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Studying and Understanding the Instructional Contexts of Classrooms: Using our Past to Forge our Future

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In this article, we focus particularly on the instructional contexts of classrooms. We discuss five interrelated questions: (a) How has classroom context been defined? (b) Why is classroom context important to study? (c) How have classroom and instructional contexts been studied? (d) What are the essential components for studying the instructional contexts of classrooms? (e) What are the future directions for the study of classroom contexts?

The study of classroom contexts has a long history but has remained somewhat on the periphery in our discipline of educational psychology. Although most formal instruction takes place in classrooms, educational psychologists have tended to study educational outcomes and processes from the perspective of individual differences, as if students' membership in classrooms were irrelevant or "noise" in our data analyses. A quick glance at major journals in educational psychology reveals many more research articles focused on intrapsychological processes than on those interpersonal factors that may influence such processes. Similarly, we have a tradition in educational psychology of pursuing questions outside of classrooms or so-called authentic learning situations. We appear to want to isolate basic processes by controlling for other influences on student learning, motivation, and achievement. Classroom research is messy, but it is our contention in this article that it is precisely this error variance that needs to be explored.

As we read the literature and attend conferences, we see a growing interest in the study of classroom contexts. Although there does not appear to be a common definition of *context* among researchers who use the term, there is a general increase in the willingness to experiment with a variety of methodologies that provide better answers to our increasingly more complex questions. In this article on classroom contexts, we revisit our past, discuss the present, and speculate about the future of classroom-based research in educational psychology. More specifically, we discuss five interrelated questions: (a) How has classroom context been defined? (b) Why is classroom context important to study? (c) How have classroom and instructional contexts been studied? (d) What are the essential components for studying the instructional contexts of classrooms? (e) What are future directions for the study of classroom contexts?

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HOW HAS CLASSROOM CONTEXT BEEN DEFINED?

At first glance, the meaning of *classroom context* seems self-evident, but our search in the literature revealed almost as many definitions as studies. In most instances these definitions were implicit rather than explicit. One of the central areas of confusion is the use of classroom context to denote both the study of variables that contribute to understanding context and the specific research goal of studying context. In other words, there is research that attempts to understand the interrelations among the parts and there is research that focuses on the whole, which is defined as more than the sum of its parts. Most research on classroom contexts has examined variables that focus on various parts of the classroom context. There-

fore, most of the research we examine in this article refers to the first type.

Classroom context has been variously studied as the beliefs, goals, values, perceptions, behaviors, classroom management, social relations, physical space, and social-emotional and evaluative climates that contribute to the participants' understanding of the classroom. The variety of lenses that have been used to examine classrooms reflect the multiple and interconnected contexts within each classroom. For example, the *instructional context* is a distinct but overlapping aspect of the classroom context and includes the influences of the teacher, students, content area, and instructional activities on learning, teaching, and motivation. The various contexts within a classroom, such as the instructional context, are naturally difficult to define because they are simultaneous and interdependent, making them fluid rather than static. In addition, definitions vary widely depending on whether they have been examined from psychological, educational, sociological, or anthropological perspectives.

Our research focuses on the instructional contexts of classrooms, specifically on the relation between academic instruction and motivation to learn. Therefore, we are interested in understanding lessons (within units) as they unfold over the course of a school year and the student, teacher, task, and discipline-related factors that influence teaching, learning, and motivation. We have chosen to focus our discussion in this article on instructional contexts in the classroom, whereas the other authors in this special issue discuss different aspects of the classroom context.

WHY IS CLASSROOM CONTEXT IMPORTANT TO STUDY?

For many years in educational psychology, researchers not only avoided the study of contexts but also studied teaching and learning as separate entities (Shuell, 1996). Although students' and teachers' experiences are acknowledged to be a gestalt, researchers tended to isolate variables rather than try to understand the complex interaction of thought, motivation, and affect. There are many reasons why the study of classroom contexts has become critical for understanding educational processes and outcomes. We highlight four of the most compelling rationales.

First, although we have learned a great deal about effective teaching practices (Brophy & Good, 1986), what students learn and how their learning develops involves their psychological reactions to the instructional context. For example, Dunkin and Biddle's (1974) model of teaching included instructional approaches as process variables reflecting the interaction among teachers and their students. They found that the effects of a pedagogical approach were influenced by developmental level, prior knowledge of students and teachers, the cultural context of instruction, the content area, the academic goals being pursued, rules for speaking and participating, activity segments, and multiple additional factors. Similarly, Brophy and Good summarized nearly 2 decades of process–product research: "[W]hat constitutes effective instruction (even if attention is restricted to achievement as the sole outcome of interest) varies with context" (p. 370). This conclusion suggests that context has a major role in increasing our understanding of what and how students learn. For example, Grolnick and Ryan (1987) found greater student interest and higher level learning in instructional contexts that supported more student autonomy.

Second, instruction and learning differ by content area. Disciplines have distinct traditions and specific notions of what counts as learning. What students learn and how their learning is motivated involve their psychological reactions to content activities. Stodolsky (1988) demonstrated that the instructional forms in different content areas differ, and thus, they differentially affect students' ideas about how to learn a school subject such as mathematics or social studies. Acknowledging this fact, Dunkin and Biddle (1974) included subject matter in their model of teaching as part of the setting or context. However, the importance of content or subject matter has been largely ignored in psychological theory and research (Shuell, 1996; Shulman & Quinlan, 1996; Stodolosky, 1988; Wineburg, 1996). An individual difference perspective in theory and research does not inform the contextual question of how teachers socialize students into domain-specific ways of learning and the differences in domain-specific ways of knowing (e.g., Greeno, Collins, & Resnick, 1996). Understanding how psychological mechanisms function in a discipline-specific context allows teachers to analyze student responses to content-situated instructional decisions.

Third, recent theoretical advances have begun to provide interpretive frameworks for thinking about classroom contexts that were missing from earlier, more atheoretical approaches. Social constructivist perspectives, for example, offer conceptual approaches that suggest how context may affect learning and motivation (e.g., Ames, 1992; Blumenfeld, 1992; Pintrich, Marx, & Boyle, 1993). Theoretical frameworks such as goal theory, flow theory, and constructivism allow us to test assumptions about contexts. For instance, goal theory leads us to ask how teachers and school organizations establish goal structures and how those structures affect students' motivation and achievement. To illustrate, Ames and Archer (1988) and Nolen (1988) found that students who reported more mastery-oriented goals in their classroom contexts focused on learning and improvement and also reported higher levels of deep strategy use. Similarly, Stipek and Daniels (1988) determined that kindergarten children in highly evaluative instructional contexts rated their competence lower than peers in settings with less salient evaluation practices.

