the lesson and participating appropriately. She continued the lesson without making changes. If she judged that the lesson was not proceeding within an acceptable level of tolerance, she either continued or changed to an alternative strategy in order to bring the students back within the acceptable level of understanding. Students not able to answer questions, for example, would provide direct cues leading the teacher to alter instruction. On the other hand, if the model holds, one can see how highly able students might easily be overlooked because, unless they exhibited bored or inappropriate behaviors, the teacher would likely assess that they were at an acceptable level of understanding, even though they may have been at that level prior to instruction.

Shavelson and Stern's (1981) model followed a similar pattern but focused on decisions teachers make when their established routines are interrupted. This model was based on the assumption that teachers execute well-established routines with a high level of automaticity. Teachers then must make interactive decisions when this pattern was broken by events such as an unanticipated student question. While both of these models may be too narrow, assuming that student cues were the only antecedent for teacher decisions, the idea that a threshold existed above which the need for change in teacher behavior was warranted, provides an important dimension for examining how teachers provide instruction for academically diverse learners.

Many teaching experiences may also involve what Yinger described as *improvisation* (cited in Borko & Livingston, 1989), rather than planned activities. He suggested that teachers begin with an instructional outline but fill in the details from an extensive repertoire of routines in response to student cues. Clark and Peterson (1986) described the relationship between proactive planning and interactive decision-making as follows:

> planning shapes the broad outline of what is possible or likely to occur while teaching and is used to manage transactions from one activity to another. But once interactive teaching begins, the teacher's plan moves to the background and interactive decision-making becomes more important. (p. 276)

As teachers make adjustments they may be adapting or tailoring the lesson. Shulman (1987) described this process as assessing the relevant aspects of various factors, including student ability, gender, prior knowledge skills, and determining the impact these will have on the various ways of presenting a lesson. Much like the process of tailoring a suit jacket, a lesson must be adapted to fit well. However, differentiation implies that several different sizes must be available so that each child in the class can have a close fit; tailoring after the jacket is made can only do so much. When a one-size-fits-all approach is taken, we suggest the image of a size 10 child being fitted in a size 14 jacket. Tailoring may improve the fit, but not make it comfortable. The child may grow into the jacket someday, but, like the student exposed to content well beyond her grasp, at the moment she is lost in it. Equally poignant is the image of the size 14 child being asked to wear the size 10 jacket. This jacket will never fit; she is like the child exposed to content long since mastered.

Making instructional decisions based on learner cues has important implications for preservice and beginning teachers. Research findings suggest that novice and experienced teachers differ in their awareness and interpretation of classroom events. Clark and Peterson (1986) cited a study conducted by Housner and Griffey in which both experienced and novice teachers responded at approximately the same rates to negative cues (e.g., disruptive behavior); however, the experienced teachers were more likely to make interactive adaptations in response to the positive cues than were the novice teachers (responding to 30% and 6% of the positive cues, respectively).

The ability to make sense of classroom events is often linked to the development of teaching expertise. Expertise is characterized by rapid and automatic decision-making that is often unconscious and automatic, implicit and situated in episodic context, difficult to verbalize, and unintelligible to novice observers because they often see only surface features that they internalize implicitly and incorrectly (Anderson, 1989; Berliner 1986). Such schemata develop based on experience and interaction over time and are likely to result from implicit rather than explicit learning (Berry & Dienes, 1991). Ropo (cited in Copeland et al., 1994) underscored the importance of knowledge about students, suggesting that a critical difference between novices and experts may be the knowledge they have of students and how that knowledge informs the form and substance of teacher-student interactions. For example, findings suggest that expert teachers have richly developed visual images and elaborate schemata of students and classrooms based on years of experience that allow them to automatize and chunk information for faster, deeper, more accurate evaluation of classroom stimuli than novice teachers (Calderhead, 1983; Carter et al., 1987).

The Role of Preservice Teachers' Preexisting Beliefs

Preexisting beliefs of preservice teachers play an important role in their understanding of teaching and their response to teacher education preparation. Studies of preservice teachers indicate that candidates enter their professional training with well-established beliefs about students, teaching, and classrooms (Feiman-Nemser & Buchmann, 1987; Florio-Ruane, 1989; McDiarmid, 1990; Ryan, 1986; Tabachnick & Zeichner, 1984). McDiarmid (1990) also contended that prospective teachers may be unaware of their beliefs or may lack the vocabulary to express them. Despite problems inherent in the ways beliefs can be measured (i.e., self-report instruments), research suggests that teachers' beliefs are relatively stable and resistant to change (Kagan, 1992b; Pajares, 1992). These beliefs are likely based on their many hours in classrooms in what Lortie (1975) aptly termed an *apprenticeship of observation*.

Research suggests that the impact of teacher preparation programs on novice teachers' belief systems is marginal with prospective teachers maintaining the beliefs they held about teaching and learning prior to entering programs (Book et al., 1983; Hollingsworth, 1989; Kagan, 1992b; Rodriguez, 1993; Ross, 1988; Tabachnick & Zeichner, 1984). Multiple explanations for inability of teacher education to change beliefs have been proposed. Lortie (1975), for example, contended that socialization to school occurred well before formal teacher training began, Veenman (1984) suggested that the impact of teacher education courses was "washed out by everyday experience in schools" (p. 144), whereas Tabachnick and Zeichner (1984) contended teacher education made little impact in general.

Novices' adherence to existing beliefs and teaching as they themselves were taught (Cuban, 1984; Hargreaves & Fullan, 1992) can result in what Florio-Ruane (1992) called teaching to the *status quo* rather than to the state of the art. Because of their familiarity with schools (Florio-Ruane, 1989) and their success in the social structure of schools (Pajares, 1992), it is difficult for beginning teachers to view schools in a new light. Pajares further posited that those beliefs that are formed early in life tend to withstand contradictions of reason, time, schooling, or experience. At the same time, the school takes on what Ryan (1986) termed the *shock of the familiar*. Although the environment of schools is essentially familiar, the demands of being a teacher rather than a student catches beginners unprepared and disoriented.

The very nature of teacher education programs may be at fault, because, as McDiarmid (1990) contended, they may not do enough to encourage prospective teachers to examine their fundamental beliefs about such important issues as the teacher's role, pedagogy, and diverse learners. In addition, teacher education focuses on issues with which students already agree. The thousands of hours spent in school provide the basis for their understanding (Lortie, 1975) that is often reinforced by university teaching consistent with their past experiences. Pajares (1992) points out that most students who choose a career in education have a positive attitude toward teaching and positive beliefs about the teaching environment. Therefore, the teacher education program reaffirms rather than challenges the past.

The mere presentation of the knowledge base is not sufficient to change prospective teachers' beliefs about learning and instruction (Anderson, 1989). The pull of prior beliefs is strong and even though early field experiences are intended to reintroduce prospective teachers to the classroom, often they serve to reinforce what Buchmann termed *folkways of teaching*, those beliefs based on faulty perceptions and judgments (McDiarmid, 1990). Examples of misconceptions preservice teachers have about student abilities (Feiman-Nemser & Buchmann, 1987; Koehler, 1985; Kohl, 1984) suggested the need for more reflective practice. In a study reported by McDiarmid (1990), preservice teachers indicated beliefs that young children were incapable of complex thought or sustained attention on a topic. After observing the contrary in an elementary school math class, preservice teachers openly resisted the implications, stating that this must have been an atypical class or that the teacher's "knowledge of mathematics . . . [and] children was beyond the ken of mere mortals" (p. 18).

The resistance of beliefs, however, is not simply a result of lack of exposure to new information. Whether or not they are cognizant of their preexisting beliefs, these beliefs form the filter or intuitive screen (Goodman, 1988) through which novices attend to and interpret events. For example, one explanation for why preservice teachers often believe they were not taught essential information in their teacher preparation programs has been characterized as a "feed forward" problem (Katz, Rahts, Mohanty, Kurachi, & Irving, 1981). Because prospective teachers could not see the relevance of content they were taught, they did not attend to it and therefore did not believe the topics were covered in their coursework.

In a related situation, Borko et al. (1992) hypothesized reasons for a math teacher's inability to teach the conceptual underpinnings of dividing fractions, despite the fact that this was explicitly covered in a teaching methods course. The researchers suggested that, among other reasons, she may have been convinced that the rote method she used to divide fractions was sufficient to be successful. Therefore, the conceptual emphasis in the methods course may have seemed irrelevant and she did not attend to it.

In stressful situations or those in which their content background knowledge is weak, novice teachers may revert back to the way they were taught. Shulman (1986, 1987) noted how Colleen, who typically ran a student-centered, highly interactive class, reverted to a combination of lecture and tightly controlled recitation when teaching a grammar unit. She confessed that she did not want to encourage questions because she was unsure whether she would be able to answer them. Similarly, Grossman, Wilson, and Shulman (1989) found that mathematics and science teachers who did not have conceptual understandings in their fields were likely to rely on prepared texts whereas those with developed understandings adopted classroom strategies focusing on conceptual understanding. Berry and Dienes (1991) suggested that as new teachers encounter a vastly more complex situation than they have ever dealt with in training, they will resort to implicit problem solving strategies. Because they have already had years of implicit learning in traditional classrooms, the variables and links they will draw upon are not necessarily the ones they have learned in their teacher preparation programs. Instead,

beginners may teach as they were taught. Kagan (1992a) reached a similar conclusion based on the studies conducted by Hollingsworth (1989):

> . . . in constructing images of teachers, novices may extrapolate (albeit unconsciously) from their own experiences as learners, in essence assuming that their pupils will possess learning styles, aptitudes, interests, and problems similar to their own. This may partially explain why novices' images of pupils are usually inaccurate. (p. 145)

Preservice Teachers' Attitudes Toward Academically Diverse Students

Research suggests that specialized training is related to teacher attitudes toward some types of learners. Preservice teachers who had a background in gifted education tended to have more positive attitudes toward gifted students than those who did not (Buttery, 1978; Starko & Schack, 1989). Starko and Schack (1989) suggested that teachers who possess classroom experience as well as knowledge concerning the needs of gifted learners are more likely than teachers without experience to perceive the necessity of meeting gifted students' needs through a variety of strategies. Teachers with such experience and knowledge are also more likely to feel capable of using strategies of differentiation than those teachers who have neither classroom experience nor knowledge of gifted students' characteristics and needs.

Cramond and Martin (1987) found that preservice teachers gave gifted students lower ratings on items measuring academic brilliance, industriousness, and athleticism than did inservice teachers. On the other hand, preservice teachers tended to rate non-identified students higher if they demonstrated non-academic characteristics, such as athleticism. Hanninen (1988) found the following differences when comparing preservice and inservice teachers' responses to descriptions of gifted students and their corresponding needs: (a) preservice teachers tended to assume more responsibility for the gifted students' learning than did the inservice teachers; (b) preservice teachers' suggestions for activities for these students demonstrated less depth and were less theoretically organized than the inservice teachers' suggestions; (c) preservice teachers considered the gifted students' interests less than the inservice teachers did; and (d) preservice teachers perceived the learning environment to be contained while the inservice teachers saw it extending beyond the classroom.

Preservice teachers appear to have positive attitudes toward the mainstreaming of students with special needs (Hoover & Cessna, 1984; Warger & Trippe, 1982). Research demonstrates that both preservice coursework concerning mainstreaming and the same coursework accompanied by teaching experience with handicapped students results in more positive attitudes among preservice teachers concerning mainstreaming (Leyser, Johansen, & Abrams, 1984; Leyser & Lessen, 1985). However, Hoover and Cessna (1984) pointed out that preservice teachers who have already taken a course concerning mainstreaming, but have not yet had a field experience in a regular classroom containing mainstreamed students, have more positive attitudes concerning mainstreaming and mainstreamed students than do preservice teachers who have already had the course as

well as the field experience. Hoover (1984) reported that limited experience within a special education classroom does not alter preservice teachers' attitudes and confidence levels concerning special education students and their needs. However, Hoover and Sakofs (1985) hypothesized that preservice teachers' attitudes toward mainstreaming may be related to the amount of anxiety that they experience during the student teaching practicum. They claimed that as preservice teachers' anxiety levels decrease, their attitudes regarding mainstreaming and their own abilities to meet the needs of mainstreamed students tended to grow increasingly more positive.

The attitudes of teachers toward students with diverse needs appear related to their belief in their ability to teach these students successfully (Gickling & Theobald, 1975; Jordan, Kircaali-Iftar, & Diamond, 1993; Siegel, 1992; Stephens & Braun, 1980). Those teachers who felt more confident about their ability to teach students with disabilities reported that they were more willing to have them in their classrooms (Hannah & Pliner, 1983; Larrivee, 1981), especially if they received assistance from special education personnel (Giangreco, Dennis, Cloninger, Edelman, & Schattman, 1993; Gickling & Theobald, 1975; Mandel & Strain, 1978; Phillips, Allred, Brulle, & Shank, 1990), have previous teaching experience with disabled students (Mandel & Strain, 1978), received intensive inservice training (Larrivee, 1981) or have taken courses in special education (Mandel & Strain, 1978; Stephens & Braun, 1980). Siegel (1992), however, found that teachers' attitudes toward *specific* students with learning handicaps were not related to their special education training, special education experience, or previous experience with similar students.

Factors Influencing Teacher Development

This section discusses three factors influencing the development of preservice teachers: (a) elements of teacher preparation practices that facilitate change, (b) the impact of coaching or mentoring, and finally (c) the strategies of practicing teachers related to differentiating instruction for academically diverse learners.

Teacher Preparation Practices to Facilitate Change

Preservice teachers bring previously developed conceptions and prior knowledge to their student teaching experiences (Calderhead, 1993; Fullan, 1991). Often these preconceptions do not correspond to the knowledge needed in the classroom (Calderhead, 1993), and research indicates that the student teaching experience does not change preservice teachers' preconceptions about teaching (Goodlad, 1990; Kagan, 1992b). Hence, experts prescribe specific opportunities to confront beliefs in preservice preparation to promote growth (Feiman-Nemser & Buchmann, 1987; Kagan, 1992a). Without these opportunities, beginners may reconfigure what they see to fit their initial beliefs or ignore what is inconsistent (Goodman, 1988; McDiarmid, 1990). For example, the importance of structuring corrective feedback after observations was underscored by findings indicating that preservice candidates paid selective attention to events and drew inappropriate inferences based on their observations. If left unchallenged, these field experiences would confirm misconceptions and biases. Rodriguez (1993) recommended

that teacher education programs strive to work with preservice teachers' preconceptions rather than against them, building upon assumptions with concrete experiences and alternative theories.

Criticisms have also been raised regarding the general structure of teacher education programs. Among the concerns which have been expressed in the past is the concern that teacher education does too little to prepare preservice teachers for the practical aspects of teaching, such as behavior management (Lortie, 1975). This concern is still present among educators who do not perceive a relationship between the educational theory presented in education coursework and realistic educational practices occurring in schools (Koehler, 1985). Student teachers report that the gap between theory presented in education courses and the skills needed to actually teach in a classroom is the biggest obstacle they face as they begin their practicum experiences (Aitken & Mildon, 1992; Tighe, 1991). Teacher education coursework is often too theoretical and too far removed from the reality of the classroom to be of real value to preservice teachers (Fullan, 1991; Goodlad, 1990; Lortie, 1975). Both preservice and inservice teachers maintain that the student teaching experience is a more valuable component of teacher education than education coursework because the practicum experience gives them a sense of the practical knowledge needed to teach in schools (Fullan, 1991; Goodlad, 1990; Griffin, 1989; Lortie, 1975).

However, despite its perceived superiority over education coursework, the student teaching experience is not without its faults. Aitken and Mildon (1992) and Zeichner (1990, 1992) criticized the narrow scope of the teaching practicum, pointing out that because they are virtually immersed in one classroom, student teachers are isolated from the school and community outside of their own classrooms. Cole and Knowles (1993) claimed that these isolated placements do not prepare preservice teachers for the task of teaching because they pay little attention to the complex reality of teaching. In addition, due to their isolated placements, a student teacher's professional growth is subject to the influence of a single inservice teacher and that teacher's practices whether they are effective or not (Fullan, 1991; Lortie, 1975; Zeichner, 1990).

Zeichner (1990) highlighted several barriers to teacher learning which devalue the student teaching experience: (a) the assumption that placing preservice teachers in classrooms with *good* inservice teachers will necessarily produce positive results in the preservice teachers; (b) the absence of an established practicum curriculum that draws a relationship between what is learned in education coursework and what is experienced in the classroom; (c) the lack of training for practicum supervisors that is specific to the characteristics of the practicum experience; (d) the low status of the practicum and the focus on student learning rather than on preservice teacher learning.

Research continues to support the long-accepted notion that cooperating teachers are the most important influences on student teachers' attitudes and behaviors both in the practicum experience (McIntyre, 1984; Morin, 1993) and in the entire teacher education program (Connor, Killmer, McKay, & Whigham, 1993). Yet, this influence is not always positive (Morin, 1993; Tighe, 1991). Additionally, cooperating teachers can do little to

guide student teachers in addressing students' diverse academic needs if they, themselves, do not provide differentiated instruction in their classes. Morin (1993) indicated that cooperating teachers' heavy reliance on direct teaching greatly limits student teachers' exposure to a variety of instructional strategies. Hoy and Woolfolk (1990) suggested that student teachers are often socialized into custodial school cultures, exemplified by cooperating teachers who emphasize order and control versus encouraging autonomy in the classroom. Furthermore, when student teachers attempt to utilize alternative instructional strategies, they do so without the support of the cooperating teacher, and they often receive little feedback regarding these attempts (Morin, 1993). Ironically, it is this feedback which student teachers value most highly during their practicum experiences (Connor et al., 1993).

Morehead and Waters (1987) contended that cooperating teachers need to be able to explain their instructional decisions and strategies to student teachers. More often than not, they do not provide student teachers with explanations concerning their recommendations and advice about the student teachers' instructional practices (Dunn & Taylor, 1993). This assumes, however, that cooperating teachers understand how lack of teaching experience affects preservice teachers' interpretations of events and their abilities to deal with problems. Expert teachers see classroom problems more quickly and clearly than novices. Many of the strategies they use have become routine so they are able to pay attention to several things simultaneously. Novice teachers, on the other hand, may have limited knowledge structures, less efficient pattern recognition, and require more conscious attention to execute teaching tasks (Copeland et al., 1994; Wildman, Niles, McLaughlin, & Magliaro, 1987). Mentoring or coaching can provide guidance as novices expand their abilities to recognize patterns and develop their teaching repertoires. Novice teachers need time and practice to develop the expertise to manage the multidimensionality, simultaneity, immediacy, and unpredictability of classroom environments (Doyle, 1986).

Providing novices with guidance and support during their preservice experience is important because the professional ideas that guide subsequent teacher behavior are formed early in one's career (Goodman, 1988). Research has demonstrated that once teachers become *entrenched* in strategies, their behavior is often difficult to alter (Bereiter & Scardamalia, 1986). Specifically, Scardamalia and Bereiter provided insight into the inferences teachers made about their students' abilities to learn subject matter. Whereas some teachers were likely to become good progressive problem solvers who learned to meet individual needs, others may become adept at circumventing the problems diverse learners presented by rationalizing student failures, minimizing the amount of inference they required from students, or limiting instruction to familiar topics. Teachers develop expertise in certain patterns of behavior as they continue to teach. However, the focus of teacher efforts and the potential outcomes for students vary greatly.

Beginning teachers have been developing conceptions of teaching from the time they were students, but as Barnes (1992) remarked, "the most important shaping of teachers' frames occurs during the first year or two of teaching, when they must interact

with their students and with their more experienced colleagues" (p. 18). Teacher education courses do little to prepare preservice teachers for meeting the needs of academically varied and diverse learners in their classrooms, and due to this lack of crucial knowledge, preservice teachers tend to focus almost exclusively on behavior management issues rather than on student learning in their classrooms (Kagan, 1992a). This lack of preparedness for the task of teaching academically diverse students can lead to a conflict between preservice teachers' ideologies and practices (Calderhead & Robson, 1991; Tabachnick & Zeichner, 1984). They may know that they should be meeting the needs of each of their students, but they may not know how to do so.

Coaching or Mentoring Preservice and Beginning Teachers

One approach used to enhance the transfer of knowledge and skills from teacher education programs to the classroom is mentoring or coaching (Kagan, 1992a; Showers, 1987; Showers, Joyce, & Bennett, 1987). Planned mentoring programs have become increasingly common in schools and teacher education programs (Feiman-Nemser & Parker, 1992; Huling-Austin, 1992; Rosaen, Roth, & Lanier, 1989; Wildman et al., 1992 Williams, Gold, & Russell, 1991). Mentoring relationships among teachers often develop naturally, usually beginning when the protégé recognizes signals suggesting that the mentor is taking a particular interest in his or her work (Gehrke & Kay, 1984). Mentors help teachers decide how to use a new model and provide support for the teacher during application of the new model. Mentors must be competent in the strategy or model that they are helping the teacher learn (Showers, 1987). In fact, characteristics including the ability to work together, trust, respect, and belief in each other's abilities were reported more crucial than a strong interpersonal relationship (Galvez-Hjornevik, 1986).

Coaching or mentoring as a part of the preservice experience raises certain issues related to responsibilities of university supervisors. Christensen (1991) suggested that university supervisors of student teachers should seek mentoring relationships with their students. Stroble and Cooper (1988), while agreeing with Christensen that mentors should be utilized with preservice teachers, did not specifically suggest that university supervisors should fulfill that role. They stated that if the mentor also has an evaluation or appraisal role in relation to the new teacher, the beneficial mentoring roles of encouragement, advising, and friendship may be jeopardized. Relationships among the cooperating teacher, preservice teacher, and university supervisor should also be considered. Shuell (1990), for example, recommended that the university supervisor mentor the cooperating teacher in order to increase the latter's supervisory skills.