In addition, educational psychologists have adopted new methods, both quantitative and qualitative, to help us study complex constructs. Researchers are beginning to use these methods as complementary, rather than conflicting, approaches. The increase in use of qualitative methods within this social constructivist framework is important because, as

Behrens and Smith (1996) noted, qualitative methods help us understand the black box that the classroom has become. As we move from a study of inputs and outputs to a more integrated notion of classroom processes, we need to ask different questions using contextualized theories and methods. Such new conceptualizations are still in their infancies, both in terms of increasing our theoretical knowledge (e.g., Pintrich, 2000) and in proposing appropriate methodology. Nevertheless, they provide a fresh impetus for theory and research.

Finally, educational psychology will not be viewed as relevant to educational practice, including having a role in the education of teachers, unless we conduct "studies that investigate the relationship among cognitive, affective, social, and motivational aspects of learning from instruction" (Shuell, 1996, p. 760). Contextualized findings provide more externally valid information for teachers because they help explain the why and how behind student–teacher interactions. Teachers base their practice on understanding individual students within contexts (Feiman-Nemser & Floden, 1986), not on generalizations about students void of specifics. This situated knowledge is important for teachers who reflect on their practice and desire to create classroom environments that involve students in learning. For example, Wood, Cobb, and Yackel (1990) reported on a second-grade teacher who changed the instructional context of her classroom after discovering that her high achieving math students correctly used the algorithms for determining place value but did not understand the concept of place value.

Although the distance between theory and practice may be great, it is a central role of educational research to understand the gaps when they exist and to explain the complexities of classroom life.

HOW HAVE CLASSROOM AND INSTRUCTIONAL CONTEXTS BEEN STUDIED?

We addressed this question by compiling a list of research studies that have contributed to our knowledge of the influences of classroom and instructional contexts on achievement, learning, and motivation. Table 1 reveals our categorization of major areas of classroom research in which contextual variables or processes have been examined. We view the interrelations among variables that influence context as also being the products of context. For example, a teacher's or a student's self-efficacy in a content area is as much a factor in instruction or learning as it is an outcome of achievement or failure in attaining that goal.

Several considerations guided our selection of the studies in Table 1. First, our intention was not to provide a comprehensive list but to include studies representative of methods and topics. Second, we focused primarily on studies from the last 2 decades. Because there are excellent reviews of earlier work (e.g., Brophy & Good, 1986), we do not attempt to review all of the important process–product research. Third, we have selected research that is primarily psychological, despite the richness of research on classroom context from other disciplinary perspectives (e.g., Jackson, 1968). We have divided this body of research into nine categories, which we briefly discuss.

Research Topics Studied in Educational Research on Classroom Learning and Teaching

One of the richest and most prolific areas of research is the process–product literature from the 1970s and 1980s that investigated the influence of teacher behaviors on student achievement (Brophy & Good, 1986). Many studies converged to demonstrate the academic effects of teacher management (Doyle, 1981; Kounin, 1970), direct instructional strategies (e.g., Good & Grouws, 1979), and opportunity to learn (e.g., Evertson, Anderson, Anderson, & Brophy, 1980). More explicitly, this group of studies shared a common goal of finding the teacher input or inputs that afforded the best student output (i.e., achievement). This work was primarily functionally and empirically driven. The goal was to determine the teacher characteristics or behaviors that were correlated with achievement gain and then to follow up with experimental studies to see if the relations were causal. Focusing on how and why was not a central goal of this body of research. However, we learned much about the multiplicity of classroom behaviors that could be observed and about how to observe in classrooms (e.g., Good & Brophy, 2000; see the section titled "Observation Methods").

At about the same time, measures of classroom interaction (Flanders, 1970) and classroom climate (Trickett & Moos, 1974) appeared. The Flanders scale measured the effects of teacher indirectness (e.g., questioning, accepting and clarifying ideas, and praising or encouraging) on student attitudes and achievements. Although the measured behaviors were generic, Flanders found that teacher flexibility, such as using more directness in skill instruction and more indirectness to support abstract reasoning or creativity, was positively related to student attitude and achievement. Moreover, an important finding from Flanders's work, like that of the process–product studies (Good & Brophy, 1986), was the conclusion that optimal teaching varied with situations. These studies of classroom climate involved coding observational data and provided some of the first attempts to understand the context or environment that teaching and learning share.

In the 1980s, alternative conceptions of teaching and learning began to guide research in classrooms. These studies reconceptualized the learning process as a mediated one. As students' self-regulation became a primary topic of study (Zimmerman, Bandura, & Martinez-Pons, 1992; Zimmerman & Schunk, 1989), their perceptions and self-reports became more common in educational research. Studies of mediating factors such as activity and grouping structures, students' and teachers' perceptions, and classroom discourse continue to the present time. Some of these studies combined a process–product approach with observation, think-alouds, surveys, and rat-