Coaching has been found to be effective at both preservice and inservice levels (Clift & Wilson, 1984; Neubert, 1988; Peterson & Hudson, 1989). Teachers are more likely to use new strategies and concepts if they receive coaching while they are implementing the changes in their classes (Showers et al., 1987). Benefits have been reported for students of coached teachers (Showers, 1987) and for the mentors themselves (Fessler & Burke, 1983).

Practices of Experienced Teachers

As noted, supervising or cooperating teachers can have a positive impact on the practices of their student teachers (Connor et al., 1993; Morin, 1993; Zeichner, 1990). The impact is tempered by the abilities of cooperating teachers to recognize differences in how the novices interpret classroom events and their abilities to communicate with the student teachers. However, unless differentiated instruction is used by practicing teachers, the preservice teachers will have few opportunities to develop an understanding of how to meet the needs of academically diverse learners in their classrooms. Recent findings related to modifying instruction for students with exceptionalities in regular classrooms suggest that few curricular or instructional adaptations are being made for academically diverse students (McIntosh, Vaughn, Schumm, Haager, & Lee, 1994; Schuum & Vaughn, 1991; Ysseldyke, Thurlow, Wotruba, & Nania, 1990). In a survey examining teachers' willingness to adapt instruction for mainstreamed students, Schuum and Vaughn (1991) found that, in general, modifications requiring little in terms of planning, instruction, or altering the environment were rated as most feasible. This pattern was similar across elementary, middle, and high school levels. Specifically, teachers indicated that (a) providing reinforcement and encouragement; (b) establishing a positive relationship with the student; and (c) involving the student in whole-class activities were the most feasible of the thirty options suggested. Those modifications rated least feasible were (a) adapting regular materials; (b) using alternative materials; and (c) providing individualized instruction.

Researchers at The National Research Center on the Gifted and Talented (NRC/GT) conducted a national survey of third and fourth grade teachers to determine how the needs of gifted students were met in regular classrooms (Archambault et al., 1993). Whether the school was public or private; urban, rural, or suburban; located in the Northeast, South, West, or North Central region of the country, "teachers only [made] minor modifications in the regular curriculum to meet the needs of gifted students" (p. 98). Of the 39 classroom practices considered, teachers seldom reported using differentiated curricular or instructional strategies for gifted students. Only two practices, assigning advanced reading and repeating difficult concepts, were found to have even medium effect size differences among public school teachers. Of particular interest are those practices that were not reported to be different for gifted and nongifted, including, using basic skills worksheets.

Those practices most frequently used with gifted students related to questioning and thinking skill activities; however, these activities were used about as often with average students as with gifted students. Teachers also reported using advanced curriculum units, independent study, acceleration to higher grade level content, and ability grouping with gifted students less often than a few times a month, about as often as they were used with average students. Researchers concluded that the results "paint a disturbing picture of the types of instructional services gifted students receive in regular classrooms across the United States" (Archambault et al., 1993, p. 98). Similarly, in a study involving classroom visits, researchers found that 84% of assignments for gifted students were the same as those made to the whole class in the five subjects surveyed.

The most individualization took place in mathematics, but even there only 11% of activities for gifted students contained advanced content and instruction (Westberg, Archambault, Dobyns, & Salvin, 1991).

A survey comparing the attitudes of middle school teachers and teachers of the gifted (Gallagher & Coleman, 1994) also provides insight into attitudes and practices of experienced teachers. Findings revealed that these two groups differed in their views on several issues. In particular, middle school teachers were more likely than teachers of the gifted to agree that "the regular middle school curriculum is challenging for gifted students" and "programs for the gifted could benefit all students."

A separate survey (Gallagher, Coleman, & Nelson, 1995) examined teachers' beliefs related to cooperative learning. Responses of teachers of the gifted were compared with responses of teachers using cooperative learning as a vehicle for addressing student readiness differences in the regular classroom. Findings suggested that teachers using cooperative learning were more likely than teachers of the gifted to see cooperative learning curricula as challenging for the gifted, as helping gifted students develop critical social and leadership skills, and as contributing to higher self-esteem. The teachers using cooperative learning as a primary vehicle for addressing student differences were also less likely to believe that gifted students resent being a *junior teacher* in cooperative learning settings.

These findings suggest that some practicing teachers may feel that the learning needs of gifted students were being met by the strategies already in place and there was no need to focus efforts to differentiate instruction. Tomlinson's (1995) description of her interactions with skilled, experienced middle school teachers over an 18-month period provides evidence of this view. Initially most teachers in Tomlinson's study expressed a *we already do that* stance, indicating that they were regularly differentiating to meet the varied needs of their students. Observation and interviews revealed that these teachers' practices were largely reactive, providing minor modifications to lessons in keeping with the interactive, improvisational decisions such as modifying questions, expanding assignments, or giving additional challenges to those who finished work early rather than planned alternatives designed to meet student interest and need. Tomlinson depicted these as examples of microdifferentiation, which she placed as a point on a continuum leading toward a goal of macrodifferentiation. To implement macrodifferentiation teachers must be willing to accept multiple methods of assessment and use varied resources and expressions of learning. Shifts to student-centered, concept-based instruction enhance opportunities to develop differentiated classes. Tomlinson concluded that even experienced teachers need models to guide them in developing appropriate practices to meet the needs of academically diverse learners. Said one teacher, "We need somebody who can work with us in our classrooms on differentiation. It's like in college when they tell you all this stuff about teaching while you sit and listen, and it makes no sense at all until you start using it" (p. 84).

Thus, research suggests that differentiating instruction is not a strategy that comes easily for experienced or novice teachers. It is unlikely that preservice teachers will learn

how to differentiate instruction for academically diverse learners through their interactions with their cooperating teachers. At best, they are likely to observe experienced teachers making minor adaptations in the form of varied questions given to different learners or expanded assignments for advanced learners.

Summary

Preexisting beliefs and past school experiences are powerful in shaping prospective teachers' ideas about teaching and learners. Although teacher education programs may attempt to expand preservice teachers' notions of teaching and learners, the content of preservice instruction may not penetrate the screen created by novices' prior beliefs. As they try to make sense out of the classroom, preservice and beginning teachers are faced with a multitude of new responsibilities and concerns that could understandably divert their attention away from differentiating instruction. While they express a strong belief in addressing student differences, evidence suggests they neither have the confidence in their ability to identify specific needs nor move away from *one lesson for all*. Logic might lead us to predict that as teachers become more experienced and gain more content knowledge and pedagogical knowledge, and teaching routines become more automatic, they will, in fact, focus on the differing needs of their students. While this may be the case for some teachers, empirical evidence suggests that differentiated instruction (e.g., proactive planning and delivery of varied instructional practices based on student characteristics and abilities) does not occur often, even in classes of experienced teachers. Those adjustments that are made to accommodate student differences may generally be described as minor tailoring at best. Preservice programs that encourage prospective teachers to examine their beliefs about learners and provide opportunities for the novices to practice strategies under the guidance and support of professionals and mentors who implement differentiated strategies offer potential for the development of skills needed to teach academically diverse learners. Absent such reflective practice, a broad repertoire of teaching strategies, and persistent support as the strategies develop through and beyond the novice stage of teaching, it appears likely that novice teachers are simply set upon a course which will lead them to become career teachers lacking the skill and/or will to robustly and effectively address the needs of academically diverse learners in their classrooms.

CHAPTER 2: Methodology

Quantitative and qualitative methods were used to examine (a) attitudes and beliefs of preservice and beginning teachers related to academically diverse learners; (b) teaching practices that preservice and beginning teachers employ in response to the academic diversity in their classrooms; and (c) the impact of interventions, including staff development on academically diverse learners, their needs, and strategies for meeting those needs. Specifically, data collection was designed to address the following research questions:

1. How will orientation to the nature and needs of academically diverse learners and strategies for meeting their needs affect attitudes and/or practices of novice teachers?
2. How will the interventions affect attitudes and practices of cooperating teachers?
3. How will preservice teachers identify students in their classes for whom differentiation may be appropriate?
4. How will preservice teachers assess the effectiveness of various instructional approaches for differentiating curriculum and instruction?
5. How do preservice teachers develop as problem-solvers capable of assessing and meeting the needs of academically diverse learners?

Design

This study was divided into three phases. Phases 1 and 2 followed preservice teachers during their student teaching experiences. Phase 1 preservice teachers received no treatment other than the formal teacher preparation courses stipulated by their respective universities. Preservice teachers in Phase 2 were randomly assigned to one of two treatment groups: (a) those who participated in an interactive full-day workshop on differentiation, hereafter referred to as workshop only (n = 22); and (b) those who participated in an interactive full-day workshop on differentiation and had a curriculum coach who worked with them throughout their student teaching placement, hereafter referred to as workshop and coaching (n = 23). Phase 3 was designed to extend the examination of attitudes, beliefs, and practices by following a small sample of those who had participated in Phases 1 (n = 6) and 2 (n = 4) through their experiences as first-year teachers (see Table 1).

Data were systematically collected from the participants so that pre-post comparisons of beliefs, attitudes, and practices could be made among participants who received no intervention treatment, those who received the workshop only, and those who received the workshop and coaching intervention. In addition, comparisons across time were made by examining the practices of a sample of Phase 1 and Phase 2 preservice teachers during their first year as classroom teachers.

Table 1

Number of Participants by Site and Treatment

	Treatment					
	Phase 1	Phase 2		Phase 3		
Site	No Treatment	Workshop Only	Workshop & Coach	No Treatment	Workshop Only	Workshop & Coach
A	15	6	6	6	2	2
B	10	6	6			
C		4	5			
D	5	6	6			
E	4					
F	2					
G	5					
Total	41	22	23	6	2	2

Sample

A two-stage sampling process was used to obtain preservice and first-year teachers for the study. First, university sites were selected based on the criteria described below. Second, stratified random samples of participants were selected at each site to reflect the representation of students in elementary, middle, and secondary education at each university site.

Selection of Sites

Initially, six universities were selected as sites based on their willingness to collaborate with the NRC/GT, their access to classrooms in which student teachers instruct a range of academically diverse learners, and the qualifications of faculty to serve as site directors and to execute the prescribed research design. These sites represented four states in the South, Southeast, and Mid-Atlantic regions of the country, as well as small, medium, and large universities. All were state-supported public universities. One of the initial sites withdrew during data collection for Phase 1 and although only two preservice teachers participated from that site, those data were included in the analysis. A second site participated in Phase 1 but did not participate in Phases 2 or 3. Data from that institution were also included. At each site the decision to withdraw from the study was based on the inability to obtain participants and an adequate number of trained observers. A seventh site was added and data were collected from that site for Phase 2. One of the participating programs was a five-year Holmes project; the others had four-

year teacher education programs. Student teaching varied from the option of fall or spring teaching, fall only, or spring only. Some students had one placement and others had two. None of the institutions provided the option of majoring in gifted education at the undergraduate level. The size of the undergraduate teacher training program varied considerably, and the selectivity of admissions at the universities varied from minority open admissions to highly selective (1 in 5 students selected). Table 1 indicates the number of participants in each phase from each site. Complete descriptions of sites are available on request.

Selection of Participants

Participants were selected to maximize the likelihood that a range of students with differing abilities would be in each preservice teacher's classroom. For that reason, special education teachers were not solicited, as their classrooms were unlikely to have a representation of typical and gifted learners. At each site, the names of all teacher candidates entering their student teaching experience were classified by their grade level assignment (elementary, middle, and high school). Then within each of these grade strata, a sample of names proportional to the representation in the respective teacher education programs was randomly drawn. Once the preservice teachers agreed to participate, permission from the cooperating teacher and the school administrator was obtained. In instances where permission was not granted, another name was randomly drawn from the remaining students in that strata.

At each institution, the student teaching experience was directed by a university supervisor and a supervising classroom teacher; however, some student teaching experiences took place in the fall semester while others took place in the spring. Student teaching experiences at six of the sites were one-semester duration. The school year at Site G was based on the quarter system, so the five preservice teachers from that site participated in a quarter-long student teaching experience.

Phase 1

Forty-one preservice teachers from six institutions participated in this phase of the study. All Phase 1 data were collected during the first year of this study to reduce the likelihood of treatment contamination between groups at the same site.

Phase 2

Forty-five preservice teachers from four institutions participated in this phase of the study. Once the sample had been selected, subjects were randomly divided into (a) workshop only and (b) workshop and coaching treatments.

Phase 3

All participants in Phases 1 and 2 were contacted and asked to participate in Phase 3. Some expressed a willingness to participate, but had accepted teaching positions that were located too far from the research sites to make data collection possible. Others who were contacted did not want to take on additional responsibilities during their first year of teaching, and still others had gone to graduate school or did not take full-time teaching

positions. Although a larger number of participants had been solicited, 10 subjects participated in Phase 3. Each of these first-year teachers graduated from the same five-year teacher preparation program. Their preservice and first-year teaching assignments appear in Table 2.

Table 2

Preservice and First-Year Teaching Placements of Phase 3 Participants

Participant[a]	Preservice Placement(s)	First-Year Placement
No Treatment		
Amy	K, 4th grade	1st grade
Jennifer	7th grade, K	5th grade
Sarah	6th grade	5th grade
Sue	7th grade	7th grade
Brian	9th-12th grade French	7th-12th grade Spanish & French
Melanie	9th-11th grade biology	9th-12th grade biology & chemistry
Workshop Only		
Karen	K, 4th grade	K
Becky	9th-12th grade Spanish	9-12 Spanish
Workshop & Coach		
Tim	2nd grade, 5th grade	6th-8th grade math
Linda	10th grade biology	7th grade science

[a]Pseudonyms are used for all participants.

Treatment

Workshop

All Phase 2 participants took part in a six-hour workshop on teaching academically diverse learners. Intervention workshops were held at each university site during or just prior to the first week of student teaching. The workshop was designed to ensure that all participants had at least some level of common involvement with key principles and practices of working with academic diversity. The workshop format was selected because there is support for the efficacy of direct instructional intervention in enhancing preservice teacher awareness of instructional elements (Saunders & Morine-Dershimer, 1990) and such direct instruction is the typical inservice model for public schools, thus inviting use of positive findings in existing staff development formats. Goals of the workshop were to (a) guide the thinking of preservice teachers about the

nature and needs of academically diverse learners; (b) assist preservice participants in developing a framework for thinking about curricular and instructional differentiation; (c) provide preservice participants with materials on strategies helpful in meeting the needs of academically diverse learners; and (d) initiate the process of preservice teachers acting as problem solvers in thinking about instruction of academically diverse learners.

The overall study was directed by a project director at one of the participating sites. The project director was a university faculty member with over twenty years of experience working with a wide range of exceptional learners at the public school level, and doctoral specialties in gifted education and qualitative research. At each of the participating sites, research and training were directed by a site director who was a university faculty member with expertise in research as well as gifted education and/or special education. A detailed training manual for the workshops, containing specific activities, training materials, and background readings was prepared by project staff and utilized in training at all sites.

During the workshop, each site director led preservice teachers in consideration of the nature and needs of students identified as gifted, learning disabled, or remedial in one or more subject areas, as well as in consideration of principles and practices of differentiating instruction for academically diverse learners in heterogeneous settings. Participants individually read case studies of academically diverse learners and then worked in small groups to analyze cases for student traits, learning needs, and appropriate teacher responses to the learning needs. This was followed by a large group discussion and synthesis of ideas led by the site director. Site directors then presented the framework for novices to use to modify instruction via content (what is taught, what materials are used and adapted, how ideas are organized), process (ways in which students are helped to make sense of key ideas, concepts, and skills), and products (ways in which students show and extend what they have learned). Novices were then asked to propose specific modifications of content, process, and product for the case study students, and were presented with several means of differentiation that are among those useful in working with academically diverse learners (e.g., reading buddies, concept mapping, curriculum compacting, independent study, tiered assignments). Following large group sharing of novice ideas for case study students, site directors presented examples of teacher-developed differentiation for participant analysis. Finally, novices shared concerns and possible solutions to those concerns related to establishing and managing differentiated communities of learning. Site directors acted as participants in this portion of the workshop, providing suggestions, but also guiding preservice teachers and encouraging them to reflect on their own experiences and knowledge. Time in the workshop was balanced in favor of reflective thought and application by novices, but supported with ideas (both verbal and in print) from site directors.

At the end of the workshop, those who had been randomly selected for the workshop only treatment were dismissed and those who had been randomly assigned to the workshop and coaching treatment were asked to remain so they could be introduced to their curriculum coaches.

Workshop and Coaching

In addition to attending the workshop described above, participants in this treatment group were also assigned an experienced professional to serve as their curriculum coach. The curriculum coach was to act as a guide and resource for assisting the preservice teacher in planning for and implementing differentiated instruction. Coaches were asked to contact their preservice teacher at least weekly. Curriculum coaches were selected because of their experience with academically diverse learners as well as their skills in classroom settings. Coaches participated in the intervention workshops with preservice participants to ensure that both groups received a similar initiation to principles and practices. This laid common ground for developing dialogue and focusing on shared problem solving. Coaches also received approximately three hours of instruction on the nature of the project and role of a curriculum coach. Their role was not to tell novices what to do in their classrooms, but rather to elicit and guide reflection and problem solving related to teaching academically diverse learners. They were also given a manual that was developed to highlight essentials discussed during training.

Data Collection

Data were collected using various sources (preservice and beginning teachers, trained observers, curriculum coaches) and methods (self-report survey, interviews, observations, documents) to provide multiple viewpoints for interpretation and triangulation of data (Denzin, 1978; Miles & Huberman, 1994). Observers who visited classrooms and interviewed participants received specific training on observation and interview methods as well as supporting printed materials (e.g., observation and interview protocols) to ensure consistency among observers.

Observer Training

Practicing teachers and graduate students in education with extensive experience as teachers of academically diverse learners were selected as observers at each site. Each observer attended a three-hour workshop led by a university faculty member skilled in qualitative research methods. During workshops, observers examined and analyzed exemplars of field notes and interview transcripts. Observers were coached in interviewing techniques and methods for documenting observations in field notes. Observers also reviewed the procedures for completing the following observation protocols, the Classroom Practices Record (CPR), and Classroom Practices Observation of Preservice Teachers (CPO).

Quantitative Instruments

The Survey of Practices With Students of Varying Needs (SOP)

The Survey of Practices With Students of Varying Needs (SOP) was developed by the NRC/GT staff at the University of Virginia to assess attitudes and beliefs about academically diverse learners and differentiated instruction appropriate for meeting their needs. Participants for each phase of the study completed the SOP at the start of the

observation semester and at the end of the observation semester, thus making pre- and post- comparisons possible. The SOP appears in Appendix A.

Pilot Testing

The SOP was developed specifically for this study. Items were designed to reflect the best practices for meeting the needs of academically diverse learners. During the summer of 1993, prior to the start of Phase 1, a pilot study of the SOP was conducted to obtain feedback on questionnaire items. Thirty-two (n = 32) preservice teachers who were enrolled in an introductory education course and 23 experienced teachers who were enrolled in a graduate education course or were teaching in a summer enrichment program for gifted learners completed the instrument at Site A. Based on feedback from those taking the SOP and internal consistency estimates, the number of items in the first section of the instrument was reduced from 42 to 26 items. No other changes were made to the SOP.

Classroom Practices Record (CPR)

The CPR was designed to systematically collect information about student composition of classrooms and the types of instructional activities taking place during the observation period. A modified version of the CPR (Westberg, Dobyns, & Archambault, 1990) was used by observers to record instances of each of 15 activities (e.g., lecture, simulation, games, testing, demonstrations, project work) for targeted students (those identified as gifted, special education, or remedial learners) during an observation. The CPR contained three sections: (a) Identification Information which provided a record of the observation itself, and asked for information regarding identification of target students and their ethnicity; (b) Physical Environment Inventory, which allowed recording of availability of learning centers and small working group arrangements under the direction of the preservice teacher which might facilitate individualizing or differentiating assignments; and (c) Curricular Activities, which solicited information about the types of curricular activities that occurred during a specified 20 minute period of each hour and a half observation as well as the numbers of students in various groupings and the composition of groups (homogeneous or heterogeneous). Evidence of differentiation experienced by students identified as gifted or remedial/special education (referred to as target students) was recorded in this section. The CPR appears in Appendix B.

Qualitative Instruments

Semi-Structured Interview Protocols

Protocols developed by the NRC/GT staff at the University of Virginia were used with all preservice and first-year teachers to explore attitudes and practices related to academically advanced and struggling learners as they evolved over the course of the observation semester. Preservice and first-year teachers were asked questions about specific students and observed teaching behaviors to focus discussion on real students and teaching activities. Interview protocols are in Appendix C.

Classroom Practices Observation of Preservice Teachers (CPO)

The CPO was a semi-structured observation protocol developed by the NRC/GT staff at the University of Virginia to record classroom activities. Protocols were semi-structured in that they provided a focus for observations, but also allowed flexibility in observations as settings and circumstances varied. Observers indicated and described the type of activity the preservice teacher was conducting (e.g., differing content, process, product; differing assignments or tasks; preservice teacher awareness of differing needs). In addition, space was provided for observers to indicate the type of student for whom an activity was intended (i.e., gifted, special education, or remedial learners). This form complemented the data provided by the Classroom Practices Record. Space was also provided for the observers to record key phrases, quotes, or notations that could be elaborated upon later in expanded field notes. The CPO is in Appendix D.

Classroom Documents

Documents, when available, were collected as a source of additional information and as a vehicle of triangulation. These included unit and lesson plans, compacting records, Individualized Educational Programs (IEPs) developed by the teachers, and other relevant materials relating to classroom instruction.

Procedures

Research site staff contacted appropriate university and school district personnel to secure permission for the observers to begin classroom observations and interviews with preservice or first-year teachers. Typically, contact was made with and permission secured from (a) Human Subjects Committees of participating universities, which granted approval for the study; (b) teacher education departments at the participating sites which granted access to student teachers; (c) student teachers and first-year teachers, who signed *consent to participate* forms when they agreed to take part in the study; (d) district superintendents who gave permission for the study to take place in the district; (e) school principals who gave permission for the study to take place in their schools; and (f) cooperating teachers (who may have been called by other titles such as *master teacher*, or *clinical instructor* depending on the site), who provided basic information to site personnel about the range of students in their classes. Site directors (or their representatives) notified observers when it was acceptable to make initial contacts with the preservice teachers and cooperating teachers to set up observation/interview schedules.