TABLE 1
Classroom Research Areas, Representative Studies, and Methodologies

Research Areas	*Representative Studies*	*Methodology*
Classroom climate	Flanders Interaction Analysis Categories (Flanders, 1970)	Observation coding categories of teacher behavior.
	Classroom Environment Scale (Trickett & Moos, 1974)	Participant rating scale/checklist.
Teacher behaviors (process–product studies)	Beginning Teacher Evaluation Study	Phase II: low inference systems focused on teacher and nature of instruction and on the activities of target students.
	McDonald and Elias, 1976; Berliner and Tikunoff, 1976	Phase III A: ethnography used to create 61 dimensions of effectiveness.
	Soar, 1977	Observations of teacher interaction, teacher affect, classroom management, development of subject matter, and cognitive level of discourse.
	Stallings, 1975	Observations of teacher behaviors and student responses to one of seven instructional models.
	Good and Grouws, 1977, 1979	Observations of teachers' mathematics instruction and management; intervention using a model of mathematics instruction.
	Brophy and Evertson, 1976	Observations (i.e., event sampling of specific categories of behaviors) and teacher interviews related to stability of achievement outcomes in elementary classes.
Student perceptions and responses	Peterson and Swing, 1982	Stimulated recall (using videotapes) of students' thought processes during instruction.
	Marshall and Weinstein, 1986	Student responses to vignettes of teacher differential treatment and observations (i.e., narrative records of teacher–student interaction) later quantified in a categorical observation scale.
	Ames and Archer, 1988	Surveys of students' achievement goals.
	Meece, Blumenfeld, and Hoyle, 1988	Surveys and observations (structured narrative records) of students' achievement goals and cognitive engagement in science.
	Feldlaufer, Midgley, and Eccles, 1988	Student and teacher surveys and observations (i.e., high and low inference rating scales) on friendliness, supportiveness, and caring.
	McCaslin and Murdock, 1991	Interviews, experience sampling, classroom observation related to home and school effects on students' learning and motivation.
	Anderman and Midgley, 1997	Surveys of student perceptions of own goals and classroom goal structures.
Teacher perceptions	Ashton and Webb, 1986	Ethnography, interviews, questionnaires, and rating scales related to teacher efficacy.
	Midgley, Feldlaufer, and Eccles, 1989	Surveys of students' beliefs in mathematics and teacher efficacy.
	Midgley, Anderman, and Hicks, 1995	Surveys of teachers' and students' perceptions of the school goal structure.
Classroom discourse	Cazden, Carrasco, Maldonado-Guzman, and Ericson, 1980	Observation, narratives, and videotapes of teacher–student interaction patterns.
	Mehan, 1979, 1985	Videotapes of classroom teacher–student interactions.
	Turner et al., 1998	Experience sampling of student involvement; observation and discourse analysis of classroom mathematics instruction.
Instructional and motivational strategies	Marshall, 1987	Structured narrative observations of teachers' motivational strategies.
	Meece, 1991	Surveys and observations of teachers' instructional strategies related to classroom goal structures in science.
	Blumenfeld, Puro, and Mergendoller, 1992	Questionnaires and observations (i.e., narrative records) to identify teacher behaviors related to student motivation and cognitive engagement.
	Skinner and Belmont, 1993	Teacher and student surveys; teachers' reports of student engagement.

	Au and Carroll, 1997	Classroom observations and analysis of student portfolios, including achievement measures.
	Fuchs et al., 1997	Teacher ratings of students and student questionnaires related to motivation and achievement in mathematics.
	Meyer, Turner, and Spencer, 1997	Surveys and interviews related to students' achievement goals in project-based mathematics.
Activity structures	Berliner, 1983	Observer rating scale to identify activity segments in elementary classrooms.
	Anderson, Brubaker, Alleman-Brooks, and Duffy, 1985	Observations of seatwork activity in first grade.
	Oakes, 1985	Interviews, school documents, and classroom materials; questionnaires and observations related to academic tracking.
	Stodolsky, 1988	Narrative and structured observations of instruction and students in mathematics and social studies classes.
	Webb, 1982	Coding of audio recordings of students' verbal interactions in cooperative mathematics groups.
Teacher and peer relationships	Juvonen and Murdock, 1993	Questionnaires involving attributions to hypothetical situations related to peer popularity and teacher liking.
	Ladson-Billings, 1994	Ethnographic observations; interviews with successful teachers.
	Wentzel, 1998	Surveys of students' social goals in schools.
Content areas		
Reading	Dahl and Freppon, 1995	Observations (i.e., narrative field notes); spontaneous utterances of focal students captured on audiotape during learning activities.
	Turner, 1995	Structured observations of students during learning activities; observation of teachers (i.e., narrative field notes with verbatim discourse); student interviews; analysis of tasks.
Mathematics	Stigler, Lee, and Stevenson, 1987	Structured observations (i.e., time sampling) of students and teachers during mathematics instruction.
	Cobb, Wood, Yackel, and McNeal, 1992	Structured analysis of videotaped and transcribed mathematics lessons.
Science	Lee and Anderson, 1993	Structured and narrative classroom observations and semistructured interviews of focal students; self-report questionnaires related to conceptual change.
	Krajcik, Blumenfeld, Marx, Bass, and Fredricks, 1998	Structured observations (from videotapes); interviews with target students; artifacts; cases constructed for eight target students' learning in project-based science.
Social studies	Brophy and Alleman, 1991	Theoretical analysis of how activities influence students' achievement of curricular goals.
	Leinhardt, 1993	Observations of teachers and students in history.

ing scales. Researchers began to blend their data from observations and checklists with data that tapped teachers' and students' perceptions of these experiences. Over time, these self-report measures frequently became used without any observation of the classroom, limiting researchers' understandings of the contexts in which they collected their self-report data. During this same time span, classroom researchers also adopted more qualitative methods, such as sociolinguistic and ethnographic approaches. Thus, from the decade of the 1980s emerged a more diverse and complex understanding of classrooms that enticed researchers into new topics (e.g., motivational strategies) and methods (e.g., discourse analysis, experience sampling method, video-stimulated think-alouds or interviews, etc.; see discussions of some of these methods in later sections of this article).

More recently, studies of the influence of instructional strategies and teacher and peer relations have appeared. These studies address teaching and learning at multiple levels by considering the simultaneous goals within classrooms: cognitive, motivational, emotional, and social. Although these studies have addressed variables of classroom context in more complex ways, much of this complexity has been in the methodology (e.g., well-constructed surveys) and the analyses (e.g., path analysis, multidimensional scaling, hierarchical linear modeling [see Lee, 2000], etc.) rather than in the design. Once again, this work was conducted to understand more about perceptions of classroom contexts and the interrelations among theoretical constructs related to classroom learning and motivation, but these studies seldom took place in classrooms other than to administer the self-report instruments.

Finally, we have included studies of learning in the content areas as a separate research topic focus because the primary goals of these studies were situated within a discipline. The content area studies could be interspersed among the previous categories because they also examined contextual factors such as teacher behavior or activity structure, but they are a distinct body of research. Historically, educational psychologists were more likely to study aspects of classrooms such as students' time on task or the effects of grouping without examining potential content area influences (e.g., type of questions, participation patterns, etc.). However, in the last decade researchers have demonstrated the importance of content domains both in terms of activity structures (e.g., Stodolsky, 1988) and domain-related instructional and motivational goals (e.g., Blumenfeld, Puro, & Mergendoller, 1992; Turner, 1995; Turner et al., 1998). Although much of the earlier discipline-specific research was focused on curriculum development, now more research is concerned with the psychological processes specific to content domains within classroom contexts.

In summary, Table 1 reflects the changing focus on teaching and learning over time as well as attention to mediators of learning (e.g., students' perceptions, strategy use, etc.) and other processes within classroom contexts such as peer groups, academic grouping patterns, and the nature of instructional discourse. In the following section, we closely examine the methodologies that have been used to study classroom and instructional contexts.

METHODOLOGY DIFFERENCES IN THE STUDY OF CLASSROOMS

As we reviewed the literature on classroom research, we noted that particular types of methods have been more common for certain categories of research. For example, process–product researchers used observation checklists a great deal, although not exclusively. Similarly, researchers of student and teacher perceptions and those who study peer relationships often relied on self-report measures. Such choices reflect both the state of the art in research methods at the time and the fit between the research question and an effective method for answering it. However, all methods have advantages and disadvantages, and thus exclusive use of one method may fail to consider important information about the classroom context, limiting and possibly even distorting the picture. In this section we briefly describe and discuss the methods that are commonly found in research that taps classroom context variables. Within the discussion of each method we also highlight some of its advantages and disadvantages.

Observation Methods

Observation methods have been used consistently since the earliest process–product studies. Consistent with their assumptions that teachers' behaviors had direct effects on student outcomes, process–product researchers often studied teacher behaviors with observer checklists (Evertson & Green, 1986). These low-inference systems were typically based either on time or event sampling. In time sampling, all target behaviors that occurred during specified time intervals (e.g., every minute) were recorded. In event sampling, the researcher specified a locus of observation such as seat work during reading, but not a time parameter, and sampled all behaviors related to the event. These research methods, though groundbreaking at the time, suffered from several limitations (Dunkin & Biddle, 1974), including the failure to consider the processes of classroom teaching, the atheoretical nature of the variables, the inadequate measure of student learning, and a failure to consider contextual effects or how situations varied.

However, observation methods have not been confined to checklists and rating scales. Descriptive and narrative observations are more open systems whose purpose is to provide "detailed descriptions of observed phenomena, explain unfolding processes, (and) identify generic principles and patterns of behavior in specific situations" (Evertson & Green, 1986, p. 169). Descriptive and narrative systems differ in their degree of structure. Descriptive systems often use a pri-

ori categories derived from theoretical research and are analyzed from the perspective of those categories. For example, Blumenfeld et al. (1992), in a study of how teacher practices help students translate learning goals into self-regulatory behavior, audiotaped and transcribed 150 lessons in elementary science classrooms. The researchers coded the transcripts to describe lesson content, including facts and concepts; instruction, including directions, explanations of concepts, and modeling of cognitive strategies; question and feedback patterns; motivational techniques, including practices designed to enhance the value or interest of the task; management, including how teachers monitored tasks and how they elicited and insured participation; and accountability of how teachers evaluated task completion.

Narrative or ethnographic systems aim to record broad segments of events, often including verbatim speech and descriptions and interpretations of ongoing events. They may use field notes, specimen records, critical incidents, artifacts, or diaries. Of all the observation approaches, this one depends most heavily on the skills of the observer because what is recorded is a function of the observer's perceptions (or interests and biases) and his or her ability to capture and make understandable what was observed. Narrative records, although written, resemble video- and audiotapes because of their sequential treatment of a "slice of life" and because no attempt is made to select events for observation (Evertson & Green, 1986). For example, Phase III of The Beginning Teacher Evaluation Study used ethnographic methods to describe reading and mathematics instruction (Berliner & Tikunoff, 1976) and then to generate protocols that distinguished effective from ineffective teachers. In another example of narrative methods, Ashton and Webb (1986) conducted a participant observation study on teacher efficacy for 1 year in two middle school classrooms and two junior high classrooms. The goal was to produce an account of the four teachers' perspectives and practices and ultimately "to discover cultural themes that connected attitudes to actions and had explanatory power" (p. 104). Another example is Ladson-Billings's (1994) observations—30 times in each of eight classrooms over 1 school year—to discern the pedagogical practices of exemplary teachers of African American children. She used field notes, audio recordings, and on-site or telephone conferences with teachers to interpret her data.

Advantages and disadvantages of observations. The prime advantage of observations for studying classroom contexts is that they can paint a descriptive picture of the context. They may allow us to see how people interact and to hear what they say. Another advantage of observations is that they can be used to verify and interpret patterns found using other methods (e.g., survey findings, interviews, or achievement data). Observations can be used deductively to test theory or inductively to generate theory. Turner (1995) used observations to help explain the differences in first graders' interview responses about the goals and purposes of literacy. Some students described reading and writing as a meaningful, enjoyable route to communicating with and understanding others. Other students described literacy as a fairly mechanical activity that one performs to meet teachers' expectations for completion. Observations revealed that the literacy tasks teachers selected (e.g., drills vs. reading books and writing stories) and the messages teachers sent during instruction (e.g., the importance of speed and accuracy vs. understanding) helped to form students' notions of literacy as meaningful or mechanical.

The disadvantages of observations vary with type. When using low inference measures, the observer may not accurately represent or understand the perceptions of the participants. For example, time on task is often used as a low inference measure of student engagement, but as Peterson and Swing (1982) discovered, students who appear engaged in class work to the observer may actually be engaged in other things.

High inference observations can have some drawbacks as well. First, because they are so labor intensive, they usually involve a small number of participants or contexts. This makes them less likely to be generalizable to other individuals or situations. On the other hand, generalizability is not necessarily the goal; rather, the goal is to understand one or two settings very well. Second, in the use of high inference observations, observers must be very careful to demonstrate the reliability and validity of their conclusions and explain their roles, belief systems, and biases at the beginning of the research. Otherwise, the research may be subject to criticisms of bias or "only seeing what you want to see." As with any method, the representation is filtered through the tool used (e.g., the observation instrument) and the way in which the data were collected. This last disadvantage points out the importance of researchers' perceptions of participants in studies of classroom context as measured with self-report measures.

Common Methods Using Self-Report

Self-reports, such as surveys and questionnaires, are common approaches used to study classroom contexts. For example, surveys have been used extensively in studies measuring students' and teachers' beliefs and behaviors, instructional and motivational strategies, and teacher and peer relationships. For all these research areas, the individual's perception is key and becomes the standard for judging or evaluating the situation or relationship. For example, students' perceptions of the goal structures of their classrooms or of teacher differential treatment are important variables for understanding how classroom context affects participants. To illustrate, Feldlaufer, Midgley, and Eccles (1988) used surveys to assess student and teacher perceptions of the classroom environment before and after the transition to junior high school. Researchers asked students to respond to questions about social comparison of

abilities, competition among students, and their teachers' fairness, friendliness, and interest in mathematics. Teachers were asked to respond to questions about general teaching and grading practices, discipline techniques, reward strategies, and opportunities for student autonomy and cooperative interaction. A second example is Marshall and Weinstein's (1986) study of students' perceptions of differential treatment in the classroom. Students were given vignettes and asked to rate the frequency of 30 teacher behaviors toward a hypothetical male or female high-achieving or low-achieving student. There were three scales of behaviors—negative feedback and teacher direction, work and rule orientation, and high expectations of opportunity and choice. It is interesting to note that both these studies also used observations to contextualize the students' perceptions.