Observers arranged three mutually convenient observation/interview times, spaced at intervals of approximately one month (for example, one observation/interview in early October, one in early November, and one in early December). Each observation lasted approximately one and one-half hours of instructional time during which the preservice or beginning teacher was responsible for instruction in the classroom. Each observation was also followed by an interview between the preservice or first-year teacher and observer. Time for the interview was pre-arranged with the interviewee and approved by the cooperating teacher.

Prior to their field experience, potential preservice participants at each site were asked to attend a meeting explaining the study. The study was introduced as a way for researchers to begin to understand how preservice teachers think about and respond to the needs of diverse learners in the classroom. The SOP was distributed during this meeting. Participants were assured of confidentiality; therefore, identification numbers rather than names appeared on the instrument. All surveys were completed and returned by the close of the meeting.

Data Analysis

Analysis of SOP

Each of the four parts of the SOP was analyzed separately. Three scales were formed from the 26 items in Part I, which assessed attitudes toward (a) advanced (gifted) learners; (b) struggling (remedial/at-risk) learners; and (c) differentiation of classroom practices to meet the needs of academically diverse learners. In order to determine if differences existed among the three treatment groups (no treatment, workshop only, workshop & coach) in their reported attitudes, three separate univariate repeated measures analysis of variance (ANOVA) were run where the dependent variables were attitudes toward advanced learners, attitudes toward struggling learners, and attitudes toward differentiation, respectively.

Part II of the SOP provided an opportunity for respondents to reflect on the amount of time and attention received by special education students, average students, and gifted students by asking them to rank each group accordingly. Descriptive statistics for each treatment group were calculated for comparison of pre/post treatment conditions.

For Part III, respondents were asked to rate their confidence on a five-point Likert-type scale ranging from no confidence to very confident regarding their abilities to adapt instruction for the needs of academically diverse learners. Because of the small number of items and reliability issues surrounding the use of such few items, only descriptive statistics were computed for each treatment group.

For Part IV, respondents were asked to indicate if they would use particular instructional strategies with gifted students, average students, or special education students. Pre/post descriptive statistics were computed for each treatment group.

Analysis of CPR

Data from the CPR were used to describe classroom environments and instructional activities. Instances in which a specific activity was observed were tallied and summarized data are reported as percentages by grade for each phase.

Analysis of CPO

The CPO provided a means for systematic collection of data that described classroom events. Frequencies of interactions with target students (i.e., gifted, remedial, and those receiving special education services) are reported. These data and the data collected from the CPR were also used in the qualitative analyses in conjunction with the interview transcripts and observers' field notes to develop case studies for each teacher. Whereas the summary tables provide information about which practices were used most frequently in preservice teachers' classrooms, case study analyses provide an in-depth explanation of how and why these practices were used within the context of each preservice teacher's class.

Analysis of Qualitative Data: Development of Emergent Themes

Although quantitative data were gathered, the primary focus of this study was qualitative. Qualitative inquiry is appropriate in educational settings when (a) how and why questions are asked; (b) researchers attempt to understand an educational phenomenon rather than predict the future; (c) there is an assumption that varied people will perceive events in varied ways; (d) there is an interest in understanding processes rather than ends; (e) an event is studied in its natural context, with lines blurred between context and phenomenon; (f) the investigation is inductive, building hypotheses, and g) multiple sources of evidence are used (Marshall & Rossman, 1995; Merriam, 1988; Yin, 1989).

The goal of the qualitative analysis was twofold: (a) systematic analysis of data generated by each university; and (b) cross-site analysis among the seven university sites. Cross-site analysis procedures developed by Miles and Huberman (1994) included the use of common codes, outlines, reporting formats, and common displays of coded data segments to enable cross-site comparisons. The project director from Site A coordinated procedures for cross-site data collection and analysis. Using qualitative data analysis computer programs, researchers coded interview transcripts with preordinate codes reflecting the study's questions and with codes that emerged throughout the data analysis period. Redundancy of codes led to development of themes that recurred in the cases. Codes and themes were tested, expanded, and modified through use of CPR forms, interviewer/observer field notes, and teacher documents. Ultimately, researchers wrote case summaries for each novice teacher, retaining coded transcripts for additional data analysis across cases.

Initially, the research team met weekly to discuss early data analysis, including classification and coding. Later, they met at least biweekly in peer debriefing pairs to review one another's codes, themes, and case reports. Finally, two researchers not involved in initial classification, coding, and theme selection read across cases for preordinate and emergent themes as an additional check. An audit trail (Lincoln & Guba, 1985) of raw data, coded data, themes, and case reports established confirmability of data analysis procedures.

Factors Affecting Data Collection and Analysis

Securing sites and maintaining levels of participation at each site were difficult. Interviews and classroom observations added to the demands on student teachers' time. Although all participants were asked to complete pre- and post-treatment surveys, not all participants did so. In addition, some participants chose to complete only certain sections of the surveys.

CHAPTER 3: Findings

Findings in this section address the question: How will orientation to the nature and needs of academically diverse learners and strategies for meeting those needs affect attitudes and/or practices of novice teachers? The quantitative instruments were designed to collect baseline data on preservice teachers in order to assess attitudes and practices prior to any type of intervention. Data collection was then repeated after treatment so comparisons could be made.

Analysis of Quantitative Instruments

The Survey of Practices With Students of Varying Needs (SOP)

Items on the SOP provided a quantitative means of assessing attitudes and reported practices of preservice teachers in the various treatment groups (no treatment, workshop only, workshop & coach).

Part I

Means and standard deviations for both pre- and post-treatment conditions for each of the three subscales related to attitudes toward academically diverse learners are presented in Table 3. Items in each subscale were recoded so that the higher the mean, the more positive the attitude. Possible ranges for the three subscales were 9 to 36 for the advanced learner (AL) scale, 4 to 16 for the struggling learner (SL) scale, and 12 to 48 for the differentiation (D) scale. As can be seen, the three groups held similar attitudes prior to receiving any treatment toward both advanced and struggling learners as well as the practice of differentiation. The control group's means for the three subscales prior to intervention were 16.24 (AL), 8.33 (SL), and 22.24 (D), respectively. After intervention the control group's means decreased on the advanced learner scale and differentiation scale but slightly increased on the struggling learner scale (16.06 (AL), 18.06 (D), 8.67 (SL)). For the workshop only group, prior to intervention, the means for the three subscales were 18.29 (AL), 8.40 (SL), and 24.17 (D). After intervention, the group's means in two of the three scales decreased (17.71 for the advanced learner scale and 17.83 for the differentiation scale), and increased on the struggling learner scale, 8.47. The workshop & coach group's means prior to any intervention were 16.67 (AL), 8.44 (SL), and 21.00 (D). After the intervention, the means were 17.17, 8.22, and 19.43, respectively.

In summary, for the advanced learner subscale, the three treatment groups held similar attitudes toward advanced learners prior to the interventions. Following the interventions, only the treatment group receiving the workshop & coach intervention experienced a gain in the mean score, whereas the other two groups' means slightly decreased, indicating a slightly less positive attitude towards advanced learners. For the struggling learner subscale, the reverse pattern occurred. Both the no treatment group

and the workshop only group showed slight increases in their mean scores after the intervention in their attitudes toward struggling learners. On the other hand, the workshop & coach group showed less positive attitudes after the treatment. For the differentiation subscale, all three groups experienced rather large declines in their mean scores. In other words, all three groups were less positive after intervention in their attitudes towards differentiation than prior to intervention, with the workshop only group experiencing the largest decrease.

Table 3

Mean Pre- and Post-Treatment Attitudes Towards Issues of Gifted Education, Remedial Education, and Differentiation as Measured by Part I of the Survey of Practices With Students of Varying Needs (SOP)

	Preservice Teachers					
	No Treatment (Phase 1) $n = 24$		Workshop Only (Phase 2) $n = 15$		Workshop & Coach (Phase 2) $n = 9$	
Item Set	*M*	*SD*	*M*	*SD*	*M*	*SD*
Advanced[a]						
Pretest	16.24	2.66	18.29	2.81	16.67	2.34
Posttest	16.06	2.41	17.71	2.14	17.17	2.79
Struggling[b]						
Pretest	8.33	1.63	8.40	1.18	8.44	0.88
Posttest	8.67	1.79	8.47	1.25	8.22	1.30
Differentiation[c]						
Pretest	22.24	2.56	24.17	1.84	21.00	2.31
Posttest	18.06	2.93	17.83	1.47	19.43	2.94

[a]Advanced Item Set: 3, 7, 16, 18, 20, 24, 27, 30, 33
[b]Struggling Item Set: 1, 4, 9, 29
[c]Differentiation Item Set: 5, 6, 8, 11, 12, 13, 22, 25, 28, 31, 32, 35

To determine if significant differences existed on each of the three scales following the interventions, three separate univariate repeated measures ANOVAs were conducted. Tables 4 through 6 present these results.

Results from the first analysis where, the dependent variable was attitudes towards advanced learners, indicated no statistically significant differences for any main or interaction effects. In other words, all three groups' attitudes towards advanced

learners remained the same after the intervention (see Table 4). Results from the second analysis, where the dependent variable was attitudes towards struggling learners, again indicated no statistically significant differences. This again was an indication that each of the three groups' attitudes toward struggling learners were not changed after the intervention (see Table 5). Results from the third analysis where the dependent variable was attitudes towards differentiation indicated statistically significant effects (see Table 6). Specifically, the main effect of Time and the Group x Time interaction effect were both statistically significant. Because this was an experimental study, interpretation of the highest order effect was warranted. Further investigation of the simple effects revealed that significant differences existed between the two treatment groups. In other words, the profiles of the two treatment groups indicated a difference in attitudes toward differentiation, with the workshop & coach treatment group showing a more positive attitude than the group that received the workshop in isolation. Neither of these groups' profiles differed significantly from the group that received no intervention in their attitudes toward differentiation.

Table 4

Repeated Measures ANOVA Across Two Time Periods for Treatment Groups on Attitudes Toward Advanced Learners

	df	*Mean Square*	*F*
Between Subjects			
Group (G)	2	17.28	2.18
Subjects within groups	27	7.93	
Within Subjects			
Time (T)	1	.08	.02
G x T	2	.95	.19
T x subjects within groups	27	4.92	

Table 5

Repeated Measures ANOVA Across Two Time Periods for Treatment Groups on Attitudes Toward Struggling Learners

	df	*Mean Square*	*F*
Between Subjects			
Group (G)	2	3.77	.41
Subjects within groups	45	1.56	
Within Subjects			
Time (T)	1	.24	.41
G x T	2	.16	.29
T x subjects within groups	45	.58	

Table 6

Repeated Measures ANOVA Across Two Time Periods for Treatment Groups on Attitudes Toward Differentiation

	df	*Mean Square*	*F*
Between Subjects			
Group (G)	2	3.36	.35
Subjects within groups	27	9.69	
Within Subjects			
Time (T)	1	198.12	58.30*
G x T	2	37.24	5.48*
T x subjects within groups	27	3.40	

*$p < .05$.

Part II

The remaining sections of the SOP contained items relating to respondents' reported practices. In Part II, respondents were asked to rank the relative amount of time and attention they gave to each of the following groups of students in their classes: special education students, average students, and gifted students. For each treatment group at each testing, advanced students were consistently rated as the group receiving the least amount of attention (see Table 7).

Table 7

Mean Rankings of the Relative Amount of Time Spent with Academically Diverse Learners as Measured by Part II of the Survey of Practices With Students of Varying Needs (SOP)

		Learner Type					
		Remedial		Average		Gifted	
Participant Group		*M*	*SD*	*M*	*SD*	*M*	*SD*
Preservice Teachers							
No Treatment	Pretest	1.62	0.86	1.58	0.63	2.14	0.88
n = 31							
	Posttest	1.61	0.72	1.39	0.67	2.26	0.77
Workshop & Coach	Pretest	1.78	0.81	1.44	0.71	2.11	0.76
n = 18							
	Posttest	1.52	0.59	1.22	0.42	2.22	0.90
Workshop Only	Pretest	1.94	0.73	1.33	0.59	2.44	0.71
n = 9							
	Posttest	1.63	0.76	1.53	0.51	2.58	0.69

Note. Rankings ranged from "Most Amount of Time" (1 point) to "Least Amount of Time" (3 points).

Part III

In Part III of the SOP, respondents were asked to indicate how confident they felt about activities related to differentiation. Response choices ranged from 1 (no confidence) to 5 (very confident). Mean responses were calculated for each item by group (see Table 8). As can be seen from the table, prior to any intervention, relatively high confidence ratings were given. This finding is consistent with the literature concerning novices' beliefs that they already know how to teach (Weinstein, 1989). Post-

treatment means again indicated a relatively high degree of confidence with classroom differentiation activities. Although there was no one pattern across pre- and post-treatment conditions, in general, post-treatment responses tended to decrease slightly. This may well be an extension of the pattern noted by Weinstein (1989) in that as teacher candidates progressed, their confidence ratings decreased. In this situation, exposure to a workshop and continued work with a coach may have provided preservice teachers with a clearer picture of the complexity involved in appropriate differentiation.

Table 8

Mean Pre- and Post-Treatment Ratings of Confidence With Classroom Differentiation as Measured by Part III of the Survey of Practices With Students of Varying Needs (SOP)

	Pre-Treatment			Post-Treatment		
Skill/Group	*M*[a]	*SD*	*n*	*M*[a]	*SD*	*n*
1. Adapting lessons to meet the needs of gifted learners						
Preservice teachers - no treatment	3.44	1.01	32	3.64	1.03	28
Preservice teachers - workshop & coach	3.17	.96	24	3.56	.71	18
Preservice teachers - workshop only	3.26	.65	19	3.72	.75	18
2. Adapting lessons to meet the needs of remedial learners						
Preservice teachers - no treatment	3.28	1.09	32	3.57	.96	28
Preservice teachers - workshop & coach	2.96	.91	24	3.50	.99	18
Preservice teachers - workshop only	3.42	.77	19	3.61	.70	18
3. Accommodating varying levels of ability						
Preservice teachers - no treatment	3.41	.91	32	3.82	.86	28
Preservice teachers - workshop & coach	3.25	.94	24	3.56	.62	18
Preservice teachers - workshop only	3.26	.65	19	3.50	.86	18
4. Assessing where students are and designing appropriate lessons						
Preservice teachers - no treatment	3.41	.95	32	3.82	.77	28
Preservice teachers - workshop & coach	3.21	.72	24	3.72	.67	18
Preservice teachers - workshop only	3.00	.67	19	3.72	.83	18
5. Individualizing instruction for gifted learners						
Preservice teachers - no treatment	3.41	1.04	32	3.61	.79	28
Preservice teachers - workshop & coach	3.08	.93	24	3.44	.86	18
Preservice teachers - workshop only	3.26	.73	19	3.50	.86	18
6. Individualizing instruction for remedial learners						
Preservice teachers - no treatment	3.31	1.03	32	3.54	.79	28
Preservice teachers - workshop & coach	2.92	.78	24	3.39	1.04	18
Preservice teachers - workshop & only	3.26	.87	19	3.57	.86	18
7. Identifying gifted students						
Preservice teachers - no treatment	3.16	1.08	32	3.54	1.0	28
Preservice teachers - workshop & coach	2.96	.81	24	3.61	.78	18
Preservice teachers - workshop only	3.26	.65	19	3.67	.84	18
8. Identifying remedial students						
Preservice teachers - no treatment	3.09	1.03	32	3.64	.99	28
Preservice teachers - workshop & coach	3.21	.78	24	3.61	.70	18
Preservice teachers - workshop only	3.47	.61	19	3.78	.81	18

[a]Responses ranged from "No Confidence" (1 point) to "Very Confident" (5 points).

Part IV

Respondents were asked to indicate which of 14 specific techniques, activities, or instructional strategies they thought they would use with advanced, typical students, and struggling students.

Responses to these items provide information about teaching practices in general (see Table 9). Several strategies are noteworthy for the ratings by the preservice teachers as appropriate for all students. For the preservice teachers who received no treatment, results indicated that the following strategies were reported as likely strategies to be used (both pre and post conditions) with all three types of learners (NOTE: at least 50% of the respondents indicated a willingness to use strategy): activities to enhance creativity, cooperative learning, individual instruction, interdisciplinary activities, learning centers, problem solving, and projects. For those preservice teachers who received the workshop as well as a curriculum coach, the following strategies were reported as likely strategies to be used (both pre and post conditions) with all three types of learners: activities to enhance creativity, cooperative learning, individual instruction, interdisciplinary activities, learning centers, problem solving, and projects. Preservice teachers who experienced only the workshop reported the following strategies were likely to be used (both pre and post conditions): activities to enhance creativity, cooperative learning, individual instruction, interdisciplinary activities, learning centers, problem solving, and projects. The only strategy that consistently was reported not likely to be used was curriculum compacting. The infrequent reported use of curriculum compacting may suggest that teachers lack familiarity with this strategy. Although it was mentioned in the workshop, practice in curriculum compacting was not a component. Respondents from all three groups were also unlikely to consider using independent study with struggling learners.

Table 9

Percentage of Respondents Indicating That They Would Use Various Instructional Strategies With Academically Diverse Learners as Measured by Part IV of the Survey of Practices With Students of Varying Needs (SOP)

	Preservice Teachers					
	No Treatment		Workshop & Coach		Workshop Only	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Strategy/Learner type	(n = 29)	(n = 30)	(n = 16)	(n = 19)	(n = 15)	(n = 23)
1. Ability grouping for—						
Advanced Learners	43	45	46	42	58	74
Typical Learners	40	40	46	42	53	58
Struggling Learners	38	30	46	42	37	63
2. Activities to enhance creativity for—						
Advanced Learners	68	68	63	92	79	100
Typical Learners	65	70	63	92	79	90
Struggling Learners	63	68	63	88	79	90
3. Cooperative learning for—						
Advanced Learners	70	68	63	92	79	95
Typical Learners	70	70	63	96	79	95
Struggling Learners	70	63	63	88	68	90
4. Curriculum compacting for—						
Advanced Learners	20	20	29	25	43	16
Typical Learners	8	8	13	0	26	16
Struggling Learners	8	10	17	4	16	5
5. Drill and practice for—						
Advanced Learners	13	23	29	25	43	26
Typical Learners	15	43	42	63	58	79
Struggling Learners	43	53	58	75	74	79

Table 9 *(continued)*

Percentage of Respondents Indicating That They Would Use Various Instructional Strategies With Academically Diverse Learners as Measured by Part IV of the Survey of Practices With Students of Varying Needs (SOP)

	Preservice Teachers					
	No Treatment		Workshop & Coach		Workshop Only	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Strategy/Learner type	(*n* = 29)	(*n* = 30)	(*n* = 16)	(*n* = 19)	(*n* = 15)	(*n* = 23)
6. Higher level thinking for—						
Advanced Learners	70	68	58	96	79	100
Typical Learners	25	58	63	88	78	84
Struggling Learners	43	38	46	42	68	42
7. Independent study for—						
Advanced Learners	68	70	63	96	74	100
Typical Learners	43	43	58	71	58	79
Struggling Learners	23	25	33	33	32	53
8. Individual instruction for—						
Advanced Learners	55	60	50	75	68	68
Typical Learners	50	63	46	79	79	63
Struggling Learners	63	73	58	96	79	90
9. Interdisciplinary activities for—						
Advanced Learners	55	58	50	67	68	53
Typical Learners	53	55	54	63	68	53
Struggling Learners	50	50	50	58	58	53
10. Learning centers for—						
Advanced Learners	53	58	63	92	74	79
Typical Learners	60	65	63	92	68	90
Struggling Learners	65	60	63	92	68	90

Table 9 *(continued)*

Percentage of Respondents Indicating That They Would Use Various Instructional Strategies With Academically Diverse Learners as Measured by Part IV of the Survey of Practices With Students of Varying Needs (SOP)

	Preservice Teachers					
	No Treatment		Workshop & Coach		Workshop Only	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Strategy/Learner type	(n = 29)	(n = 30)	(n = 16)	(n = 19)	(n = 15)	(n = 23)
11. Problem solving for—						
Advanced Learners	68	68	63	96	74	95
Typical Learners	68	68	63	96	74	95
Struggling Learners	60	53	58	75	68	74
12. Projects for—						
Advanced Learners	70	65	63	96	79	100
Typical Learners	60	68	58	96	79	95
Struggling Learners	58	60	58	92	74	79
13. Values training for—						
Advanced Learners	38	43	42	58	26	53
Typical Learners	35	45	42	63	32	53
Struggling Learners	33	48	42	67	26	53
14. Workbook exercises for—						
Advanced Learners	25	30	29	29	53	37
Typical Learners	43	35	38	46	68	68
Struggling Learners	45	43	38	38	74	74

Analysis of Classroom Practices Record (CPR)

The CPR provided a systematic method for collecting data about the kinds of classes that were observed and the specific activities that took place in those classes. Observations were conducted in a total of 215 classes of preservice teachers; 116 classes of Phase 1 teachers were observed, and 99 classes of Phase 2 teachers were observed.

Observers recorded the types of activities in which classes were engaged during the observation period. The 15 types of activities included discussion, lecture, oral reading, project work, games, testing, and written assignments. The percentage of classes in which teachers were observed engaging in each activity are listed by grade level and phase in Table 10. These summary data provide a general sense of what the typical classroom was like, and the findings suggest a traditional, lecture-discussion format was widely used, as were writing assignments. At each grade level classes were observed while listening to lectures, participating in discussions, and completing written work. The majority of student teachers were observed teaching math, English, and social studies. In grades K-5, most observations were made in the areas of math and English. In middle school (grades 6-8) math, English, and social studies classes were frequently observed. High school observations included classes in math, English, science, and foreign language.

Table 10

Percentage of Observed Classes in Which Various Activities Occurred as Recorded in the Classroom Practices Record (CPR)

	Grade & Phase (P)									
	K		Grade 1		Grade 2		Grade 3		Grade 4	
Activity	P1 $n = 8$	P2 $n = 4$	P1 $n = 8$	P2 $n = 14$	P1 $n = 13$	P2 $n = 15$	P1 $n = 10$	P2 $n = 17$	P1 $n = 22$	P2 $n = 7$
1. Audio-visual	13			7		13		6	9	14
2. Demonstration	13		50	7	31		20	12		14
3. Discussion	25		38	36	46	33		47	23	71
4. Lecture	13	25	25	57	39	13	30	35	18	57
5. Games	50	25		29	8	20		12	18	
6. Non-academic activity			13	36	23	40	10	24	5	29
7. Oral reading	25	25	38	21	23	13		24	23	
8. Project work	38		25	21	39	13		18	18	29
9. Review	13	50		7		27	20	29	23	29
10. Silent reading	25		13		23	7		18	27	14
11. Simulation				7	15					
12. Testing						7	10	12	5	14
13. Performance/verbal	25	50		21	8	20	10	12	9	29
14. Written assignment	38	75	50	79	39	40	20	41	32	57
15. Lab										

Note. Blank entries indicate no observations were carried out for the corresponding grade level and phase.

Table 10 *(continued)*

Percentage of Observed Classes in Which Various Activities Occurred as Recorded in the Classroom Practices Record (CPR)

Activity	Grade & Phase (P)									
	Grade 5		Grade 6		Grade 7		Grade 8		Grades 9-12	
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2
	n = 7	*n* = 2	*n* = 7	*n* = 3	*n* = 10	*n* = 5	*n* = 0	*n* = 8	*n* = 31	*n* = 24
1. Audio-visual	29				20	20		25	7	8
2. Demonstration	43		14	33		20			10	25
3. Discussion	43		43		20			63	16	21
4. Lecture	29	50	43	67	40	60		63	23	38
5. Games		50			10	20		13		8
6. Non-academic activity	29		14			40		13	3	8
7. Oral reading			29		30			13	3	4
8. Project work	29		43		30			13	10	13
9. Review	14				30	60		63	23	42
10. Silent reading								13		13
11. Simulation						20		25		4
12. Testing	29					60			3	4
13. Performance/verbal	29							13	13	13
14. Written assignment	14		43		50	40		38	32	29
15. Lab	14									

Note. Blank entries indicate no observations were carried out for the corresponding grade level and phase.

Analysis of the Classroom Practices Observation (CPO)

Data collected using the CPO provided a more complete description of what the classroom was like for academically diverse learners. Table 11 indicates that diverse learners were seldom given instructional materials based on their academic needs, nor were they typically using different processes, nor working on products appropriate for their needs. The most consistently observed differentiated activity involved directing questions of differing levels to students according to their academic needs. As Tables 12 and 13 illustrate, examples of differentiated behaviors show very limited, short-term approaches to differentiation that could best be described as minor modifications.

Table 11

Percentage of Classes in Which Differentiated Practices for Targeted Students Were Observed as Recorded in the Classroom Practices Record (CPR)

Activity	Grade & Phase (P)									
	K		Grade 1		Grade 2		Grade 3		Grade 4	
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2
	n = 8	*n* = 4	*n* = 8	*n* = 14	*n* = 13	*n* = 15	*n* = 10	*n* = 17	*n* = 22	*n* = 7
1. Target student working with differentiated content instructions/materials.	13	25	13	7						
2. Target student in differentiated process instruction/materials.	38	25		7		7	20	6		14
3. Target student working on differentiated product.	13				8	13		12		
4. Target student independent study project based on assigned topic.						27		6	5	
5. Target student independent study project based on self-selected topic.										
6. Higher-order questioning addressed to target student.	13		25		15	7		18	14	14
7. Target student taking advanced test.								6		
8. Target student assigned advanced work.						7				
9. Other indication of differentiation experienced by target student.			25	7	23	20		6	14	29

Note. Blank entries indicate no observations were carried out for the corresponding grade level and phase.

Table 11 *(continued)*

Percentage of Classes in Which Differentiated Practices for Targeted Students Were Observed as Recorded in the Classroom Practices Record (CPR)

Activity	Grade & Phase (P)									
	Grade 5		Grade 6		Grade 7		Grade 8		Grades 9-12	
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2
	n = 7	*n* = 2	*n* = 7	*n* = 3	*n* = 10	*n* = 5	*n* = 0	*n* = 8	*n* = 31	*n* = 24
1. Target student working with differentiated content instructions/materials.	14				10	40		13	7	
2. Target student in differentiated process instruction/materials.	14	50			10	20		13	3	
3. Target student working on differentiated product.	14		14						3	
4. Target student independent study project based on assigned topic.					10			13	3	4
5. Target student independent study project based on self-selected topic.			14			20		13		
6. Higher-order questioning addressed to target student.	14	50			10	40		25	7	
7. Target student taking advanced test.										
8. Target student assigned advanced work.										
9. Other indication of differentiation experienced by target student.						20		13	3	

Note. Blank entries indicate no observations were carried out for the corresponding grade level and phase.

Table 12

Preservice Classroom Practices Observation Summary (Phase 2)

	Preservice Teachers - No Treatment																	
	Amy		Jennifer			Sarah			Sue			Melanie			Brian		
Observation Number	1	2	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Grade Level	K	4	7	K	K	6	6	6	7	7	7	9-10	9-10	9-10	9-12	9-12	9-12
Practice																	
1. Content			G/T/S					G									
2. Sense-making																	
3. Product								G									
4. Compact			G														
5. Homework																	
6. Independent Study																	
7. Group Task																	
8. Awareness[a]	G/T/S	G/T/S	G	G/T	G/T		G/T/S	G/T/S								G/T/S	G
9. Range[b]	G/T/S	G/T/S	G	G/T/S	G/T/S		T									G/T/S	G

	Preservice Teachers - Treatment													
	Workshop Only						Workshop and Coach					
	Karen			Becky			Tim			Linda		
Observation Number	1	2	3	1	2	3	1	2	3	1	2	3
Grade Level	K	K	4	9-12	9-12	9-12	2	5	5	9-12	10	10
Practice												
1. Content		G	G/T/S									
2. Sense-making	G/T/S		S									
3. Product		G	G/T/S						G			
4. Compact			S									
5. Homework												
6. Independent Study			G									
7. Group Task	G											
8. Awareness	G/T/S	G/S	G/T/S	S			G/S		G	G	G	
9. Range	G/T/S	G/S	G/T/S			G/T/S			G	G	G	

Note. G=Gifted learner; T=Typical learner; S=Struggling learner.

[a]Preservice teacher demonstrated awareness of presence and needs of categories of learners.
[b]Preservice teacher attempted to address needs of range of learners.

Table 13

First-Year Classroom Practices Observation Summary (Phase 3)

	First-Year Teachers - No Treatment										
	Amy			Jennifer			Sarah			Melanie	Brian
Observation Number	1	2	3	1	2	3	1	2	3	1	1
Grade Level	1	1	1	5	5	5	5	5	5	10-12	7-12
Practice											
1. Content				S				G			
2. Sense-making				G		S		S	G/T/S		
3. Product											
4. Compact				S				G			
5. Homework				S	S						
6. Independent Study											
7. Group Task								G			
8. Awareness	T	G	S	G/S		G/S	G/T/S	G/T/S	G/T/S		
9. Range	G	G/T/S	G/T/S	G/S	G/T/S	G	G/T/S	S	G/T/S	G/T/S	G/T/S

	First-Year Teachers - Treatment								
	Workshop Only				Workshop and Coach				
	Karen		Becky		Tim		Linda		
Observation Number	1	2	1	2	1	2	1	2	3
Grade Level	K	K	9,10	9,10	7	7	7	7	7
Practice									
1. Content							S		G
2. Sense-making					G				
3. Product									
4. Compact	G					G			
5. Homework									
6. Independent Study									
7. Group Task									
8. Awareness	G/TS		G		G	G/S	G	G/TS	G
9. Range	G	G	G	G/TS	G/TS	G	G/S	G/TS	G/TS

Note. G=Gifted learner; T=Typical learner; S=Struggling learner.

Summary

Quantitative findings indicated that, in general, preservice teachers in all three treatment groups expressed beliefs that were compatible with principles of differentiated instruction. They recognized that students have differing needs and indicated that giving students assignments commensurate with those needs and evaluating them on varying scales are appropriate. For example, preservice teachers indicated that certain strategies were appropriate for all learners, including cooperative learning, activities to enhance creativity, learning centers, and individualized instruction. Within each of these strategies there is room for minor modifications geared to the individual learner. However, practices did not reveal systematic efforts to proactively plan instruction for individual strengths or needs.

Orientation to the nature and needs of academically diverse learners produced statistically significant changes in the preservice teachers who participated in the workshop and those who participated in the workshop and were provided a curriculum coach. The treatment group who experienced coaching displayed more positive attitudes towards differentiation than did the group who only received the workshop.

As will be noted in qualitative analysis, these positive attitudes do not necessarily translate into more robust classroom differentiation at the outset, but may be very important in leading young teachers to persist in determination to differentiate instruction for academic diversity as the novices progress through the demanding stages of developing and applying the skills of differentiation.

Qualitative Analyses: Recurring Themes

To understand how preservice teachers come to understand differences among learners, qualitative data from interviews and classroom observations were analyzed. A case study was developed for each preservice teacher and first-year teacher. Themes that emerged from the cross-case analyses for each of the three phases: Phase 1 (no treatment); Phase 2 (workshop only or workshop and coaching); and Phase 3 (first-year teachers) are discussed in the first part of this section. The second part of the section provides a discussion of the qualitative findings depicting recurring themes.

Phase 1—Preservice Teachers

No Treatment

Phase 1 served as baseline data, reflecting the views of novices who had no preparation for teaching academically diverse students other than that required by their respective teacher education programs. Interview data supported quantitative analyses of survey responses indicating that preservice teachers were aware of students' differences; however, as we examined preservice teachers' depictions of how students differ and their approaches to addressing these student differences, several themes emerged: (a) stated

beliefs in the existence of and importance of recognizing student differences and concomitant needs; (b) used ambiguous criteria for identifying student differences and needs; (c) expressed incomplete views of differentiating instruction in response to student differences and needs; (d) exhibited shallow wells of strategies for enacting differentiation; and (e) were influenced by factors that complicate and discourage understanding and addressing student differences and needs. In presenting the themes, every effort has been made to retain the voices of the novices as they talked about their induction into teaching academically diverse learners. To this end, each presentation of a theme includes quotations from preservice teachers who typify the comments and practices of others.

Stated Belief in Student Differences

Like reciting familiar tenets of democracy, the novice teachers proclaimed the existence and rightness of student differences. "They [the students] are going to be different, and that's okay, and I'm going to have to know what to do about it." But as is often the case, when the abstraction becomes real, the reality is less clear-cut than was the belief. "One of my fears now in planning is that I'm afraid I'm going to try to target the center and I won't think about the variation in the class and adapt for each student. It's so hard when you have 23 students in one class period." ". . . Within the classroom, there's only so much I can do, you know, trying to keep up with everyone." "I'm ambivalent, because I have trouble making my lessons appropriate for every kid. It's hard having a sign that the bright kids might finish in five minutes, the other kids might need the whole class. Do I make it simpler so that every kid can understand it, or do I make it harder as to challenge the brighter ones, or do I do it somewhere in between?" "There are five or six kids in here who fly through the work. Then what do I do? Then I have these four who can't read. Then what do I do?"

The pull of students exceeds the resources of the young teachers to meet the varied needs. Because there is not enough skill, time, insight, or even energy to plan or improvise to meet the needs of everyone, students with exceptional needs, either because the students are more advanced or need more assistance than others, can become a serious problem. Preservice teachers seem to sense that they must let someone down, and consciously or by default, they choose. Occasionally, the novice focuses energy on higher achieving students. "My expectations in my classroom are usually medium to high, in fact, mostly high, but low enough, I think, for medium ability kids to do pretty well."

More often among these novices, however, was a clear empathy and preference for attending to low achieving learners. "Students who are at the lower level, I pay a lot more attention to them . . . I try to make sure there are things they're going to get, or they can at least enjoy while they are trying to do it." "[I find myself] caring more for the kids who need my help . . . I think when I'm between a rock and a hard place, I tend toward giving instruction to the lower kids and maybe let the brighter kids do something on their own." This view was repeatedly expressed by preservice teachers assigned to elementary grades. "I think a lot of times teachers don't give [gifted kids] attention because they

know they're going to get it done, do a good job, that sort of thing." "I give most attention to the lower group because they need the most help in achieving and because they demand the most time." "If you direct your lessons to the special education students, you know you'll have the other ones covered." "I know gifted learners get the short end as far as being challenged, but they aren't hurt as a result of it."

The sense that struggling learners need their attention and that they, as teachers, can provide guidance to help those strugglers succeed was evident. One fourth grade teacher stated, "You kind of have to guide [struggling students] a lot." "[These students] are struggling, but not failing. [They're] still making it. With help." The preservice teachers we interviewed seemed confident that they knew how to help these students. "If they have trouble on an area like reading a certain passage, I'll just sit down and help them through it," a fifth grade preservice teacher reported. One second grade teacher even indicated that she planned in advance for working with struggling students. "If [I] know they are going to need extra help, I just kind of plan ahead of time and just kind of put that into the lesson. . . . I just go ahead and incorporate that into the lesson."

Few teachers discussed planning for struggling students, however. An approach that called for repeating material or slowing the pace was more commonly mentioned. "Kids who are low tend to do not as well in my class, and the only thing that I can do for them is give them time to catch up, you know. More time to do the assignments and constantly remind them."

While teachers expressed a sense of empathy for struggling learners and a sense of responsibility to help them understand lessons, they suggested that advanced students would not be harmed by an approach that did not address their academic needs. This sense may have been compounded by the fact that remediation appears easy, whereas novice teachers do not feel capable of meeting the needs of those students who appear to be ahead of the rest of the class. For the struggling student, they can repeat, break a lesson down into smaller parts, or go more slowly, tactics in which they may feel confident. Advanced students, however, require something to meet their needs that the preservice teacher may not fully understand. As one preservice teacher stated, "I really don't know how to adjust for the ones who are ahead." A fourth grade teacher appeared to be adept in describing her gifted and talented students, but could not translate this ability into meeting their needs. She also indicated an interest in working with one of her gifted students, but did not think that she should spend extra time with him. Two of the teachers reported that they would be interested in learning about how to meet the needs of high ability students. One third grade teacher wondered, "What can I do for [the higher ability students] because they get their work done and that's it?" When asked what she would like to learn more about, a fourth grade teacher stated,

> For the top level [students], I'd probably want to know . . . specific suggestions, things I could do. I guess I'd want to know what types of things they give to kids who are higher ability. Like it's always enrichment this and enrichment that, but I don't really know what that stuff is, you know? Specifically, what to do to enrich these kids.

In these preservice teachers' classrooms, it appeared that the needs of gifted students were considered secondary to the needs of other students who demonstrated difficulties in school, and it appeared that this consideration was a result of the teachers' lack of knowledge regarding gifted learners and their needs.

Throughout their preservice placements, novices held on to the belief that students differ in their needs, but from the earliest interviews, there was a clear sense among virtually all of the young teachers that addressing those needs is a near impossibility. Observations indicated that novices held single-mindedly to the idea that one lesson must be crafted to suit the largest number of students possible. Tailoring may then be accomplished in some limited way for a few students, most often by slowing the pace or repeating elements for those academic outliers who struggle with lessons.

Ambiguity in Identifying Student Differences

While the preservice teachers freely talked about students who were gifted, highly able or "way ahead of the others," and those who were remedial, special education students, or "struggling," their inexperience in reading and responding to student traits was apparent in the rubrics they used to identify outliers. Struggling or remedial students are those who "can't do the work," "turn in work late," "can't sit still," "are not responsible," "have bland ideas," "look at me with a blank stare . . . you can tell by their eyes," "don't know how to get it together," "you have to keep an eye on them," and "are apathetic." On the other hand, gifted or advanced students "do the work," "sit still," "listen," "remember more," "get the work in," "do more quantity in the same time," "have high quality sentence structure," "answer questions," "grasp the material," "are not impulsive," "back up their thinking with a reason," "are right on when I need them to answer my questions," and "understand the directions and purpose for activities right away."

As the preservice teachers interpreted traits of academically diverse learners, several interesting things commonly occurred. First, the teachers often equated compliant behavior with academic readiness. This became especially puzzling for the novice teachers when a given child appeared bright and still "misbehaved." Representative were the cases of Jack, who was both "hyperactive" and "very intelligent," and Sam who "answers questions really well" but "just can't write." These students demonstrated traits of double-labeled learners (e.g., gifted-learning disabled) and were a puzzlement to their young teachers who encountered what to them was the oxymoron of non-compliant intelligence or compliant disability. Baffled by contradictions, one teacher commented,

> I find this child intriguing. He's got a lot of potential. I tend to think he's gifted, you know. . . . I lean on him a lot for intellectual discussions in class . . . but like I said, he's behind in his writing . . . his skills are not good . . . every now and then he has some trouble. . . . He picks up on theoretical things. . . . It's like he has the thought processes, but he can't get it on paper. . . . When he gets to the writing, he

> kind of gives up. . . . The writing kills him, and this class is all writing. . . . He has to have [writing] to succeed, so I can't give him alternatives.

Second, for gifted learners, the preservice teachers most often equated completing school tasks happily, or at least successfully, with high ability. One gifted third grader was described as follows:

> [He's] always paying attention, has his hand raised for every question. He's quiet and he's the sweetest child, and he's really smart in school. . . . He's probably the most mature person we have in class.

Another third grade teacher indicated that one of her gifted students "always gets things done. It's neat; it's correct. If you tell her to draw a picture, she draws a mural." This teacher characterized another gifted student in her class using the following description:

> She does things. She does not complain. She never complains about having to do something. She does it; she gets it done, and that's it. She doesn't ask; she doesn't question; she just does it. A lot of time [the work is] not necessarily difficult for her to do, [it doesn't] really try her much, but she'll do it anyway.

Thus a very creative, independent gifted learner may be likely to be overlooked as highly able if the student is lacking, sloppy, or fails to follow directions. "He doesn't get his work in, you know, so he's not considered a top student. He's not successful."

Third, remedial or struggling learners were assumed to be incapable of understanding because they did not *cover the material* successfully and did not complete assignments according to specifications. "It's like if you don't have someone standing over them saying, 'You need to do this,' they will sit there and talk and goof off the whole time." While some of the novices saw a connection between behavior and academic frustration ("I have this student who gets up and walks around and does everything but the assignment, mainly, I think, because he finds it difficult"), more often novices equated frustration during a given task with inability to learn ("He's not capable of staying on task. He can't recognize basic concepts.") or intransigence ("The remedial students who don't know will hopefully sit there and pay attention so they can start learning." "The best thing I can do for a special ed. student is keep an eye on them [sic]").

Fourth, teachers often used verbal skills to distinguish between students. This pattern was particularly pronounced for teachers of grades K-5 who focused on students' language arts abilities, but rarely mentioned students' abilities in math, science, social studies, or the creative or dramatic arts. For example, one kindergarten preservice teacher described one of her gifted students: "She reads very well. She is very articulate. She speaks very well. She expresses herself very well. She can just pick up a book and sit down and read it." Regarding a special education student, this same preservice teacher pointed out, "He doesn't make a sentence. He writes just a series of letters down and then

he will tell you what it says." Similarly, a second grade preservice teacher described one of her struggling students, "He has very distorted writing, and when he writes, he doesn't write words, he writes letters, and he thinks they make words." High verbal ability and ability to read well orally and "really pay attention to punctuation marks and things like that" were characteristics of gifted students reported by fourth grade teachers.

Narrow Views of Differentiating Instruction

Imprecise in their reading of student ability and need, many of the preservice teachers were also imprecise as they discussed what it meant to differentiate in their classrooms. Shulman (1987) suggests that there may be two elements in differentiating instruction to adapt to variations in ability and background among students. Using the analogy of a manufacturer of clothing, he first speaks of creating clothing (curricula/instruction) of an appropriate fit for a given child or group of children. This implies having more than one suit of clothing ready in anticipation of the varied sizes of children in the class. Then, he suggests, a teacher would still tailor a given suit to fit a particular learner perfectly. Differentiation of curriculum might, then, be the equivalent of creating a clothes rack with varied sized suits (e.g., proactively planning different approaches to content, process, and/or product), and individualization of instruction might be the equivalent of tailoring a suit which is a close fit for a child in order to make it as nearly perfect a fit as possible (e.g., different pacing, expression through preferred learning mode).

There were a few exceptions to the tendency to minimize differentiation. One teacher used advanced assignments for a gifted learner. In another classroom, a novice continued her cooperating teacher's practice of using first grade reading bins with books of different levels of difficulty in different bins, matching bins to student readiness. In a kindergarten setting, a novice working with the senses taught all of her students about four categories of taste, and expanded the lesson for highly able learners by giving them a model of the tongue and having them identify where the four tastes would be detected. In most instances, however, differentiation of curriculum was, at best, synonymous with individualization of instruction. There was a pervasive one-size-fits-all approach to planning lessons, with individualization happening reactively on those occasions when a method of doing so presents itself. As one preservice teacher explained, "How do I differentiate? By trial and error."

For academic outliers, the result is clothing that is so much too big or too little that tailoring it to fit is an impossibility. "In math, everyone does pretty much the same." "If someone finishes early, I give them an enrichment sheet [sic]. With remedial students, they may not understand, but at least they are being exposed to it." "The quiz is the same for everyone, but I look at them differently for children that have different ability levels [sic]." "It's not so much that the assignment was different, but the expectations were different. What was considered to be excellent performance for some students would not have been considered to be [excellent] for others." "They all write the same thing, but it can be typed or written in pen. It all depends on which is more comfortable for them." "I never really individualize. I never set them apart and require

something different of them." "I suppose I could ask the gifted child to do something more with the same information." "If gifted students finish early, I'll probably just think, probably unfortunately give them busy work like reading another chapter." "I think she spends a lot of her time bored in the sense that she wants to be moving along and could be moving along . . . she would benefit from moving along. But it's kind of like, what do you do, give them more work because they've done such a great job?" Systematic differentiation is difficult when needs are not assessed and neither differentiation nor tailoring is planned.