Another lesser known type of self-report is the experience sampling method (ESM; Csikszentmihalyi & Larson, 1987). The original procedure for using the ESM is to electronically "beep" students randomly during the day, prompting them to complete an experience sampling form by describing their thoughts and feelings at that specific time. For example, respondents may indicate degree of affect (e.g., do you feel more happy or sad?), potency (e.g., are you feeling more bored or excited?), cognitive efficiency, and degree of engagement on 9-point scales. In addition, they are asked to assess their intrinsic motivation and to judge how challenging the present activity is for them and how well they feel their skills match the challenge. These responses then become the raw data for examining variations in the subjective experiences of persons interacting in their natural environments. Although this method has primarily been used to study individual differences, some researchers have adapted it to study classroom contexts. For example, McCaslin and Murdock (1991) used experience sampling in conjunction with other methods to study patterns of students' adaptive learning and the influence of teachers and tasks on that learning. For 3 weeks, students recorded their thoughts and behaviors at intervals "designed to capture the full array of the moment-to-moment of classroom learning" (p. 226). Each entry included information about the task in progress, a description of what teachers and students were doing, metacognitive awareness (i.e., how the student felt), and level of concentration. These journals revealed rich portraits of students' perceptions of the classroom, their teachers and peers, and their schoolwork.

Advantages and disadvantages of self-reports. Self-reports have several advantages as measures of student and teacher perceptions because they provide a vehicle for understanding differential experiences within the same classroom. First, they are theoretically driven, moving from general inferences through deductive logic to tentative hypotheses about particular events or outcomes. Thus, they can test theory in classrooms. Second, there are well-established psychometric procedures for examining construct validity and reliability of survey items, which heightens confidence in self-report results. Third, they are relatively efficient as measures, making a large sample fairly easy to gather, even over several waves. This implies the fourth advantage—the generalizability that such measures afford when large sample sizes are used.

An additional advantage related specifically to the ESM is ecological validity. The ESM solicits moment-to-moment responses that are specific to time and place, thus alleviating the dilemma of interpreting global or retrospective responses associated with self-reports. The ESM also allows the researcher to tap individuals' responses at many times and in many settings, providing a portrait of a person's thoughts and feelings over time and place. It has the potential to indicate where a person was and what a person was doing when feeling most (or least) positive, engaged, intellectually energized, and so forth, and thus point to maximizing conditions for intrinsic motivation.

The major disadvantage of self-reports is that they do not provide information about events or interactions in the classroom, thus obscuring the why and how. For example, studies of students' perceptions of classroom goals have shown significant differences among classrooms in goal structure. Although theory proposes the reasons for such differences, it is not possible to discern from these studies how teachers help establish different goals or what elements of instruction or social climate help enculturate goals. Consequently, some studies of student perceptions have complemented survey measures with observations or interviews.

Interview Methods

Although interviewing is common in research from sociology and anthropology, interviews as a classroom research tool are fairly new (McCaslin & Good, 1996). Interviewing, like observations, can be a tightly controlled top–down or an emergent bottom–up procedure. An interview may be preplanned with participants who have been selected based on their ability to provide valid and reliable information and the interview data coded for a priori categories. On the other hand, the interview method itself may be an integral part of the research process by allowing the research questions, the choice of interviewees, and the theoretical constructs to emerge as interviews are conducted. Thus, interviews may fall on a continuum. They range from the structured or directed interview with predesignated questions and a preconceived set of theoretical constructs for interpretation to the narrative interview in which participants are asked to tell their stories in open and unstructured ways. Whereas the structured interview borrows such terms as *reliability* and *validity* from traditional educational research methods, the narrative interview stems from ethnography. Although, when used as a classroom research tool its use is not necessarily taking an ethnographic approach (see Eisenhart & Borko, 1993).

Other methods of interviewing fall within the center of this continuum by being theoretically based and semistructured but at the same time emergent, such as the active interview described by Holstein and Gubrium (1995), who explained that

> One's methodological approach unavoidably shapes what phenomena can potentially be, and vice versa. Put slightly differently, the way that one construes the topic under consideration both dictates and is shaped by one's strategies for empirical observation. Active interviewing, then, can develop its topics as much from indigenous activities and meanings as from preexisting interests or preestablished agendas. (p. 73)

Therefore, interviews, like many other qualitative methods of classroom investigation, provide opportunities to instantiate and enlighten our theories and empirical literature base as well as to inform theory and practice by giving us first-person accounts of the contexts that we study. Within this method, researchers may take deductive approaches, inductive approaches, or a combination of both.

Advantages and disadvantages of interviews. Interviews provide important insights into our interpretations of classroom contexts as researchers. They help to illuminate how our constructs are experienced by the participants in different ways. Interviews not only check our understanding of the questions we are exploring, but they help us to see how our constructs have distinct meaning that cannot be separated from the situation in which they are experienced and studied. For example, in our research (Meyer, Turner, & Spencer, 1997) we interviewed upper elementary students about a project-based mathematics unit as they completed it, trying to understand how they were perceiving the level of challenge, ambiguity, and their personal success in the project. When we examined survey data on each student we found that their beliefs about the goal orientation of the classroom and their personal goal orientation, self-efficacy, and preference for difficulty in mathematics were interrelated in unique ways that seemed to shape their learning strategies and outcomes. Although we could classify students based on their surveys as challenge seekers and challenge avoiders, the interviews provided different reasons and personal strategies for either seeking or avoiding the challenges of the math project. Whereas some challenge seekers enjoyed anything mathematical and working with peers, other seekers were successful because the project required individual problem-solving opportunities. Similarly, students who avoided the learning goals of the project did so for different reasons. Some students went to extremes to avoid appearing less able than their peers. Other avoiders who appeared successful revealed in their interviews that they truly did not feel successful because they had played it safe, using the teacher's support as a crutch. Our interview findings highlight two compelling advantages of interviewing: Interviews illuminate the why and how behind the observed actions or self-reports, and they allow for constructs to be redefined by the participants and for new perspectives on theoretical concepts to emerge (e.g., ambiguity in a problem can be a two-edged sword—it can prompt problem solving or camouflage avoidance strategies).