Lack of Planning and Assessment

For the great majority of the preservice teachers in the no treatment group, the notion of proactively differentiating curriculum was absent in both their conversation and practice. Rather, as one preservice teacher indicated, they appeared to be "flying by the seat of their pants" when it came to teaching the diverse students in their classrooms. One novice reported, "I don't think of everything to do before I teach. But then it's like I never know until after I teach what I could have done differently." Another admitted, "I don't think that my mind has the capacity to reflect while I'm [teaching]." Yet another indicated that,

> The way I come up with [strategies to address the needs of different students] is just when the need comes up I'll just think of something and try it. I'll just keep trying that out; if it doesn't work, I'll just move on to something else.

In general, these preservice teachers appeared to spend little time considering in advance the differing needs of their students, and based on their comments, they did not feel proficient in doing so. The logic behind this may well be that, if a preservice teacher intends to spend time with struggling students when those students do not understand a concept or part of a lesson, and the preservice teacher does not have the skill or experience to anticipate which parts of a lesson will be difficult, the preservice teacher may believe that there is no way to plan ahead.

Further confounding the task of addressing needs of academic outliers is a virtual chasm of understanding and application of assessment strategies. Particularly striking was an absence of preassessment of student knowledge or understanding. In the absence of a clear picture of what a student knows or understands, it is easy to assume the single lesson of the day is appropriate for everyone. "How can I assess them? I don't see them that much." "I don't know what appropriate responses *are*." "Essentially, evaluation comes down to 'did you do it' as opposed to 'how well did you do it.' That way, more students succeed." "To me, assessment is checking to see if the work is in." "What do you mean by 'readiness'? Like, do they have their work?"

While preservice teachers expressed confidence in their abilities to assess their students' understanding in response to survey questions, they generally used very few formal types of assessment to do so. A third grade teacher claimed that "I haven't had

trouble figuring out who can understand what and what the base is of this class." Concerning her ability to assess students, another third grade teacher stated,

> I feel I can pretty much do it for the most part. . . . You can see that they are having trouble, and if you just kind of question and probe around, you can usually find out what [the trouble] is and give specific help and feedback.

One teacher assessed her students by "just looking at their work . . . who's ahead and who's not" and by observing which students in her class could follow directions and work independently "without extra help."

Several teachers claimed to be able to identify students who did not understand material simply by looking at them. One fourth grade teacher reported that,

> The best way to monitor their progress as far as struggling or breezing through class is to watch them during class. . . . You can pretty much look at a student and tell if they [sic] need help, if they are getting frustrated or if they're just whizzing through it and turning it in.

Another teacher stressed the importance of watching students, saying,

> I just try to observe and just listen to them carefully and see who just might have that puzzled look. . . . I think it's important to observe them when they don't know you're watching them.

Yet another claimed, "A lot you can tell by their look on their faces. . . . A lot of it I can tell by how they look."

One second grade teacher did stress the importance of assessing students in different ways and highlighted the use of both oral and written assessments. Another teacher indicated that the student teaching practicum had helped her look at student performance when assessing students. She reported paying attention to students' class participation, the types of answers provided by students, their use of imagination, and the types of conversations in which they engaged.

Shallow Well of Strategies for Responding to Diversity of Need

Given the goal of ensuring that everyone learns ("covers") the same thing and completes the same tasks, the overwhelmingly preferred instructional strategy for differentiation became the use of cooperative learning groups. One preservice teacher even interpreted the terms as interchangeable, "Differentiation means putting kids of different abilities in a single cooperative group." In the context of cooperative learning as practiced by the novices, there were consistent role expectations for the academic outliers, specifically advanced and struggling students. High ability children were teachers, remedial children were learners. These new roles were believed to benefit all students. "I think when they are in a group [the gifted student] will take on the position

of kind of like a teacher. She is the extra help they need in a group, you know." There is only an occasional sense that the "tutors" may lack original and challenging learning opportunities, or that the "learners" may be dependent on very inexperienced guides. "We grouped them, you know. This one is a very high ability, this is a very low one, let's put them together and kind of mix in the middle." "The use of groups is good, because some of the lower kids couldn't have done it by themselves." "If they see they are accountable for helping each other, then it's good because you have a bunch of little tutors or teachers as opposed to just one." "It's good for the kids who are tutoring and they don't even realize they are learning because when they explain something, by explaining, you learn something better." "The gifted student was starting to get bored, because he knows his letters forwards, backwards probably, but it's good to have him here because he can help the others." "It's better having a child who knows strategies to figure out a problem and a child who is less able to think because they could learn from one another." "Right now we try getting a group together so there is a lower ability child and a high ability child in the group so they can help each other. But sometimes I think the higher ability child overshadows and [the low ability children] are still not getting all the help they need." The words of these teachers indicate that cooperative learning may create rather than diminish lines of demarcation between academic "haves" and "have nots" in the minds of the novices. When they reported other examples of differentiation, these practices were typically limited to offering students choices or directing different kinds of questions to different types of learners.

Choice as Differentiation

Several preservice teachers indicated that differentiation in their classes took place when they gave students choices. These choices, however, were limited in scope and reflected a teacher-centered approach as the following examples suggest. Most often choice involved the form a finished product would take, "They can write or type their work," "write or draw their project." One second grade teacher was exceptional in providing her students with a substantial amount of choice in the area of spelling. For example, her students could choose when they wanted to complete which activities: "It's the same list [of activities]. They just have a choice. They can choose what to do on Tuesday or Wednesday." This teacher also allowed her students to choose how many words they wanted on their spelling lists and which words to include on them, provided that they included a certain number of "teacher-choice" words. She further allowed one of her gifted students to select words from the dictionary because this student already knew all of the words provided in the spelling book. A fourth grade teacher also provided choice in spelling by allowing her students to choose their own words when they performed well on the spelling pretest.

The Use of Various Questioning Strategies as Differentiation

Preservice teachers also responded that they differentiated for students of varying abilities by addressing different types of questions to them. One of the third grade teachers indicated that she used Bloom's Taxonomy to question students of different ability levels. A fourth grade teacher described trying to meet the needs of a gifted student through her questioning techniques, saying

> [I] always try to give him more challenging questions. . . . Even though he might raise his hand on the easier question, [I] have to try to find something that he might not know as easily, which is sometimes hard to do.

Another fourth grade teacher used probing questions to lead her special education students to the correct answers.

Despite these attempts at using beneficial questioning strategies, some of the teachers relied on questioning strategies that did not appear to advance their students' learning. One fourth grade teacher used questions as a behavior management technique with one of her students. She stated, "The more I call on him, then he's forced to pay attention." Another fourth grade teacher reported calling on a gifted student frequently "because he always knows the answer." Another teacher asked only questions which she knew that all of her students could answer and, thus, did not attempt to challenge higher level students with her questions.

Factors That Discourage Addressing Student Diversity

Becoming a teacher is a complex task, requiring simultaneous development and application of multiple skills. The novices we studied were energetic, hard working, and evidenced a desire to grow as effective educators. It is the complexity of teaching rather than a lack of effort which stymies them. At least three factors recurred in their interviews and observations as complicating their ability to understand and address needs of diverse learners: (a) issues of management; (b) views of teaching and learning; and (c) lack of emphasis from superordinates on differentiation.

Not surprisingly, managing student behavior was a priority for these novices. Having students learn from different materials, at different rates, or in different ways appeared too risky to the preservice teachers. "The class works pretty much as a whole. I lecture a lot to avoid confusion." "[The remedial students] definitely need some one-on-one instruction, but we haven't been able to do that because there's too many kids." "I guess the whole time we just move steadily through in trying to keep everybody together and everyone moving together so that it's obvious that the class is ready to move on to the next step." "You can't put one kid ahead of everyone else. It'd throw you off for the whole year." Meeting diverse needs of students interjects more variables into management, and the novices often rejected the risk, sometimes after an initial attempt:

> I tried giving two different articles to various groups in one class to read and discuss. It's a big mistake because when you try to discuss it as a class, then the groups that didn't have the particular article aren't paying attention because they don't get it, you know, and I don't blame them.

A second complicating factor in addressing diversity of student need is the clear presence of traditional images of teacher as dispenser of knowledge ("When a gifted kid asks me a question beyond and I can satisfy them, then I think I'm doing something good"), student as consumer of knowledge ("They have to learn to take what I say and

put it on paper"), and content as a discrete body of prescribed information to be covered in a specific period of time ("It's hard to be spontaneous when you have to cram so much in one class"). This view makes it difficult for preservice teachers to picture and construct a classroom in which diversity can be accommodated.

A third discourager of addressing student diversity is the perceived near absence of advice and encouragement from cooperating teachers, university supervisors, and even teacher preparation programs toward that end. "I don't feel like I've been taught in college how to deal with different levels. You are taught there is the gifted program, and there's the LD and BD program, and you're taught little things about each group. You're told you have to keep the lower level students on task, and it's got to be a task they can perform. You've got to teach the upper level students and keep them from getting bored, and you have to keep the average students going along at a good pace. They don't really tell you how to do that." "There've never been any comments about that from my university supervisor that I can think of. I don't know if there have been any comments like that at all. It seems most advice is along the lines of advice about behavior." "The only advice I've gotten about addressing student differences is that it wasn't a good idea when I assigned a learning disabled student to be the reporter in a group." "No one has said anything to me about differentiating for student differences." "I asked my cooperating teacher if we could do something a little more advanced, a little extra with third period, because they're ahead, you know. But she said we had to keep them all together because they have to take the same test at the end of the year." "We had a course about exceptional children and it was a good class, except that it packed a lot into two hours a week, so it was hard to sift through." "I don't know what kinds of things we should do, and no one has given me any advice."

Patterns Among Elementary Preservice Teachers

A separate analysis examined the cases of 10 preservice teachers of grades K through 5 to provide a clearer focus of how issues of differentiation were discussed by preservice teachers of elementary students. In the elementary grades, preservice teachers typically worked with students all day and in various subject areas rather than for individual class periods or subject area blocks as did preservice teachers assigned to middle or high schools. We, therefore, anticipated that they might have had more opportunities to observe individual students and recognize students' individual differences. In addition, issues of readiness are more often a component in preparation for teaching these grades than middle and high school levels. For these reasons, we expected that elementary teachers might serve as a best case example of differentiation. The patterns that emerged, however, were quite similar to those of other teachers.

While elementary teachers were able to identify and describe differing characteristics of the students in their classrooms, they did so in limited ways, relying almost solely on verbal abilities and good conduct as indicators of students' abilities and academic labels. Their uses of differentiation and student assessment were also limited in scope. These teachers' inability to meet the needs of diverse students seems to be a result of lack of knowledge in a variety of areas, including a lack of knowledge of gifted and

talented students and their needs, and a lack of both pedagogical and subject area knowledge. With certainty these 10 teachers perceived that their teacher education programs did not adequately prepare them to meet the diverse needs of students. However, it remains unclear whether their teacher education programs did not give them the information that they felt they needed or whether these teachers could not put their knowledge into practice. It is clear from these teachers' remarks that they felt they needed more practice in meeting the needs of academically diverse learners.

Phase 2—Preservice Teachers

Workshop Only and Workshop and Coaching Interventions

Preservice teachers in the workshop only and workshop and coach intervention groups, like their counterparts in the no treatment group, began their student teaching experiences with an articulated view that students would differ, and that as teachers, they would be called upon to meet needs arising from those differences. Much like their counterparts who participated in Phase 1 of the study, these preservice teachers used ambiguous criteria for identifying student differences and needs, and were limited in their repertoires of teaching strategies for enacting differentiated practices. However, participants in both the workshop only and the workshop and coaching intervention groups typically set themselves apart from peers in the no intervention group by their sustained articulation of the need to differentiate.

Interventions for the study were designed with the premise that direct information about effective teaching of academically diverse learners, combined with guided and sustained reflection about the process, would be more powerful than direct information alone, and that both would be more powerful than no treatment. Data from the study suggest, however, that while the two intervention groups differed in some noticeable ways from the baseline group, there were not consistent differences between the two intervention groups.

Implementing the coaching treatment as intended was difficult. Although the selected student teachers had agreed to work with a curriculum coach, once they began to assume teaching responsibilities, some student teachers were either unwilling or unable to accommodate the interaction with their assigned curriculum coach. Journals of some coaches frequently had weekly entries reading, "Called and left message. No response." In contrast, other student teachers developed positive relationships with their coaches and began to discuss their thinking about different students, but were limited by their schools and cooperating teachers. For Lisa, having her university supervisor as her coach meant consistency in the advice she received. However, her supervisor/coach was also keenly aware of the demands of this student teaching placement. With this teacher she would have to model her cooperating teacher's one-size-fits-all lessons if she wanted the opportunity to teach. Despite the questions she raised, the coach/supervisor concluded "I have attempted to ask questions and encourage reflection, but I don't think [Lisa] has the background to pull this out through reflection alone. But I have seen her deep desire to help kids, to believe in them, and to make a difference for them." Her ability to

systematically implement practices to accommodate academically diverse learners, however, was not apparent. These findings suggest that for student teachers, it may be that the addition of a curriculum coach to the already cluttered lives of novice teachers who must work with both a university supervisor and cooperating teacher provided more *noise* than clarification.

In some instances, coaches were able to provide support as preservice teachers made attempts to differentiate. The experiences of Tim and Holly illustrate the positive extremes, rather than the typical cases. The types of interactions, however, provide insight into how coaching relationships can foster positive outcomes. Holly and her coach met weekly and frequently discussed and evaluated strategies that Holly could use with students who seemed to be having difficulty. With the guidance of her coach, Holly focused on strengths one student could use to compensate for weaknesses in written expression. Holly began experimenting with ways of managing the classroom so that she could work with one student orally, while others were actively engaged in other learning experiences, which can be seen as a step toward developing repertoires needed for differentiating instruction. Similarly, Tim worked closely with his coach/university supervisor. Disappointed with the results of his attempt to differentiate by assigning independent projects, the coach helped Tim analyze how to modify the assignment and provide opportunities for students to develop necessary skills to achieve success. We can only speculate, but Tim may well have abandoned the idea of independent projects and differentiating instruction if he had not been guided by a coach or more experienced colleague. Although these positive encounters are encouraging, it may be that the largely extra-classroom interaction between novice and curriculum coach was not powerful enough to move into the classroom, or it may be that the semester-long exchange between coach and novice was insufficient in duration to bear observable fruit. In the end, the presence of the coaches did not appear to make marked differences in the practices and stated beliefs of students in the workshop and curriculum coach treatments when compared to the workshop only group.

While the distinctions between the workshop only and workshop and coaching interventions were blurred, clear demarcations between baseline and combined intervention groups were evident. These distinctions that emerged from the qualitative data are the focus of the sections that follow.

Preservice teachers in both of the intervention groups appeared to be more conscious and accepting of the need to differentiate instruction for academically diverse students than were participants in no intervention group (Phase 1). Many baseline teachers, like their intervention group counterparts, espoused an early belief that student learning differences should be attended to by teachers. Noted a baseline novice, "They [the students] are going to be different, and that's okay, and I'm going to have to know what to do about it." Early on with most baseline participants, however, emphasis shifted to the near impossibility of accomplishing the task, and a diminution of effort in that direction. "Within the classroom, there's only so much I can do, you know, trying to keep up with everyone." "I'm ambivalent because I have trouble making my lessons appropriate for every kid." "It's so hard when you have 23 kids in one period."

Also, there was a marked distinction among participants from both interventions in their continued articulation of the need for differentiated instruction as a core principle, a continuing sense that their effectiveness as teachers might include demonstration of the ability to adjust curriculum and instruction for academically diverse learners, and an abiding interest in finding out or figuring out how to accomplish differentiation. Certainly a number of intervention group participants remained non-subscribers to differentiation ("Basically, I don't do anything special in the sense of giving assignments. I mean, every single child is given the same assignment) or skeptics about differentiation ("Right now, you don't have to differentiate. You don't. And a lot of the teachers we see don't do that, so we really have no models . . . and there's nothing we've seen to show us that it works, or even to show us why we should try. I have to jump through too many hoops as it is, wanting to teach good [sic]").

More typical among intervention group participants, however, and nearly absent from baseline data, are comments such as the one made late in student teaching by an elementary preservice teacher who said, "I know I need to get better at it [differentiation], and I know I don't have it yet, but I know I'll get better at it," and another made late in the semester by a primary preservice participant, "I've tried it a few times and I'd like to keep trying because I'm sure there is a way I can work it out. I just need to find out how it can work out for me." A still more positive (and less typical) response regarding the importance of persisting in adapting instruction for academically diverse learners came from a preservice teacher who worked first in grade three and then in grade five. "It [differentiating a lesson] was really neat. I was really impressed with myself. But it works, and it's not hard. I mean, I can see where sometimes it would be hard. . . . It's been burned in my mind that you are going to have a spectrum of kids in the classroom, so you're going to have to do it. I hear all of these teachers talking services and all that kind of stuff in the classroom is [sic] kinda crazy, but I haven't experienced anything like that."

Finally, far fewer students in the intervention groups than in the baseline group indicated that *no one* had suggested differentiation to them (a large number still reported that cooperating teachers, university supervisors, or both, failed to talk with them about the need to differentiate and/or how to do so).

It appears, then, that engaging preservice teachers in direct instruction and/or on-going dialogue about adapting instruction in response to the needs of exceptional learners may at least aid in making differentiated instruction an explicit, acceptable, and sustained goal for many preservice teachers. Intervention data suggest, however, that while the interventions may have aided the preservice teachers in *knowledge that* differentiation is valuable, they had a more modest impact on *knowledge how* that might be accomplished. Novices in the intervention groups do appear to have attempted differentiation more often than novices in the baseline group—or at least to have more often interpreted their actions as moves toward differentiation. They also entered their student teaching placements with ideas about how to differentiate for diverse learners in larger proportions than did baseline novices. What may be most interesting about intervention data is the indication they provide of what happened to many of the novices

who began student teaching with *knowledge that* differentiation was an appropriate goal, a little *knowledge how* that might happen, and in search of greater skill in *pulling it off*.

It is important to note here that the study's data record a broad range of experiences among the novices from highly positive to abysmally negative and from relative skill with differentiation to virtual absence of skill in that regard. The section which follows reflects a redundancy in the data that makes the themes pervasive and typical rather than all encompassing. The themes that follow were based on analysis of data from both the workshop only and workshop and coach intervention groups.

Learning the System

The young teacher enters a classroom where student teaching will occur—parameters, patterns, and expectations already operative. Much like jumping on a moving train where passengers and crew are already aboard and established in routines, the novice tries to get with the itinerary. In many subtle ways, those routines are like train schedules—set in destination and time—difficult to alter. Those in the Phase 2 intervention groups, unlike their baseline peers, had become aware that differentiating instruction for academically diverse learners was a desirable goal, but one that would require alterations in destination and time.

<u>It's About Coverage</u>

The hallmark of most of the classes in which the novices taught was standardization. The fixedness or sameness seemed to be established predominately by the image of a classroom as a place to "cover prescribed material." "My cooperating teacher told me what to cover." "She gave me her lesson plans so I could see what I needed to cover."

The power of coverage is compounded by the near absence of a sense of conceptual framework which shapes and gives meaning to the information, and by an accompanying lack of emphasis on students making sense of ideas as opposed to accumulating them. "I read those chapters before I go to bed every night. In the morning . . . there's all these things that I don't know. I really want to seem an authority."

"Getting" the information is greatly valued, but this often appears to have more to do with passing tests and completing tasks than with understanding. "I try to present enough in class so they [struggling learners] walk away with the gist of it . . . even if they're not getting the point of it, they are making their own reasoning about it." The teacher's role has much to do with seeing that the "universal coverage" happens. "She told me I had to make it to the middle of the twentieth century by May." Standard materials—often texts, worksheets and teacher talk—are used to "give" the students the information. "[I give them worksheets] because they won't read unless there's something to be done afterwards."

Equal Time for Everyone

Time is also a component of standardization—itself fixed and inflexible. "It's so hard to cover everything in the time I have." The amount of information to be covered is great and time generally inadequate. "There's not enough time to cover everything. It took longer than I thought to go over all the postulates and proofs." "Appropriate" amounts of time will be allotted to a segment of information to be covered, and everyone will need to be able to "get" the information in the prescribed time. "There's just not enough time in the day for some students and they have to work through story time and recess. . . . I feel like maybe they'll start realizing, 'Well, why aren't *we* going out to recess and why aren't *we* going to story time?' . . . I feel like we just need to try to think of something else to do where it's all equally distributed." When the allotted time is gone, it will be necessary to move on. "It's hard when some kids still don't understand something. I have to tell them to see me later." "Class was productive because we got everything done."

Differences Among Students

Seeing Who Got It

At a prescribed point in time, assessment tends to happen for everyone in order to determine who *got* the prescribed material and who did not. Assessment, too, is standard. "Their abilities will be more clearly defined if I've given everyone the same information." "Portfolios are a good idea, but when you have parents and schools clamoring for grades, you can't have those high-blown ideals." In a few instances, assessment was on-going and diagnostic. In some of those cases, an interesting standardized result occurred nonetheless. When diagnosis indicated that some students lacked the prescribed information, the teacher felt justified in teaching it to everyone. In rare instances, students who demonstrated mastery were exempted from additional coverage of the material—generally spending their time on games or extra credit work. Grades are typically a reflection of how a given student fared with the prescribed material in the allotted time. "It kind of bothers me that we're making them [struggling students] do the same thing everybody else is doing because I just don't think they can do it . . . and it's just dragging them down. It's got to be defeating that every time you get a paper back it's an F."

Students Who Exceed the Standard

Views about exceptional learners themselves are often established in light of standardization of time and material. Gifted or advanced learners are ones who *get* the material in less than the time allotted. "They're the quickest ones." "They give you more than you ask for." "They think beyond what the text expects them to." Gifted learners *have* the skills specified. "They read well." "They have advanced vocabularies." "They write wonderful stories." Once a student *has* what is prescribed, there is little need for additional instruction. "They teach themselves." "They finish their worksheets early. But I don't know what you can do about that." "They aren't the kind of person who needs you to go up to them [sic], who needs your help."

The fact that gifted or advanced learners don't need all of the time given to covering a certain body of information often results in a need to assign more work to keep them out of trouble—frequently more of the assignment already mastered, or extra credit work. "My [cooperating teacher] tells them to get ahead, to do four pages instead of two." "They can cause a lot of disturbance because they can be off task and still listen and get the information. Or maybe they already know it." "I need to find enough fillers to keep them busy." Recognition of the affective implications that undersized expectations might bring was rare.

Another common way to ensure that a gifted or advanced learner was occupied was to use her services as *a junior teacher*. Frequently this was seen as a service to advanced learners "so they could learn to be sympathetic with kids who have it harder," or "so they can learn patience." More often, it was just assumed that, "they learn more when they explain to somebody else." "Sometimes if they read well . . . they don't want to sit and listen while someone struggles over the words, but I think it's important for them to see that they need to be understanding." [Of a first grader very advanced in language areas], "I assign her to be a word helper . . . I think it helps her to be more cooperative and more understanding that everyone is not at the same level."

Students Who Fall Short of the Standard

Special education or struggling learners are the ones who *don't get* and perhaps won't get the material in the time allotted. "They don't grasp things." "I don't know that he'll ever get it." "They look like they're listening, but they don't hear." "They have a blank stare." These students don't have the prescribed skills. "They just can't do the work I ask them to do." "They read poorly." "They can't spell." "They have trouble finishing homework." "They have trouble comprehending from notes." Occasionally a novice suggested that a struggling learner could probably do the work if there were time. "He could have success. He just needs more time." There is widespread confusion about links between cognition and behavior. "It's hard to tell whether they are struggling academically or if it's their behavior which causes them not to achieve." In virtually no instance is there reference to what a special education or struggling learner *can* do. Nearly total focus is on what the student *cannot* do.

Sometimes the child's failure to meet the standard is a cause for blame. "If he doesn't get the answer, he just brushes it off. He doesn't care." "He's lazy." "He's reluctant to be thorough." "I don't think the lesson worked well for them, because they were just playing." At other times, there is a sensitivity to the misfit between child and task. "He tries really hard. The effort all day just wears him out."

It is also problematic that struggling or special education learners don't seem to *get* the material in the prescribed time. This results in a teacher needing to *go over* it again or explain again.

> . . . [H]e just comes right out and asks these obvious questions that other students would pick up on pretty easily. So sometimes I get frustrated with students like that . . . it's kind of frustrating to teach, because you're trying to move on to other

concepts and they come up with this very obvious question that perhaps the whole class has already gotten.

A frequently used antidote for the misfit of exceptional learners to allotted blocks of time is to have students who *are ahead* explain it to students who *are behind.* "The children who finish faster get to be little teachers." There is little articulated sense that this may present a problem to the student who consistently teaches rather than learns, or to the student who is always cast in the role of recipient rather than expert.

Classroom Management

Management for Time and Coverage

Management also seems inextricably bound to standardization, coverage, and time. Front-of-the-room-control, itself not automatic, is initially easier for a novice than managing a multi-task or student-centered classroom. In fear of losing control, the frontal approach is embraced, and once again leads to standardization of time and content. One novice disliked her cooperating teacher's suggestion that she have students in a secondary class read aloud "just for practice," so she began asking them to summarize and predict as they read. "It was too taxing for them and I lost them, so she told me just to go back to having them read aloud for practice." "It's hard to manage working with one group and having another group do something else." "When I put them in groups, they picked on one another and I couldn't get any teaching done. They adjust better in rows." "When the noise level peaks, I move on. It frustrates the slow learners because they aren't finished yet." "It was a mistake when I took time to explain it to [the gifted learner]. It took too much time, and I lost the others."

Differentiation in the Context of Uniformity

Due at least in part to the fixedness of coverage and time, the notion of differentiation is cast. In large measure, the definition becomes whatever the teacher can think of to do that doesn't displace the standardization of coverage and time and management. "Whereas the gifted student has to do the whole assignment, the special ed. kid only has to do half." "My [cooperating teacher] lets the [struggling] kids stay after school for reinforcement. Other than that, pretty much everybody does the same thing." "I guess I could have two different worksheets or something, but how would I know who gets which one without intimidating somebody or playing favorites?" "[Differentiation] would be difficult because you'd have to like [sic] make up three different worksheets." Because robust differentiation cannot be accomplished in the context of a single-sized lesson, the teacher may accept that the lesson will miss some children. "You can't get all of the kids in any one lesson." The teacher can also make the single-size one which is within the reach of most students. "I try not to make it too hard. I try to make it where everyone can get it."

Inadequate Preparation and Support

Wearing Down, Joining Up

Some of the novices in the study had largely exhilarating initiations to teaching. By anyone's measure, however, early teaching experiences for most beginners are mentally and physically exhausting. Noted one novice, "There have been times when I thought, 'I don't want to do this,' and then some days I go home and think, 'This was great. I love this.' It goes up and down." She concluded her final interview by saying, "I'm more knowledgeable about the fact that I don't know as much as I thought I knew." Another novice glumly said, "I learn something here every day . . . but the biggest thing I've learned is how poorly prepared I am."

A consistent refrain in conversations of the novices was their sense that their college experience left them unprepared to deal with academic diversity in any meaningful way. In what came to sound almost like a script, the fledgling teachers talked about "survey of exceptionality" courses in which they "heard about" an exceptionality a week and gained little, if any, practical experience in addressing those exceptionalities in classroom practice. "There needs to be much more time spent on this before students are allowed to student teach." "You don't get much from the courses we take. I mean you don't get anything. You don't learn anything on gifted students. You don't learn what to do for them." "In my seminar we were told not to do all lecture. There was no other mention of differentiation." "I was really angry that we came in here and didn't feel like we had any practice . . . like who was going to be gifted. People just kept saying, "Oh, you'll know. And I didn't accept that. I wasn't comfortable with that."

A number of university teacher education programs, including some whose novices took part in this study, are now designed to enable contemporary graduates to develop more student-centered and relevant learning environments, while still emphasizing content richness. In this study, even the novices who entered student teaching experiences with "new and improved" visions of a classroom found themselves also drawn by a powerful undertow of uniformity which often rendered new practices irrelevant. In addition, the classroom of the novice's childhood memory was likely to be one in which the teacher is the center of attention, learners are passive receptacles of chopped and diced information, and both teacher and student success are charted in terms of learner reproduction of that information.

Many, though certainly not all, of the preservice treatment group teachers felt that they were not encouraged or were even discouraged by cooperating teachers and/or university supervisors when it came to modifying instruction for exceptional learners.

Cooperating teachers often modeled single-size pedagogy and frequently counseled the novice to do likewise. As one preservice teacher explained, "I asked her [cooperating teacher] if we shouldn't do something different for those students because they were already there, already had it, but she said we had to keep them together, that it's important to keep them together." Another novice remarked, "My cooperating teacher has not talked to me about adjusting lessons. Not at all." Some cooperating teachers,

perhaps because of the automaticity which typifies an expert, practiced a more dynamic and flexible approach to teaching but failed to articulate to the novice a rationale and road map for doing so. "She does lots of things with the students, but she doesn't say how she makes it work." In the first scenario, the preservice teacher lacked the mandate to persevere toward differentiation. In the second scenario, the novice lacked the coaching needed to do so.

Discouragement during student teaching was real for many of the intervention group participants. In part, it was the price of learning. For others, it appeared to be the cost of boarding the locomotive of standardization. In either case, student teaching took a clear toll on early plans of the novices to adapt instruction for exceptional learners. One observer wrote of the novice she observed, "By the third interview, she was no longer volunteering information about her ideas, and she answered in short sentences rather than in the excited, long paragraphs that characterized her first two interviews." One of the novice's final comments was, "I guess I just try and aim for the middle and then try and supplement either way, the best you can." Another novice reflected on her earlier plans to differentiate instruction, "I've just been doing what I'm told. I can't think of any specific strategy until I get my own class." The capacity of the novice to sustain focus on addressing academic diversity in the absence of preparation and support for doing so, and in the presence of clamor to master many other things, was compromised—even among treatment group participants.

Phase 3—First-Year Teachers

In order to understand how novices develop skills in recognizing student differences and implementing appropriate practices, 10 novice teachers were followed into their first year of teaching. The purpose was to examine the learning-to-teach process as it relates to academically diverse learners once the constraints of student teaching were lifted and beginners had the opportunity to implement practices of their choice.

Six of the first-year teachers, five females and one male, had been assigned to the no treatment group during their preservice teaching experience; two others, both females, had been assigned to the workshop only treatment group, and the final two, one male and one female, had been assigned to the workshop and coaching treatment group. Data gathered from interviews and classroom observations from both preservice and first-year teaching assignments were analyzed to yield fuller explanations of how differentiation fit into novices' notions of teaching as they assumed full responsibility for classroom instruction.

Struggling to Survive

An overall finding was that first-year teachers found teaching much more difficult and time consuming than they had imagined. Although they had looked forward to the opportunity to do things their own way once they were in charge of their classes, the realities of the classroom were overwhelming at times. Comments similar to Brian's, "All

I can do right now is keep up," were expressed by most beginners. Brian became painfully aware of the differences between student teaching and assuming the full responsibility for several classes, "That was easy last year . . . it was a gradual takeover, and there were two of us there. I mean it was almost easy to do." Sarah acknowledged that she had "no idea where to start." Being overwhelmed during the first year of teaching has been well documented in the literature. However, Jennifer's statement gives insight into how being overwhelmed may affect practice relating to academically diverse learners, "My confidence is down that I can meet the needs of all students, because realistically, I see that I can't."

The concept of beginning teaching as a survival skill is not a new phenomenon (Fuller & Brown, 1975; Ryan, 1986); however, Linda's explanation of how feeling overwhelmed affected her willingness to consider meeting all students' needs supports the notion that beginners focus first on the major events of teaching:

> At the beginning I was definitely nervous and I thought it was overwhelming to try to plan alternative activities for other students, for gifted students to work on, or more practice sheets for the slower students. . . . I was just trying to get the main part of the lesson over with and cover my content and get through that day . . . as time has moved on I've been able to spend a little more time planning, thinking about what would help individual students, and I've tried to work on putting those things in my lesson plans.

She may well have characterized what distinguishes teachers who are likely to implement strategies for academically diverse learners from those who are unlikely to do so—an awareness that teaching is more than getting through lessons and that planning must include attention to the varied needs of learners.

Recurring Themes for First-Year Teachers—No Treatment

Modifications Reflect Ambiguity

Meeting the needs of all students is predicated on being able to identify students' needs. Sarah's case illustrates how tenuously understanding develops without interventions. As a preservice teacher, Sarah stated the importance of meeting different learning needs through a variety of classroom activities; however, her classroom practices reflected a one-size-fits-all model. She was quick to describe differences between classes rather than between students within classes. When asked about individual differences, she focused on personality differences. She noted, for example, that some students were quiet while others extroverted and discussed the value of grouping kids compatibly based on these differences. She had all students complete the same assignment; however, she explained that to accommodate student differences, "the final draft can be typed, it can be written . . . which is more comfortable for them."

As a first-year teacher, when differences in students' abilities became apparent in her sixth grade math class, Sarah attempted to differentiate assignments. Her interview

statements and the practices she attempted indicated that she had no theoretical basis for determining what modifications she should make in terms of the content or process of instruction. Rather, she tried to think of something different that might interest the students:

> But that didn't work well for me because then some kids missed out on what some of the other kids were doing and they saw what they were doing and wanted to do it too. So some of it was just accepting the fact that some kids are not going to get it this time around and they'll get it next time when someone comes along and teaches [the material again], they'll be able to get to that bridge and probably bring them across to where they hadn't been this year. The thing that I really did not want to do with my higher kids was to discourage them from math by having it be boring which discouraged them from science for the same reason.

Within the classroom she had no framework for managing practices that had students working on different tasks, and thus, went back to one lesson that would not meet the needs of either advanced learners or struggling learners. Later in the year, she "had to split the top off in math and put them in their own math groups so we can do things like algebra, cause they are really not interested in decimals. They've covered them, they know them." But, the how and why she selected the differentiated activities was unclear. Interview responses provided some evidence to question whether activities were geared to academic needs or were just implemented as something different to do. She described a geometric picture task as "advanced" because students were having difficulty learning the names of the shapes, a memorization-based activity. She seemed to sense that she could benefit from the experiences of colleagues but had not had such opportunities:

> I wish I did have someone to work with and someone to say, "Oh, you know there's a real neat activity you could do, you know to help get this idea across." I find I'm scraping the bottom. . . . It really intimidated me to think that I had to balance so many different needs at once and it got to the point where I thought well, I'm not gonna deal with it. I'll just deal with it when I get there.

Implementing Strategies Learned in Student Teaching

For some novices, strategies used during student teaching seemed to find their way into first-year classrooms, suggesting the potential impact of learning strategies for differentiation and having opportunities to routinize procedures for managing multiple activities during the preservice experience. Sarah, for example, noted that her supervising teacher was strongly opposed to the use of spelling books and believed spelling should be integrated into language arts. She continued this practice as a beginning teacher, explaining that she was comfortable having students complete different assignments and grading them accordingly.

Sue also implemented one of the practices she had used during student teaching, actually surprising some of her colleagues by using Writer's Workshop during her first

year. Explaining that she had become familiar with it during her preservice experience, she was accustomed to students working on various tasks at a given time and even added a component of portfolio assessment.

Brian's case, in contrast, illustrates how fragile these learned strategies can be and emphasizes the importance of providing a supporting environment for novice teachers. During his preservice experience, Brian's cooperating teacher required him to differentiate instruction for his French class. Assessing students was necessary because students were from different feeder schools and had been exposed to different content and vocabulary. Brian grew familiar with the routine:

> . . . [W]e did a lot of pretesting and posttesting. And also what I'll do is like midway through a chapter I'll give like an optional quiz [sic]. If they do well it counts and if they don't do well it doesn't count but it lets me still know where they are with the chapter and what I need to backtrack on or if I need to go faster, slower, or what.

Brian also became familiar with informal methods of assessment, "giving written work and then looking over that and seeing where their mistakes are . . . also you can tell by like oral drills that you ask whether they are getting the concepts or not [sic]." Based on his preservice experiences, we might expect Brian to continue to recognize student differences and develop differentiated instruction as part of the teaching repertoire he brought to his first full-time position. However, the structure of his assignments and the lack of on-site support appeared to work against developing these skills. Brian's placement was a beginning teacher's nightmare, two schools, two languages, six classes, five preparations, and limited instructional materials. Ironically, Brian attributed changes in his behaviors to the wide range of abilities of his first-year students (e.g., some foreign language students had not yet passed a literacy test, a test geared to the fourth grade reading level):

> . . . [L]ast year when I did my student teaching, you know I tried to do the same types of things [supplemental assignments]. But here it hasn't worked out as well because there is such a wide gap that, you know, I could be doing that every single day of the year for every single class, and with the four or five preps I have already, it's all I can do just to keep up with the regular teaching.

When asked if he was differentiating, left to his own resources as a first-year teacher, the extent of Brian's effort at differentiation consisted of having advanced students learn higher numbers:

> Sometimes I will give them an extra thing that is a little bit higher level . . . like today we were doing numbers through the thousands. I would give those [more able] students numbers dealing with millions.

Differentiation and Classroom Management

Maintaining classroom control continued to be an overriding issue for first-year teachers. As Jennifer described her first-year experience, she lamented, "The behavior in the last couple of weeks has gotten in the way of instruction. . . . The gifted are the ones I really have problems with. I haven't found a way without totally ignoring the rest of the class to work with them and keep them focused."

Those teachers who managed their classrooms with few problems were more likely to attempt differentiated activities. Sue exemplifies the beginning teacher who had classroom management within her control and, therefore, had the freedom to experiment with differentiation. Although she was at a loss to explain exactly why her approach worked, she explained that when kids talked in class she became frazzled, so she "just made sure they knew from the beginning that it's bothersome. They got the impression there was no use in even trying."

As a preservice teacher she had become aware that she would need different strategies to reach all of her students. She recognized the connections between academic and behavior issues as her description of a new student suggests, "he just transferred here and he can't read—and so I'm struggling—he's a discipline problem as well, I am trying to deal with the situation . . . it's real hard when you're the only one in there that can't read. . . . While I'm planning for the next few days, I should take that into consideration." During her preservice experience both her clinical and university supervisor had addressed varying student levels in planning. One of the strategies she used was the pairing of weaker and stronger students to complete an assigned task. Initially, she had also tried to keep classes together. However, as her placement continued, she came to terms with this concept, recognizing that the needs of students in classes would affect how far she got in a given day.

Like Brian, during her first-year assignment Sue had six preparations: three in English and three in social studies. Unlike Brian, however, she was housed in one school, a middle school. Still, there was much uncertainty as she began her career. She characterized her first year as "kind of groping in the dark . . . and you don't really have anything to compare it to . . . so you continue on groping," but observations revealed that she evidenced positive behaviors and the developing sensitivity to individual differences needed to provide differentiated instruction.

Profiles of First-Year Teachers in Treatment Groups

As noted in the beginning of this chapter, clear distinctions could not be made between those who had attended the workshop only and those who had coaches in addition to the workshop. Profiles of each novice are provided by treatment group so that readers can better understand the varied contexts for each novice.

Workshop Only: Becky and Karen

Becky: Differentiation Does Not Apply

Becky, a Spanish teacher, was least like the other teachers in the treatment groups, primarily because of her beliefs about the teacher's role in foreign language instruction:

> Beginning Spanish . . . it makes it somewhat harder to design instruction where students can go further in their own direction or they have to first develop a base of knowledge before we can go beyond that and right now we are still in developing that base of knowledge . . . it can be difficult to think up alternative ways to explain things. It's very challenging because they basically know nothing and we have to teach them everything or show them everything.

This view was not challenged by Becky's cooperating teacher. In fact, Becky had multiple opportunities to model her cooperating teacher's strategies as the two planned and evaluated lessons together. In addition, Becky also was able to watch her cooperating teacher teach the very lesson they had planned together before she had to teach it:

> [The cooperating teacher] taught the first period so I got to see a master teacher model the lesson one time and some of the things that she did I incorporated into my lesson like the vocabulary sheets at the very beginning. . . .

Becky took advantage of the opportunity to teach a class more than once, reflecting on what was effective and altering what was not. Although Becky was thoughtful about how to improve classes and had the guidance and support of an experienced teacher, how to differentiate instruction still received little conscious attention. Because Spanish was an academic class, the assumption was it would be taught at a college track level. Neither Becky nor her cooperating teacher knew which students in her classes were identified as gifted; no special provisions were made for them. Struggling students, however, were easy to spot:

> Like, they'll just sit there [sic], They won't know what to do because they don't understand what's happening. The tape is very difficult for all students and for some . . . it's very, very hard for them.

Whether or not special provisions were expected for struggling students, Becky and her cooperating teacher made efforts to meet their needs by holding special help sessions during lunch periods on Wednesdays.

With the strong teacher-centered focus during her student teaching experience, it was not surprising that few modifications were made in her first-year classes. Although attentive during the workshop, Becky likely believed that the recommendations did not apply to her content area and possibly filtered her own thinking.

Karen: The Classroom—A Dynamic Environment

In each preservice setting (kindergarten and fourth grade), Karen's classroom observations revealed multiple activities taking place at the same time and Karen seemed both comfortable and confident in her ability to teach in a dynamic environment. In the fourth grade class, for example, students were given a choice whether to work on their own for a graph test, work on a story project, do work sheets, or read to themselves. After completing a test they were free to choose from a number of math games. Similarly, several activities went on simultaneously in the kindergarten class. Open-ended and higher-level questions such as "what would happen if. . . ?" "The inside of the cup is dry, why not wet, tell me?" encouraged students to extend their thinking. She tried not to give answers to students, rather she prodded them with additional questions. Although no specific activities were designed for students with different strengths, she expressed her belief that different goals should be set for different learners. Karen's depictions of advanced students showed insight beyond a superficial level of understanding. For example, she described one student who exhibited an original way of thinking. He devised a language of his own using nonsensical shapes. Others "read well" or "have exceptional vocabularies." She described another advanced student as "very thoughtful, able to make connections."

Based on the multi-task atmosphere of her preservice classrooms, it was not surprising to find Karen's first-year classroom a lively place with much student activity. No students in this class were formally identified as gifted, but she observed that students in her class came with strong skills, having attended preschool for at least a year and came from "very enriched home environments." Karen expressed beliefs that providing instruction at different levels was appropriate and exhibited evidence of recognizing differences in her classroom expectations and activities. For example she read a story to one group of three students so they would be able to "discuss the meaning" of passages and not be limited by their difficulties in decoding words. She continued her practice of giving students choices and having many activities happening simultaneously. As she moved through activities she adapted to students' needs. Early in the school year, when students picked up patterns in the calendar she commented, "I'm not gonna wait till [sic] January to teach and work with patterns just because the curriculum says I have to wait until January. I'm not gonna do that." Her conception of teaching included a student-centered approach that provided flexibility. She also noted that some children evidenced behavior problems that seemed at odds with their intellectual skills. She was able to separate these issues and provide appropriate strategies to address them.

Workshop and Coaching: Linda and Tim

Linda: Experimenting, Questioning

Throughout her student teaching in high school biology and chemistry, Linda used a range of instructional strategies. The observer noted that her descriptions of target students' abilities and social and emotional needs "revealed mature insight into their special needs." She allowed special education students the option of working with the LD resource teacher on a test. She described the strength of one of her students labeled

ED, "He was really a standout when we were on the nature trail." She also made accommodations for a struggling student:

> [During the test] he kind of knew what I wanted from a question but he couldn't put his idea down. So I went back and asked him a few different ways to try to make him think through . . . then he came to an answer that way . . . just by talking and letting him take a test in a place where he is more comfortable.