The richness of insights provided by interviews is accompanied by a myriad of pitfalls. Regardless of the type of interviewing approach, the knowledge and skill of the interviewer and the relationship with the interviewee are paramount to capturing the most powerful meanings. The more that the interview method presumes to approach objectivity, the more likely that the method and its findings will fall prey to three common disadvantages or problems of the approach. First, interviews may be negatively influenced by the lack of reliability or consistency in an interviewee's responses. The sooner an interview can take place in relation to the experience being studied, the more emotion and detail will be captured. However, this information may not be reliable because it is a heightened version of what happened. Therefore, allowing time for the emotion to fade and for the participant to reflect may yield more reliable (i.e., stable and consistent) results. However, increasing the time between the experience and the interview may substitute such problems as the inability to recall events, vagueness, or overinterpretation as the interviewee struggles in recollecting the experience.

Second, interview methods also struggle with questions of validity. Validity in an interview is defined by McCaslin and Good (1996) as the degree to which the interviewee is willing and able to share his or her ideas. Reliability issues in the participants' recollections also contribute to whether the interview captured the constructs in an externally valid way. In addition, bias is a major threat to validity. One source of bias in interviews is when interviewers influence the responses through the phrasing of their questions or verbal and nonverbal interactions. Another problem with validity is in the interpretation of responses—the same words do not yield the same meanings for both interviewees and interviewers. A third disadvantage of interviews, like all self-report methods, is the problem of social desirability; the interviewees may answer to please the interviewers or to "look good."

Sociolinguistic Methods: Classroom Discourse Analysis

Sociolinguistic approaches to classroom research help to situate the research topic theoretically and empirically. Theoretically, sociolinguistic methods, such as discourse analysis or semantic analysis (Biddle & Anderson, 1986), explore multiple levels of a dynamic context based on the assumptions that "oral language … weaves the fabric of classroom culture" (Alvermann & Hayes, 1989, p. 305) and that language is used to negotiate meaning. Empirically, sociolinguistic methods have used data collection techniques

such as audio or video recordings and observational notes (Cazden, 1986) to record language. Like the more narrative approaches to observation and interview methods, the results of discourse analyses are more interpretive of the context being studied in comparison to the traditional positivism of process–product methodologies.

Researchers from a variety of paradigms have successfully examined classrooms by adopting sociolinguistic methods. For example, Peterson, Wilkinson, Spinelli, and Swing (1984) merged a process–product approach with a sociolinguistic approach to study cooperative math groups. By observing learning processes sociolinguistically, Peterson et al. identified specific characteristics of successful discourse within the context of small group work and found that discourse was related to student ability. They concluded that the merger of process–product and sociolinguistic paradigms contributed to a greater understanding of the process because the pragmatics of language appeared to mediate achievement (i.e., the higher ability students within the small group assumed a teacher-like discourse pattern to direct the learning of the lower achieving students).

In addition to examining how using language mediates learning, sociolinguistic methods assume a dynamic context for studying classroom linguistic processes (Carlsen, 1991; Needels, 1988). For example, Carlsen contrasted sociolinguistic approaches to traditional process–product approaches of studying the effects of teacher questioning strategies. He criticized the process–product methodology for maintaining a static view of context. His criticisms were illustrated convincingly using the research findings on teacher wait time (i.e., the time between the end of a teacher question and the student response):

> Process–product research on wait time reflects the paradigm's preoccupation with teacher practices and its inattention to the interactive nature of discourse. Wait time is deemed a teacher behavior despite the fact that its termination is normally effected by a student response. (p. 173)

The effects of context on the meaning of teachers' questions and students' responses were central to Carlsen's argument. For example, he noted that classroom talk reflected and reinforced teacher and student status in terms of who was in control.

Carlsen's (1991) proposition that sociolinguistic approaches to classroom discourse are more sensitive to dynamic changes in classroom context is a central assumption for researchers who use discourse analysis. By analyzing turn-by-turn contributions in classroom talk, the teacher and student responses are interpreted within the context they were given. For example, discourse analysis qualifies the student response in terms of the response that preceded it (e.g., a teacher cue, the laugh of a peer) and with respect to the response that follows it (e.g., the absence or presence of a teacher evaluation). Thus, discourse analysis provides a powerful way to explain how contextual influences are interpreted, communicated, sanctioned, and changed within classrooms.

Advantages and disadvantages of discourse analysis. On the one hand, sociolinguistic methods allow researchers to capture a central part of classroom life through verbal interactions, and they may also provide supporting examples for other research findings. For example, there are instances in daily classroom talk when teachers send explicit philosophical messages. In addition, classroom discourse analyses can introduce new constructs or interpretations into the empirical or theoretical literature. In our recent work (Turner et al., 1998), we found that a classification of positive affect did not capture the motivational messages that teachers were sending in their talk. In other words, positive affect was not unequivocal. Although the discourse of many teachers could be classified as emotionally positive, they were sending very different messages. Some teachers were using content-related humor and encouragement to help students stay engaged in difficult learning, whereas other teachers were using jokes and pleasantries to help students eschew challenges and focus on easier and more error-free activities. The major advantage of discourse analysis is its real and in-depth examples of how the immediate context of a lesson was created and maintained. This degree of detail is critical for understanding the complexity of classrooms and the interaction among teachers and students and for informing practice through vivid case examples of lessons unfolding in the common registers of teacher and student talk.

On the other hand, collecting data for discourse analysis, coordinating the transcription of tapes, and coding the transcripts is costly and labor intensive. Because of the large amounts of time involved in discourse approaches, it is common to study a small number of students and teachers. Transcripts of classroom discourse also can be misinterpreted because, like interviews or observations, if the researcher does not understand the contextual meanings and history of the classroom adequately, then the meanings among the participants may not be captured in the analysis. For example, teacher talk that appears to be a reprimand may actually be a subtle encouragement depending on the teacher–student relationship and the typical interaction style in the classroom. In sum, as methods such as discourse analysis help us delve into the study of classroom contexts, they also require us to have fuller knowledge of the participants and environments in which we conduct our research.

WHAT ARE THE ESSENTIAL COMPONENTS FOR STUDYING THE INSTRUCTIONAL CONTEXTS OF CLASSROOMS?

Table 1 was the catalyst for helping us to begin to unravel the multiple definitions and methods of context that are embed-

ded in our history of studying classrooms. Most classroom research has been done using an analytic approach and by studying a few controlled variables. This leads us to pose the question: What are the essential requirements for studying classroom context? We present the following four assumptions as heuristics to address this central question. These four assumptions raise issues about the approaches we choose, the questions we ask, and how we decide to measure our constructs and interpret our findings. To illustrate, we provide an example from our research that has helped us think about each issue. We hasten to add, however, that our experiences offer but one response to these issues. We hope that these examples will provoke thought and discussion among our colleagues.