During a meeting with her curriculum coach early in the semester, Linda discussed the idea of developing an individual learning center. The idea had come to her when she was looking through the book given to her *by the research study* at the workshop. She grappled with the idea of how to plan alternative activities and how to fairly group students throughout her student teaching placement:

> I don't want a [gifted student] in the group dominating the whole thing, but as long as he's sharing and helping other people that's fine. At the same time I don't think I want to put all the bright students in one group and leave the other kids hanging. So I've been trying to work through that. I am also interested in trying to do individual projects where the students do really self-guided activity.

As a first-year teacher, she explained that sometimes she grouped stronger students together:

> I try to move groups around. Sometimes putting stronger people together so that they can feed off each other and come up with more than say when they are in a group with a lot of slow people who need time to do all the work for them where they're helpers all the time. So I try to mix that up, I do try to do some individualized work. . . . I try to allow these kids to have some time to do their own work because I think both ends need that.

She did develop lessons that allowed for differentiation. For example, lab stations were used for those who finished early. In addition, stations could be skipped if students already knew material.

Linda evidenced traits of being reflective and tuned into individual differences. Her cooperating teacher addressed this, encouraging her to allow some students to move around more and not *harp on* the notes of those who seem to know it. On her own, Linda recognized that she needed to have planned transitions between activities and more complex assignments for some. Her stated beliefs and practices were out of synch in a different way from most other novices in this study. She spoke against having differentiated content and products; yet, she readily provided different activities. She was also thoughtful about grouping. While recognizing there were advantages to grouping, she recognized the advantages of both homogeneous and heterogeneous configurations and experimented with both.

Tim: Off and Running

Tim clearly expressed a student-centered view as a preservice teacher, acknowledging that his school often does not convey this message:

> Let's face it, knowing exactly what you need to do and following their directions is probably going to make a lot of teachers happy, so they've adapted themselves to that. I think it limits them and I'm trying to focus—I think you have to move away from being told everything . . . cause they can have their own, they're very smart [sic]. They know they can do things different [sic].

And Tim did experiment with meeting diverse needs in his lessons. During student teaching, his coach observed a lesson that was "on three levels so that all readers could participate in a dramatic reading that was planned for high student involvement." Tim may have been fortunate that his university supervisor and curriculum coach were the same person. His cooperating teacher had not shared any views on differentiation with him, so he was able to work closely with the coach/supervisor.

Tim entered teaching as a second career. His experiences both in the real world and as a student with learning disabilities appeared to influence his attention to individual differences. In planning his lessons, Tim tried to think of individual students to frame his examples, "Mark doesn't participate much. So, the Redskin thing was for him. That was the key to get him involved." In another instance Tim noted:

> And this group, the first group especially, will immediately say, "This is hard, I don't know what to do." If you stay on them two minutes, next thing you know, "This is easy, this is easy." They take off.

He regularly assessed student learning before he began, explaining:

> Well, what I do is, their last quiz, I gave them an extra credit and it was a preassessment. Then, their first project . . . I incorporated everything, and that allowed me to assess and change my lessons. That's how I like to do--I always like to give them a little activity first, something fun to assess and then I go from there.

As a first-year teacher, he focused his attention on meeting his seventh graders' needs as he thought they should be met. So in math, he developed his own curriculum for a new course:

> It's all mine. Yes, from scratch. And I pretty much based it on the idea of concrete to abstract using manipulatives and reteaching concepts. I tried to design a lot of what I learned from the University [named] and the National Teachers' Council for Mathematics [sic].

His focus was on making his students "risk-takers," because he stated, "I know it will carry over into other areas." To do so he often relied heavily on group work which

resulted in the familiar pattern of having advanced students teach those who were struggling. He explained his strategy as follows:

> I try to pick different students to help with the groups depending on whom seems to meet with more success or who likes the activity. . . . I try to have working pairs and then to put pairs together . . . so each group will have at least one high person in it.

He explained the benefit of giving high ability students responsibility for teaching others, explaining that, "If you give [Scott] responsibility to help others behave or to show them, he remains interested in the class" and "his behavior is improved." Tim conceded that "if you just try to let him go by himself—there is not enough for him to care" and subsequently Scott loses interest.

Summary of Qualitative Findings of Phase 3

The voices of preservice and beginning teachers provide insight into the challenges of learning to teach academically diverse learners. Although novice and experienced teachers report meeting needs of academically diverse students as a goal in principle, it is not perceived as a high priority for student teachers. With little encouragement and often discouragement from cooperating teachers or university supervisors, preservice teachers concentrate on other aspects of learning to teach such as covering and mastering content areas and pedagogical skills necessary for teaching. Moreover, classroom management appears to be a necessary precondition for implementing differentiated strategies. When control of the classroom is lacking, preservice teachers revert to more teacher-centered, "in the front of the room" activities, often encouraged to do so by their cooperating teachers or university supervisors. When left on their own, beginning teachers may choose to tailor lessons to student needs by default. Often, as was the case with Sarah, they do not know how to develop differentiated instruction or manage student reactions to different activities. Those novices who recognize that advanced students may already know the material, may search for alternative activities, but these are seldom tied to curriculum or instructional goals.

Preservice teachers exposed to the workshop or the workshop and coaching intervention expressed a consistent concern with differentiation, and discussed it as a part of their teaching goal. Their efforts to implement appropriate strategies were often limited by their conception of teaching, the structure of the school curriculum, and the lack of adequate preparation and support. The potential impact coaches can have on preservice and beginning teachers regarding differentiated instruction warrants further attention. While some of the coached group in the larger study found having an additional person with whom to discuss lessons and teaching approaches a distraction and unnecessary noise in an already complicated situation, this was not the case for Tim or Linda. In their cases both Linda and Tim talked with their coaches about specific students and what strategies would best suit those students' needs. Coaches then served as expert eyes and ears to guide the preservice teachers in implementing these strategies.

When Tim was somewhat disappointed that a student did not take off with an independent project idea, Tim's mentor guided him, helping him understand how gifted students may need to be taught independent research skills. Linda received encouragement when an activity she designed for one high ability student went differently than planned. Linda and Tim continued to use and refine the behaviors and strategies related to differentiation that they tried when working with their coaches during their first year of teaching.

Cautions About Interpreting Findings

In qualitative research, the transferability of findings is left to the individual reading the study. In this case it is important to consider the impact of the study on participants and the impact of sample selection. As it happened, although the entire study drew samples from seven sites, those who were followed for two years all had attended the same university. Because they represented the full spectrum from kindergarten through high school, we can assume their coursework and interests differed, as did their backgrounds and previous school and social experiences. They did, however, all meet the criteria established for admission to Site A University and the teacher education program there.

In addition, the 10 beginning teachers in this phase agreed to participate for two years, having someone observe their classes, interview them, and, for those in the two intervention groups, devote time to a workshop. The coached beginners made a further time commitment to meet with their coaches. Although we randomly selected students to participate, they of course had the right to decline. We cannot know if those who declined differed from participants in consistent ways relating to their attitudes, confidence, knowledge, or openness to change.

CHAPTER 4: Discussion and Implications

Recent research has focused on the process of learning to teach and what teachers need to know in order to teach various content areas. Little, however, is known about how beginners learn to meet the needs of the full range of students in heterogeneous classrooms. To better understand how preservice teachers learn to recognize and address the academic diversity of their students, this study examined the attitudes and practices of preservice teachers in three treatment conditions: (a) no intervention; (b) participation in a workshop designed to guide preservice teachers in thinking about the nature and needs of academically diverse learners and to provide them with a framework for making instructional decisions to meet those needs; and (c) participation in the workshop and assignment to a curriculum coach who was to serve as a mentor during the student teaching experience. Ten of these preservice teachers were then followed into their first year of teaching, during which data were collected to assess their attitudes and practices related to instruction of academically diverse learners. The research was guided both by preordinate research questions and by data collection and analysis that allowed themes to emerge from the data. In this chapter, a discussion of the preordinate questions is followed by a discussion of the two broad emergent themes: (a) developmental processes and (b) support systems.

Preordinate Research Questions

1. How will orientation to the nature and needs of academically diverse learners and strategies for meeting their needs affect attitudes and/or practices of novice teachers?

The workshop intervention called attention to the issues of addressing academic diversity and provided guidance for novices in determining when differentiation would be appropriate and which strategies they might use. Because beliefs about teaching have been found to remain relatively stable over time and resistant to change as a result of teacher education courses (Brousseau, Book, & Byers, 1988; Feiman-Nemser & Buchmann, 1987; Florio-Ruane, 1989), treatments such as direct instruction workshops may have limited power to effect change in preservice teachers. Research suggests, however, that programs encouraging prospective teachers to examine their fundamental beliefs are needed to challenge long-standing beliefs (Anderson, 1989; McDiarmid, 1990) and that even direct instructional interventions have been shown to enhance preservice teachers' awareness of elements of instruction (Saunders & Morine-Dershimer, 1990). With these findings in mind, the intervention workshop activities were developed to focus on preservice teachers' beliefs and understandings about academically diverse students and their learning needs, and to encourage preservice teachers to act as problem solvers as they examined their own beliefs and practices regarding instruction of academically diverse learners.

Prior to student teaching, most preservice teachers in all treatment groups expressed beliefs that individual student differences should be recognized and accommodations should be made to meet students' varied needs. Responses to survey items indicated that, in general, preservice teachers were in agreement about practices related to differentiation (e.g., advanced students do not need longer assignments because they work faster than others, nor should they be required to do all assignments if they have mastered material). Because these beliefs were in the *correct* directions at the outset, it was not surprising that most stated beliefs of preservice teachers in the workshop only or workshop and coaching intervention were not significantly different from those who received no treatment on the posttest survey. However, one statistically significant difference was observed in pre and post comparisons. Preservice teachers in both intervention groups expressed less favorable beliefs regarding differentiation at the end of their student teaching experience than they had at the beginning of it, although the preservice teachers paired with curriculum coaches experienced less of a decline in attitudes towards differentiation. We speculate that this may have occurred because the intervention called attention to the needs of students and, thereby, heightened novices' awareness of how much time they devoted to curriculum modifications. However, further investigation with other samples is needed to determine whether this finding is a stage in developing an understanding of differentiation or a temporary artifact.

The impact of the workshop intervention, designed to encourage discussions about beliefs regarding academically diverse learners and instructional strategies, was reflected in participants' interview statements. Qualitative findings from attendees suggest that, in general, interventions appeared to raise preservice teachers' awareness of and commitment to addressing academic diversity throughout their student teaching and first-year experiences, while their peers in the non-intervention treatment seemed resigned to the impossibility of the task early into their student teaching experience. The ways novices talked about academic diversity and their attempts to implement practices to address those needs appear to have been positively affected by the treatment orientation. Although not all intervention preservice teachers subscribed to differentiation as a goal for their classrooms, these preservice teachers typically acknowledged the need to "get better at it" or "find out how it can work [in their classrooms]." Some not only mentioned use of strategies they had discussed in the workshop, but reported (without prompting) that they had used the materials or ideas provided during the workshop.

The ability of novices to focus on student needs is an important step in teacher development. Laboskey (1994) observed that, among other characteristics, reflective novices focused on students' needs rather than on themselves or their subject matter and viewed the teacher as a facilitator rather than a transmitter of knowledge. Identifying student needs may be seen as a precursor for the development of the expert skills for teaching in academically diverse environments, such as abilities to assess student readiness, provide learning options that invite students to progress at their own levels of readiness, vary the amount of instruction and practice, and execute flexible management routines.

Even though novices in the intervention groups were more attentive to differentiation than their peers who were in the no intervention phase of the study, their abilities to translate their beliefs into practice were limited. Observations revealed little evidence of differentiated practices in the classrooms of preservice teachers in the no intervention, workshop only, or workshop and coaching interventions. This was not surprising given that experienced teachers likewise have shown little evidence of using differentiated practices (Tomlinson, 1995; Westberg et al., 1991). Modifications for advanced or struggling learners were minor adaptations (e.g., varying reading selections, shortening assignments, pairing stronger students with weaker ones).

Differentiating instruction requires that novices make accommodations for students at both ends of the learning continuum; it is not simply a matter of assigning more problems to an advanced student or directing a recall question to a struggling student. Both qualitative and quantitative findings indicated a tendency for preservice and beginning teachers to devote more time to accommodating struggling learners or students receiving special education services than for their advanced students. This may occur for several reasons. First, providing special accommodations for struggling students may appeal to novices' sense of purpose, their belief that they must transmit information to students. As their comments indicated, they do not typically think advanced students will be harmed by reviewing material they already know, whereas struggling students must *cover* the material. Strugglers need the help and novices believe they can provide what is needed (e.g., monitoring work, reading passages to students). They assume repeating, going more slowly, or breaking down tasks will be appropriate for struggling learners. The types of modifications they made were similar to those described by Corno and Snow (1986) as microadaptations, practices such as feedback to students that tend to occur spontaneously with little forethought. (These are distinguished from macroadaptations that would include planned responses to student differences, such as grouping strategies.) Making accommodations for advanced learners requires an extension of the instruction, calling for understandings the novice may not have. Even if novices have mastered the subject matter knowledge for example, knowing how to adapt for advanced academic levels of learners requires an ability to sort out the key concepts, determine which will be needed for subsequent learning, and design instruction to teach those concepts. This ability seemed beyond the capacity of most novices in this study.

As they struggled to interpret classroom cues, novices often focused their attention on classroom management issues such as disruptive behavior. Previous studies have called attention to management both as a concern of beginners (Veenman, 1984) and as a necessary element in their conceptions of successful lessons (Borko, Lalik, & Tomchin, 1987; Ellwein, Graue, & Comfort, 1990). The pattern of novices focusing on management rather than cues that relate to instructional significance and student learner characteristics (Berliner, 1994; Borko & Shavelson, 1990) has important ramifications for implementing differentiated instruction. Unless they feel *in control* of their classrooms, novices seem hesitant to allow students to work on their own or deviate from a one-size-fits-all lesson. Even for experienced teachers, a major obstacle to creating a differentiated classroom is fear of losing control. As Tomlinson (1995) found, teachers

are less confident in their skill at coordinating multiple activities or helping students develop self-management skills than they are in their skill to manage a single-focus classroom. Thus, mastery of classroom management appeared to be a necessary precondition for attempting differentiated strategies. Among the first-year teachers, for example, those who maintained control of the classroom experimented with managing of multiple activities as preservice teachers and continued using practices such as the Writer's Workshop or learning stations in their first-year classrooms.

2. How will the interventions affect attitudes and practices of cooperating teachers?

Addressing this question was more difficult than had been anticipated, highlighting the importance of gaining access to conduct a study like this one. Securing permission to enter classrooms was difficult because both cooperating teachers and university supervisors expressed concerns that the study would cause undue interference for the student teachers and their pupils. Every attempt was made to avoid antagonizing cooperating teachers, some of whom were less than eager to have researchers in their classrooms or to complete the SOP questionnaires twice. We, therefore, did not receive pre and post questionnaire data from all cooperating teachers. Because of this, quantitative data were not reported.

The intention had been for curriculum coaches to visit classrooms on a regular basis; however, in many instances, the coach was viewed as one more person in an already crowded classroom. To keep participants in the study, the role of the coach was adapted to minimize or eliminate classroom visits, depending on the situation. Therefore, there was little systematic contact between coaches and cooperating teachers. Data indicate that university supervisors provided little support for differentiation in their interactions with the preservice teachers. It was therefore unlikely that cooperating teachers encountered conversations focused on the need to differentiate instruction for academic diversity or the means of doing so.

3. How will preservice teachers seek out students in their classes for whom differentiation may be appropriate?

Recognizing student differences and their concomitant learning needs was difficult for preservice teachers. With so many new factors in their environments, they tended to focus on student traits relating to deportment, often equating compliance, for example, with advanced ability. The limited ability of novices to read cues, recognize patterns, and focus on student learning parallels findings on beginning teachers in various contexts (Anderson, 1989; Barnes, 1992; Copeland et al., 1994; Sabers, Cushing, & Berliner, 1991). Within each of the treatment conditions, novices evidenced a range of abilities to seek out students who might benefit from differentiated instruction. In general, however, uniformity dominated approaches to instruction.

The learning needs of struggling students often became apparent to novices more easily than the needs of advanced students as novices forged ahead to cover prescribed

material. This may well be a function of novices being so overwhelmed by the number of factors to which they had to attend, that for any given lesson, most effort was devoted to helping those students who had not *gotten* it. There was very little cognitive energy to look for differences among successful students or seek out advanced students unless they caused behavior problems. When curriculum is viewed as chapters that must be *covered*, much like the engineer of an express train, the novice focuses on heading down the single track to deliver all passengers to the destination *on time*. Even when novice teachers recognize students' academic needs, they are hesitant to go off track or allow students to proceed via various routes or choose alternative destinations because the classroom routines are already set; the destination and time are difficult to alter (Tomlinson et al., 1994).

Preassessment was typically not a factor in most of the cooperating teachers' classrooms and, therefore, novices had few opportunities to learn how to use preassessment information to meet student needs. In instances in which pretests revealed that some students were lacking the prescribed information, novices felt justified teaching or reteaching the material to all students, including those who had met or surpassed the goal. Although novices could identify some of the advanced students through informal observations of their quickness, advanced vocabularies, or abilities to think in different ways, seldom were these traits connected to differentiated instructional goals. Occasionally, a student who had demonstrated mastery was exempted from the class assignment, then usually allowed to spend time on games or extra credit work. Despite their commitment to meeting varied student needs, beginners seldom had the content or pedagogical skills to develop advanced materials on their own and there were few opportunities for them to develop the routines necessary for managing multiple activities.

4. How do preservice teachers assess the effectiveness of various instructional approaches for differentiating curriculum and instruction?

The most frequently observed instructional strategy was using some form of cooperative learning. No matter where preservice teachers in this study received university training, they all seemed familiar with the practice of grouping students in pairs or foursomes, typically ensuring that weaker students were paired with stronger ones. Almost as if reciting a mantra, they explained that this practice was as beneficial for the advanced student as it was for the weak student. Their use of the strategy was often problematic, however, as it was infrequently described as an instructional strategy flowing from a content goal. Further, there was seldom a sense of a full range of guidelines for using cooperative learning appropriately. Most often preservice teachers employed cooperative learning so that advanced students could transmit knowledge to their less knowledgeable peers. Cooperative learning also appeared to be a method for managing the classroom. If students were actively engaged, novices viewed the strategy as successful without regard to pre-specified learning or terms.

Some novices did wrestle with issues related to cooperative learning. Following Linda, (a high school science teacher who was in the workshop and coaching intervention group) through her first year of teaching provided an opportunity to view one novice's

struggle with the formation of groups for cooperative activities. At the outset of her preservice experience, she noted her preference for mixed-ability groups because she "did not want to put all the bright kids in one group and leave the other kids hanging." Her thinking shifted as she began to allow students to vary assignments. During her first year, she advocated various kinds of groupings, stating that she sometimes put "stronger people together so they can feed off each other" rather than always serving as helpers, "because both ends need that."

Few other strategies incorporating differentiation were observed. At best, novices offered students limited choices (e.g., drawing pictures instead of writing paragraphs). Cooperating teachers seemed to employ few differentiated strategies on which preservice teachers could model their behavior. In exceptional cases, preservice teachers learned strategies from their cooperating teachers (e.g., how to manage multiple activities for Writer's Workshop, developing learning centers) and these strategies became part of their repertoires as first-year teachers. However, few preservice teachers discussed the impact of these differentiated activities on student learning. Preservice teachers may have revealed more about their pupils' academic growth had longer interviews or more frequent classroom observations been possible, but methods of assessing student progress were typically not described in interviews. Journals of curriculum coaches revealed that (a) discussions about how to implement differentiated practices were important in helping novices formalize their thinking; and (b) novices were easily discouraged and needed guidance to adapt initial attempts at differentiation.

5. How do preservice teachers develop as problem-solvers capable of assessing and meeting the needs of academically diverse learners?

Findings illustrated how difficult it is for novices to identify diverse abilities. Although we saw a range of responses to academic diversity from preservice teachers, for the most part, novices who had no intervention focused on behavior (e.g., compliance) rather than how students learn. Most admitted they were "flying by the seat of their pants" and noted the inefficiency of this trial and error approach. When things got tough, they pulled in the reins even tighter, adopting more teacher-centered patterns, often teaching as they had been taught.

For those novices in the intervention groups, we saw little evidence that preservice teachers are encouraged or guided in their attempts to focus on the needs of academically diverse learners. In fact, when they asked cooperating teachers about providing alternative activities for advanced students, they were often encouraged to keep students or classes together and thwarted in their attempts to be active problem solvers. As one novice reflected, "I've just been doing what I'm told. I can't think of any strategy until I get my own class." As they noticed differences among students, novices in the treatment groups also became aware of how much more they needed to know in order to create a differentiated classroom. Becoming "more knowledgeable about the fact that I don't know as much as I thought I did" may be an important step in developing problem-solving skills.

In the fortunate circumstances where the cooperating teacher and university supervisor agreed with the principles of differentiation, preservice teachers began to look beyond whether they got through the lesson or whether students seemed to like what they were doing and began to focus on student learning. Even strong, insightful student teachers, however, needed guidance to help them understand student responses and to focus on how to adapt instruction. For example, Tim was disappointed that a student did not "take off" on an independent project. His coach helped him assess the situation, determine that the pupil did not have all the skills needed to do the project, and ultimately make adjustments so that both the pupil and Tim experienced success. Without this interaction, Tim may have abandoned attempts to differentiate instruction.

Emergent Themes

Developmental Processes

Teaching is a complex task requiring judgment, action, and capacity to reflect on and revise decisions based on understandings of pedagogy, subject matter, learners, and how these factors interrelate (Barnes, 1992). This is indeed a tall order for beginners. Mastering apparently simple procedural elements of teaching such as routinizing the start of a lesson, which requires accurate reading of visual cues and inferences, can be a formidable task for novices (Berliner, 1987).

Berliner's (1994) model for the development of expertise provides a useful framework for examining teacher development with regard to differentiated practices. He describes five phases ranging from the novice stage during which elements of tasks are context-free rules (e.g., "wait three seconds after asking a higher-order question") to the expert stage which is characterized by fluid performance. The second stage, advanced beginner, usually occurs in the second or third year of teaching, and is marked by the development of strategic knowledge that clues teachers when to enforce and when to ignore rules. After three or four years of experience, teachers may progress to the third competent stage, which is distinguished by making conscious choices by setting priorities and implementing plans. They also have gained enough experience to know which behaviors to attend to and which to ignore. Only a modest number of teachers reach the proficient stage, the fourth stage, during which they evidence an intuitive know-how sensing similarities in situations that novices cannot exhibit. Fewer still reach the fifth, or expert, level.

Given the complexities of teaching, the difficulties novices have making sense of classroom events, and the amount of experience needed to ultimately develop even competence in the classroom, it might seem unrealistic to expect preservice teachers to provide differentiated instruction. On the other hand, patterns of teaching that form early in a career may become entrenched and thus never change. Although all teachers may not reach higher levels of development as Berliner (1994) depicts them, it can be argued that introducing novices to student-centered views of instruction and giving them practice in implementing strategies may be necessary to break the one-size-fits-all conception of

teaching. Findings from this study suggest that the intervention may have given preservice teachers a vocabulary through which to frame their thinking about academically diverse learners and their concomitant needs, thus forming an imprint that may affect their image of teaching and future instructional decisions. Shulman (1987) likened adapting instruction to meet student needs to the process of tailoring a suit jacket so that it will fit well. Differentiation implies that several different suit sizes must be available so that each child in the class can have a close fit; tailoring after the jacket is made can only do so much. The workshop intervention challenged preservice teachers' conception of teaching one-size-fits-all lessons and introduced them to the notion that varied learning options must be available to appropriately challenge both a struggling learner and an advanced learner. Although the workshop heightened many preservice teachers' awareness of the need to provide a range of learning options based on student readiness, novices need more preparation and guidance to achieve this goal.

When we look at learning to teach through the lens of the belief system, we see novices whose practice is out of synch with their beliefs. Without opportunities to examine the belief system regarding diverse learners and explore options for meeting their needs, the wedge between belief and practice widens. Interventions may bring teaching behaviors into better harmony with novices' stated beliefs, rather than having novices *accept* the fact that they will not reach their advanced and struggling students.

Support Systems

Novices clearly got the message that differentiating instruction was not a priority for either their cooperating teachers or their university supervisors. The stated beliefs relating to the importance of meeting the individual needs of students of most preservice teachers receiving the no treatment intervention were at least temporarily displaced as novices learned the teaching tasks demanded of them. Although those receiving the two treatment interventions (workshop only and workshop and coaching) typically continued to focus attention on issues of differentiation, learning how to translate beliefs into classroom practices was difficult when cooperating teachers seldom modeled strategies and often encouraged them to keep students together even to the point of suggesting that different classes stay on the same page in a subject area.

Although they expressed confidence (in survey responses) that they could teach academically diverse learners, participants repeatedly stated in interviews that they had no university preparation for meeting the needs of academically diverse students. Typically, novices talked about at least one survey course on exceptionalities, but they did not recall specifics. They had perhaps forgotten what they had been taught or had filtered out such instruction as irrelevant. Regardless of the reason, the outcome was the same: novices were uncertain about what to do and had inadequate practice with a range of strategies that might have been appropriate to implement in response to diverse learning profiles.

Findings suggest that even the modest intervention of a workshop raised preservice teachers' awareness of academically diverse learners and sustained their

commitment to implementing practices to address those needs. This suggests the potential impact interventions might have as impetus for change. The addition of a curriculum coach was intended to provide further support for developing novices' behavior. However, in many instances the coach was but one more voice who had neither the power nor authority of the cooperating teacher or university supervisor. In those instances when the coaching was compatible with the practices of the cooperating teacher or the university supervisor, coaching provided an opportunity for novices to explore varied teaching approaches, receive feedback needed to continue such practices, and practice as problem solvers.

Implications

The role of a novice teacher is a confounding one at best. Attempts to understand and meet needs of diverse learners complicate issues of planning and management, and require subtle understandings and applications of both content and pedagogy. On one level, it is easy to suggest that novice teachers may not yet be ready for the task of creating classrooms appropriate for the needs of academic outliers such as gifted, special education, or remedial learners. Rather, one might argue that preservice teaching experiences are designed to develop basic pedagogical skills, the equivalent of gross motor skills. Differentiation may be considered a fine motor skill that will develop with time after the gross motor skills have been mastered. Findings based on the data from preservice teachers in this study call attention to the dangers in that assumption.

First, these novices appear to enter teaching with images of classrooms that perpetuate teacher-centered, coverage-driven practices in which the teacher is the transmitter of information. Thus the gross motor skills that the preservice teachers hone in on in the classroom maintain the status quo of schooling, which is dubious in its value even for the typical learner for whom schools are designed. The liability for academic outliers is that despite proclamations of the existence of individual differences and the responsibility of the teacher to meet them, basic practices may close off avenues necessary for addressing the needs of gifted, remedial, and special education students.

The second danger lies in the apparent reality that there is little support for the novices in changing either their images of schooling or their single-size practice of it. These novices sense that differentiating instruction for diverse learners is a low priority for their teacher education institutions, cooperating teachers, and university supervisors. If that is the case, rather than being a time that encourages developing a deepening understanding of student differences and attention to diagnostic and prescriptive skills, novices gain tacit permission to dispense learning as though all students need the same prescription and establish routines for doing so.

Interventions such as a workshop can serve as a starting point for focusing novices' attentions on the varied needs of academically diverse learners and shape their thinking about the learning environment. As they venture into the classroom, novices need support and guidance from key players in the system to model strategies and

develop a repertoire of teaching skills that can facilitate meeting varied needs. The academic diversity of today's classrooms calls for change in practice that should be recognized as a priority from preservice training through professional development. Like other forms of expert performance, the ability to differentiate instruction will develop over time; however, the process must be set in motion. Berliner (1994) suggested that we acknowledge the fact that pedagogical skills are gained slowly. We should provide the most nurturing environments for novices, adequate practice, small numbers of students, and refrain from the typical pattern of giving new teachers the most difficult classes in a school.

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Appendices

Appendix A

Survey of Practices With Students of Varying Needs (SOP)

Survey of Practices With Students of Varying Needs

This instrument is designed to help us understand teacher attitudes about classrooms, students, and teaching practices. The instrument will take about fifteen minutes to complete. Do not put your name on the paper. Please be sure to answer every question on front and back of both sheets. Thank you for taking time to participate in this study.

Please respond to the following demographic information (please complete each item):

Check the box that best describes you: undergraduate graduated

Please indicate the approximate number of credit hours you have taken (circle one):

Bachelor's Bachelor's +15 Bachelor's +30

Master's Master's +15 Master's +30

Please indicate the number of courses you have taken in the following areas:

Special education ___ Gifted education ___

If you are a graduate, please respond to the following items:

Years of teaching experience ___ Type of degree _____

Area of certification _____

Other endorsements _____

Part I:

Read each statement and circle the response that best describes your feelings about the statement. Circle SA if you strongly agree, A if you agree, D if you disagree, SD if you strongly disagree, and DK if you don't know how you feel about the statement.

A student who is learning disabled will usually be a low achiever in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
The regular curriculum will challenge all students if the teacher is interesting and exciting.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students can make it on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students find it difficult to work on their own without teacher direction.	**SA**	**A**	**D**	**SD**	**DK**
It is important to assess students' knowledge about the topic before beginning a new unit.	**SA**	**A**	**D**	**SD**	**DK**

If tests indicate that a student has acquired basic skills, the teacher should omit the regular assignments and modify the curriculum for that student.	**SA**	**A**	**D**	**SD**	**DK**
If students have already mastered some of the material before starting a unit, they should be given alternative assignments.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students may need additional time to practice to master basic skills.	**SA**	**A**	**D**	**SD**	**DK**
An effective way to identify gifted students is to look for students with the highest grades.	**SA**	**A**	**D**	**SD**	**DK**
In the classroom, content should be varied to match students' interests and abilities.	**SA**	**A**	**D**	**SD**	**DK**
To assure that all students have the same knowledge base, it is appropriate to present curriculum information to all students in the same way.	**SA**	**A**	**D**	**SD**	**DK**
Allowing gifted students to work on assignments that are different from the rest of the students is playing favorites and fostering elitism.	**SA**	**A**	**D**	**SD**	**DK**
Students who are learning disabled are usually poor readers.	**SA**	**A**	**D**	**SD**	**DK**
Average students need to spend most of their time working in teacher-directed activities.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students need longer assignments since they work faster.	**SA**	**A**	**D**	**SD**	**DK**
It is important for all students to do workbook exercises, review pages, and textbook assignments because these activities are an integral part of the curriculum.	**SA**	**A**	**D**	**SD**	**DK**
Working too hard in school leads to burn-out in gifted students.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students do not do well in most subjects.	**SA**	**A**	**D**	**SD**	**DK**
Learning disabled students who are gifted will need to concentrate their study to remediate their weaknesses so they can go on to use their areas of strength.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students are easy to identify in the classroom.	**SA**	**A**	**D**	**SD**	**DK**
Work that is too easy or boring frustrates a gifted child just as work that is too difficult frustrates an average learner.	**SA**	**A**	**D**	**SD**	**DK**

Assignment length and homework assignments are usually designed to meet the needs of the average learner.	**SA**	**A**	**D**	**SD**	**DK**
Gifted students should be encouraged to direct their own learning.	**SA**	**A**	**D**	**SD**	**DK**
Having some students work on different assignments results in unfair grading.	**SA**	**A**	**D**	**SD**	**DK**
Remedial students have difficulty grasping concepts and need a more fact-based curriculum.	**SA**	**A**	**D**	**SD**	**DK**
If a gifted student is doing poorly in spelling, it is necessary to deal with the weakness in spelling before presenting more advanced content in other areas.	**SA**	**A**	**D**	**SD**	**DK**
All students in the class should take the same test to show mastery of the material in a unit.	**SA**	**A**	**D**	**SD**	**DK**
Removing special education and gifted students from the classroom for special classes is disruptive to the class schedule.	**SA**	**A**	**D**	**SD**	**DK**
In teaching gifted students, teachers should modify the content only, since all students need to use the same processes and can generate the same projects.	**SA**	**A**	**D**	**SD**	**DK**
Having gifted students work on individual projects or assignments isolates them from the rest of the class.	**SA**	**A**	**D**	**SD**	**DK**
Grouping students is more detrimental than beneficial.	**SA**	**A**	**D**	**SD**	**DK**

Part II:

In thinking about students in the classroom, please rank the following three groups according to the amount of time and attention each one receives. Place a 1 beside the group receiving most of your attention. Place a 2 beside the next group. Place a 3 beside the group receiving the least amount of attention. If you feel you give equal time to all groups, place an E in each blank.

Special education students ___

Average students ___

Gifted students ___

Part III:

How confident do you feel about the following? Rate from 1 (no confidence) to 5 (very confident) by circling the response that best describes your feelings:

Adapting my lessons to meet the needs of gifted learners	1	2	3	4	5
Adapting my lessons to meet the needs of remedial learners	1	2	3	4	5
Accommodating varying levels of ability in my class	1	2	3	4	5
Assessing where students are and designing appropriate lessons	1	2	3	4	5
Individualizing instruction to meet the needs of gifted learners	1	2	3	4	5
Individualizing instruction to meet the needs of remedial learners	1	2	3	4	5
Identifying gifted students	1	2	3	4	5
Identifying remedial students	1	2	3	4	5

Part IV:

Which specific techniques, activities, or instructional strategies do you think you would use with each of the following learners in the classroom? Place a check in the appropriate column. <u>Do not check strategies unfamiliar to you.</u>

	Gifted Students		Average Students		Special Education Students
ability grouping					
activities to enhance creativity					
cooperative learning					
curriculum compacting					
drill and practice					
higher level thinking activities					
independent study					
individual instruction					
interdisciplinary activities					
learning centers					
problem-solving activities					
projects					
values training					
workbook exercises					

Appendix B

Classroom Practices Record (CPR)

Classroom Practices Record (CPR)*
Form VA

CPR: Identification Information

Date of Observation _____ Observer _____ Observation No. _____

Preservice Teacher's Code No. _____ School _____

School District _____ City _____

State _____

Grade Level _____ No. of Target Students in Classroom _____ No. Target Girls _____

No. Target Boys _____

Total No. of Students in Classroom _____ No. of Girls _____

No. of Boys _____

****

During your first observation in a given classroom, please indicate the number of Target Students in each category:

_____ Limited English Proficient (specify native language[s] _____)

_____ Handicapping Condition[s] (specify _____)

_____ Economically Disadvantaged (i.e., free or reduced lunch)

_____ Student[s] accelerated one grade

_____ Student[s] accelerated more than one grade

****

Ethnicity of Target Student[s]:

_____ African American _____ Native American

_____ Asian American/Pacific Islander _____ Caucasian American

_____ Hispanic American _____ Other

****

* Adapted from Westberg, K. L., Archambault, F., X., Jr., Dobyns, S. M., & Salvin, T. J. (1993). *An observational study of instructional and curricular practices used with gifted and talented students in regular classrooms* (Research Monograph No. 93104). Storrs, CT: University of Connecticut, The National Research Center on the Gifted and Talented.

Ways in Which Target Students are Identified (check all applicable):

_____ Achievement Tests
_____ Group IQ Tests
_____ Individual IQ Tests
_____ Teacher Rating Scales
_____ Grades
_____ Creativity Tests
_____ Response Lessons
_____ Parent Nomination
_____ Self Nomination
_____ Peer Nomination
_____ Student Interview
_____ Portfolios/Product Rating
_____ Other (please specify)

CPR Physical Environment Inventory

During each observation, please place an "x" in the appropriate blank:

Learning Centers/Work Groups

_____ 3 or more learning/interest centers or small working groups
_____ 2 learning/interest centers or small working groups
_____ 1 learning/interest center or small working group
_____ No learning/interest centers or small working groups

CPR: Curricular Activities

Activity Codes, i.e., (1) audio visual (2) demonstration (3) discussion (4) explain/lecture (5) games (6) nonacademic activity (7) oral reading (8) project work (9) review/recitation (10) silent reading (11) simulation/role playing (12) testing Teacher Activity (13) verbal practice or performance involving Target Students (14) written assignments (15) lab

Group Size Codes, i.e., Target Student[s] is/are working: (1) individually (2) in a group of 2-6 students (3) in a group of 7 or more students (4) with a total class

Group Composition Codes: (Ht) heterogeneous ability grouping (Hm) homogeneous ability grouping

Descriptive Notes: (1) Target Student[s] is/are involved in advanced content instruction/materials
(2) Target Student[s] is/are involved in advanced process instruction/materials
(3) Target Student[s] is/are involved in advanced product or project work
(4) Target Student[s] is/are working on an independent study project based on assigned topic
(5) Target Student[s] is/are working on an independent study project based on self-selected topic
(6) Higher order question[s] addressed to Target Student[s]
(7) Target Student[s] is/are taking advanced test
(8) Target Student[s] is/are assigned advanced homework
(9) Other indication of differentiation experienced by Target Student[s].

Please explain briefly in notes column

Miscellaneous Notes: Observer's notes for conducting the teacher interview and/or writing the summary report.

Academic Subject(s)

Beg. Time	End Time	Act. Code	Grp/ Size Code	Grp/ Cmp. Code	Codes & Descriptive Notes of Differentiation	Miscellaneous Notes

Appendix C

Interview Protocols

Preservice Study

Interview Protocol

Initial Interview

1. In your own schooling, did you ever have any experience of your own or with a friend or family member who received instructional provisions made as a result of individual needs or interest? (*If yes*, Tell me about that.)

2. What is most important for me to know about the class I observed today?

3. How did you decide what to do today in class?

   Possible probes:

   - Who or what influenced your decisions?

   - What things did you consider?

   - Did you think about specific students?

4. Who in the class I've just seen do you think may be struggling in school (if you feel anyone is)? How can you tell or in what ways? (If they identify areas other than those dealing with learning, such as behavior, personality, or emotional difficulties ask: Are there any students who seem to be struggling with learning?)

   Possible probes:

   - What makes you think that student is struggling? What kinds of things does that student seem to do when he/she is having a hard time?

5. Who in the class I've just seen do you think may be ahead of the other students in the class (if you feel anyone is)?

   Possible probes:

   - How can you tell (or what makes you think that person is ahead)?

6. I noticed today in your lesson you did _____(describe an activity or interaction of interest to you with a struggling learner, preferably a learning disabled student, a student with behavioral difficulties, or another student who may be perceived to be having problems in class). Talk with me about why you chose that particular strategy.

   - How do you think it worked?

7. Talk with me a little bit about (struggling learner's name or description) response to that part of the class.

   - How do you think things went for him/her?

   - Explain why you say that.

8. I also noticed that today in your lesson you did _____(describe an activity or interaction of interest to you with a target child: a gifted or highly able student.) Tell me about why you chose that particular strategy.

   - How do you think it worked?

9. Now talk with me a bit about (target child's name or description) response to that part of the class.

   - How do you think things went for him/her?

   - Explain why you say that.

10. Was there a point in the class today when you were conscious of wanting to alter your strategy with any of the students? Tell me what you were thinking then or might be thinking now about that point in the lesson.

11. If you taught it again, are there any other strategies that you might want to use in this lesson?

Second Interview

1. What is most important for me to know about the class I observed today?

2. How did you decide what to do today in class?

   Possible probes:

   - Who or what influenced your decisions?

   - What things did you consider?

   - Did you think about specific students?

3. I noticed today in your lesson you did _____(describe an activity or interaction of interest to you with a struggling learner, preferably a learning disabled student, a student with behavioral difficulties or another student who may be perceived to be having problems in class). Talk with me about why you chose that particular strategy.

   - How do you think it worked?

4. Talk with me a little bit about (struggling learner's name or description) response to that part of the class.

   - How do you think things went for him/her?

   - Explain why you say that.

5. I also noticed that today in your lesson you did _____(describe an activity or interaction of interest to you with a target child, a gifted or highly able student.) Tell me about why you chose that particular strategy.

   - How do you think it worked?

6. Now talk with me a bit about (target child's name or description) response to that part of the class.

   - How do you think things went for him/her?

   - Explain why you say that.

7. Was there a point in the class today when you were conscious of wanting to alter your strategy with any of the students? Tell me what you were thinking then or might be thinking now about that point in the lesson.

8. If you taught it again, are there any other strategies that you might want to use in this lesson?

Final Interview

1. What is most important for me to know about the class I observed today?

2. How did you decide what to do today in class?

   Possible probes:

   - Who or what influenced your decisions?

   - What things did you consider?

   - Did you think about specific students?

3. To what kinds of students do you find yourself trying to pay special attention and trying to adjust your teaching?

4. When you first started student teaching how would you have rated your confidence in adjusting instruction for students with learning problems?

   - Has that changed since you began?

   - How would you rate your confidence now?

   - What do you think has accounted for the change?

5. When you first started student teaching how would you have rated your confidence in adjusting instruction for gifted or highly able students?

   - Has that changed since you began teaching?

   - How would you rate your confidence now?

   - What do you think has accounted for the change?

6. Has your supervising teacher (clinical instructor) or university supervisor talked with you about adjusting your lessons to deal with differing needs of students?

   - What advice or instructions did he/she give you?

   - Specifically, what did he/she tell you?

   - Did he/she suggest any particular strategies or techniques to meet the differing needs of students?

7. How do you yourself feel about trying to figure out what the differing needs of students might be and about teaching to meet those needs?

8. What have you tried to do in the classroom to make your instruction appropriate for a range of students?

   -What strategies might you use later in your teaching to address differing student needs that you've not used so far this year or that I have not seen you use?

9. Is there anything you'd like to know more about so that you'd feel more comfortable addressing a range of student needs?

10. I asked you in the first interview who you thought was struggling in class and who you thought was really ahead of other students. I also asked you how you make those decisions. How have you monitored student readiness and needs? Has any of that changed since you began?

Be sure to thank both the novice teacher and the cooperating teacher for their assistance with the research project and let them know that they have played an important role in helping us understand an essential facet of learning to be an effective teacher. If you have the opportunity, be certain to share our appreciation with the principal as well.

Appendix D

Classroom Practices Observation of Preservice Teachers (CPO)

UNIVERSITY OF VIRGINIA
Classroom Practices Observation of Preservice Teachers
Data Collection Form

Observer Novice _____

Teacher Code Number _____ Date of Observation _____

Observation Number _____

As you observe interactions of the preservice teacher with Target Student(s), please record and explain instances of differentiated instruction as indicated by the following:

INDICATOR	STUDENT CATEGORY (T/S/G)	DESCRIPTION OF EVENT/ACTIVITY (including approx. duration)
Target Student(s) was/were assigned different content from others in the class		Target Student(s) was/were assigned a different practice or sense-making activity from others in the class
Target Student(s) was/were assigned a different product or output task from others in the class		Target Student(s) was/were allowed to omit part or all of the content or task
Target Student(s) was/were assigned a different homework assignment than others in the class		Target Student(s) was/were working on an independent study assignment based on advanced material and/or student interest

INDICATOR	STUDENT CATEGORY (T/S/G)	DESCRIPTION OF EVENT/ACTIVITY (including approx. duration)
Target Student(s) was/were working on a small group task designed to present him/her/them advanced materials and/or tasks		What evidence do you see that the preservice teacher is aware of the presence/needs of any target students? How is that awareness expressed?
What evidence do you see that the preservice teacher does or does not possess and/or use a range of teaching strategies which should be helpful in meeting the needs of target students?		

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NRC G/T

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