The Study of Classroom Context Requires the Investigation of More Than One Variable at a Time

If context is a complex phenomenon, then it only seems necessary that context studies will involve a multitude of variables. However, there is a problem with sheer number. As variables increase, so does the possibility that something will happen that is significant—either statistically or conceptually, depending on the research approach. The number of variables matters only if we believe that a whole is the sum of its parts. If context is really a gestalt, then the number of parts we measure misses the point. In that vein, a single multidimensional construct, such as cooperation, may be sufficient for capturing a research question about the collaborative context of a classroom.

Perhaps the best approach to this dilemma is the pragmatic one: define the research question and then decide how to measure it (Tashakkori & Teddlie, 1998). For example, we (Turner et al., 1998) wanted to understand how students' qualities of experience in mathematics classes related to the characteristics of instruction. We used multiple sources of data: (a) students' self-reports of involvement in daily lessons; (b) classroom observations of instruction (e.g., discussion, tasks, teacher and student affect); (c) analysis of teacher instructional discourse from the perspective of scaffolding versus nonscaffolding patterns; and (d) survey measures of students' perceptions of the academic goal structure of the classrooms. To answer our research questions we felt we had to sample the essential elements of the instructional context, which we defined as student perceptions, teacher behaviors, the influence of the content-area ways of knowing, and a larger understanding of how context differed from class to class. Although we were aware that we were measuring parts (e.g., student perceptions, etc.), we also were triangulating these parts (i.e., we were not using them as stand-alone findings but were looking for convergence among our methods and measures). If one source of data contradicted another, we were forced to look for explanations. In that sense, we hoped to gain a sense of a larger meaning than that offered by simply combining variables as proxies of the instructional context.

In addition, we believe that it is important to connect our research questions to theory, often multiple theories, to choose our methods. Therefore, we are always investigating several variables from multiple perspectives and using a multimethod approach (some quantitative, some qualitative); all our methods are chosen to help build a database for understanding specific classroom activities (e.g., math lessons). In sum, we agree that studies of context should have multiple variables. Moreover, these variables should be interpreted in relation to understanding the whole (i.e., context), not just their interrelations or relation to an outcome variable (e.g., student achievement).

Classroom Context Requires a Qualitative and Inductive Component in the Research Program

Qualitative approaches attempt "to understand the qualities or essences of a phenomenon by focusing on the meanings of events and phenomena and the social events that transform these meanings" (Behrens & Smith, 1996, p. 978). Qualitative methods also are more likely to take a systemic approach to understanding the interaction of variables in a complex environment (Miles & Huberman, 1994). They often begin with facts and observations and move through inductive logic to general inferences or theory. This focus would be in contrast to quantitative research that "assumes the meaning and examines the distribution of its occurrence" (Behrens & Smith, p. 978, paraphrasing Dabbs, 1982). Quantitative approaches move from theory through deductive approaches to tentative hypotheses about particular outcomes.

We support the necessity of including qualitative methods because the discovery of what our constructs mean in a particular setting must inform any investigation of context. We have found that we cannot assume that we know what the meaning is for participants without observing and interacting with them, then trying to interpret the data from their perspectives as well as our own. On the other hand, we qualify our endorsement of inductive methods because we have approached our research with specific questions based on theory and a priori categories for analyses. We have allowed our data and the contradictions among our different methods to inform our analyses, and we have changed our coding categories and revisited conclusions based on inductive reasoning. As a result, we have developed new and more contextualized understandings of the theories used to frame our questions. Thus, although we have used inductive reasoning, it has been more likely to come at the interpretation stage of the research effort rather than in the formative stage. Inductive and qualitative approaches appear necessary in studies of context but may be used at different phases of an investigation.

To illustrate, in the Turner et al. (1998) study we gathered both quantitative self-report data and qualitative narrative descriptions of classroom events and teacher discourse. One way to interpret instructional discourse is that it represents

what counts as learning in the content area for the teacher and is one indication of meaning for him or her. Examination of self-reports of students' affective responses to daily lessons and their perceptions of classroom academic goal structure showed no statistically significant differences among the classrooms. Given these data alone, our theoretically driven conclusions would have led us to assume that in these mastery-oriented classrooms there were opportunities to learn and understand mathematics and to strive for improvement. Yet, observational and discourse analyses pointed to distinctly different definitions of what it meant to learn mathematics. Some teachers negotiated meaning with students and transferred responsibility for learning to them, whereas other teachers evaluated students' responses and retained their mathematical authority through control of classroom talk. In addition, the first group of teachers used many ways of fostering intrinsic reasons for learning mathematics, whereas the second group favored extrinsic approaches.

How did the implicit meanings of the participants' actions (i.e., the teachers' discourse and observations of classroom events) inform our conclusions about students' involvement in the mathematics classrooms? We concluded that students' quality of experience was complex and may be defined in at least two ways: as social and as academic. The self-report measures of affect and perceptions of classroom goals seemed to represent more of a social norm, whereas the observations and discourse analysis revealed what counted as mathematics learning in those classrooms. The social norm may have reflected students' notions of a good teacher (e.g., he is nice, he cares about my learning, and he does not use social comparison). Whereas students may all perceive their classrooms as pleasant and fair, their involvement was more related to the perceived challenges in their instruction and to the implicit definitions of what constituted mathematical thinking.

Therefore, in this research example, the use of qualitative data uncovered paradoxical findings that reflected deeper, underlying meanings than the quantitative data could reveal alone. The qualitative data challenged our theoretical understanding of how to characterize a mastery classroom. We cannot claim to know contexts unless we allow the data to provoke contradictions. The contradictions, in turn, force us to make sense of our data, leading to more situated theories of teaching and learning. The end result was that the qualitative data challenged, enriched, and informed our original theoretical notions and empirical findings. We posit that some form of induction at some point in the research process helps one to capture the larger meanings that context represents.

A Study of Classroom Context Should Attempt to Answer the How and Why Questions in Addition to the What Questions

This assumption is closely related to the necessity of qualitative and inductive approaches. We posit that this is a necessary component of research that examines classroom context. We believe a researcher cannot understand the meaning of a classroom construct without understanding how or why it was constituted. To continue with the example from the Turner et al. (1998) study, we collected student self-reports of involvement on the days we observed mathematics classes. Using experience sampling forms, students were asked to judge, on a scale ranging from 1 (*low*) to 9 (*high*), how challenging the present activity was for them and how well they believed their skills matched the challenge. Csikszentmihalyi's (1975) theory of emergent motivation proposes that when challenge and skill measures are both above average, the person is said to be in *flow*. Flow is a positive state of mind that results from being involved in an activity that is chosen for its own sake and that promotes personal growth through challenges of existing abilities. When either challenge or skill is mismatched or perceived as equally low, the person may feel boredom, anxiety, or apathy. Student self-reports become the raw data for examining variations in the subjective experiences of persons interacting in natural environments. Mean daily responses on the challenge and skill measures for each classroom showed that in some classes students reported skills and challenges as above average and balanced, so that learning was both challenging and attainable. In another class, students frequently reported anxiety because they perceived their skills as being lower than the challenges offered. In yet other classes, students reported skills as greatly exceeding challenges, resulting in feelings of boredom or reported apathy when both skill and challenge were low. Although these findings were intriguing, they did not tell us how such perceptions were formed.

Through the teacher discourse analysis we were able to identify some of the instructional practices that co-occurred with these self-reports. For example, in the fifth-grade classroom where students reported anxiety, the teacher often presented the class with abstract problems such as determining how many double dip cones could be made from combinations of eight flavors of ice cream. Although this was an interesting problem with some practical appeal, the students could not work on the problem with any independence. They needed ongoing teacher support and never achieved a level of understanding without her constant backtracking to build more basic understandings. Conversely, in classrooms where students reported boredom, teachers did much of the thinking for the students or reduced mathematical thinking to simple rules and algorithms. In one classroom, a teacher frequently posed questions that she then answered herself. She excused students from accountability, saying, "You don't remember this but … " and proceeded to remind them of a formula they knew. In another classroom in which students reported boredom, the teacher encouraged students to memorize the rule for moving the decimal point to convert from meters to centimeters to millimeters. There was no requirement that the students understand these manipulations. These teachers also controlled most of the classroom talk, possibly sending the

message that students were not capable of contributing to or understanding mathematical knowledge. In sum, the discourse analyses provided some possible answers to how and why students self-reported different levels of involvement.

If the study of classroom contexts is to be valuable, it must be specific enough to advance our understanding of how classroom interactions influence perceptions and achievement. In these examples, we need to know not only what students experienced but which instructional practices may have influenced those perceptions. Such contextualized findings have relevance for teachers who want to examine their mathematics instruction and for researchers from a variety of research areas (e.g., motivation, instructional practices, mathematics, etc.).

The Study of Context Requires That the Researcher be Present in the Classroom

Although investigation of some research questions, such as the influence of activity structures, seems to require the researcher's ongoing presence in the classroom, other topics such as gathering students' and teachers' perceptions may not. Can a researcher understand the context by gathering participants' perceptions or by one- or two-time data collection procedures? Our answer would be that such an understanding would be incomplete because multiple perspectives and multiple contacts are necessary to interpret context accurately. Being present in the classroom on an ongoing basis is important for studying classroom context. For example, all perspectives within a study of the context of a lesson would include those of the students, the teachers, and the observers. As the context incorporates more than the lesson, then the perspectives of others (e.g., parents, administrators, staff, community, etc.) also come into play. Similarly, multiple contact points are necessary because the study of context assumes that it is dynamic. Therefore, research designs must involve multiple points or, better yet, continuous observation of the classroom phenomena being investigated. Only by collecting data over time, both in breadth and depth, will we garner the most powerful descriptions to support our explanations of context. Only by looking across time will we come to realize the basic principles under which a particular context operates as well as those aspects of the interactions that are idiosyncratic or ephemeral.

Our premise of the necessity of being present in the classroom is closely tied to the necessity of uncovering the how and why in studies of classroom context. As researchers gain insights into the classroom through their presence in the everyday lives of the teachers and students, they build a foundation from which to interpret the results. For example, in our work in classrooms we are studying students' avoidance beliefs and behaviors as they move from elementary to middle school. One of the nine elementary teachers that we have studied over the last year is an excellent example of the importance of researchers' participation in classrooms, even at an informal level. Our ongoing relationship with this teacher has helped to reveal unique aspects of her classroom, which have been collected informally and may later prove relevant when classroom data are compared. All the sixth-grade teachers were introducing a new mathematics series during the first year of our project. However, we learned that they had differential exposure to the training workshops on this new curriculum. For example, this particular teacher was sent to a workshop organized by the original developers for this math program, and she now trains other teachers in the district. The teachers also had different backgrounds and expertise in mathematics. For instance, the teacher who received the additional training had no special expertise in mathematics and teaches it once a day to her homeroom class, but other teachers in the study considered themselves mathematics teachers and taught math to all the classes at their grade level. This differential background of the teachers in the content area and the curriculum appeared in our classroom observations. Whereas by midyear one of the teachers had already begun to supplement with worksheets from the previous curriculum, the teacher who had become an instructional leader was enriching the new curriculum in the suggested ways (e.g., tying the lessons into hands-on learning experiences). Although we were not studying the mathematics curriculum per se, the teachers' struggles and successes in this new curriculum help us understand what we are observing at a more nuanced level and could affect our findings on student avoidance.

Similarly, our study of avoidance behaviors may be influenced by the teacher's relationship to the students, which is informally observed in our continuing visits to the classroom. The teacher in this example had many of the sixth graders when they were in third and fourth grade. On the first day of school, she not only knew the students' names, but she related bits of personal knowledge about each one. As this example suggests, by being present across the school year and engaged in casual discussions with the teachers and students, we have captured important information on the setting that we are studying, which is part of our informal research design. The formal research design focused on multiple perceptions and multiple classroom visits over the course of 1 school year, but the informal research design placed us in the unique position of establishing a working relationship with the teachers and students so that we could understand their world better.

In summary, as Table 1 indicates, much of the research involving classroom contextual variables has involved checklist-type observations and surveys. This research has involved measures of the *what* in classrooms with less evidence for or interpretation of the how or why. The research approaches have varied, but the majority of research has been deductive and quantitative. Researchers have not always been present in the contexts they studied and they have often assumed that they understood the meanings that their informants held. The context has not been the object of our investi-

gations. We have not been studying classroom context, but rather variables within a context. Therefore, we presented these assumptions as a way to consider both the meaning of context and how to study it. Although we have offered tentative responses from our own research experiences, we challenge other educational researchers to provide their own answers to these necessary conditions when discussing or designing studies that draw from classroom data or when attempting to implicate their findings for classroom practice. We do not propose that every research study needs to or should encompass classroom context. But when context is investigated, the researcher should endeavor to move beyond defining the context merely as the variables studied. Rather, an attempt should be made to capture the larger meaning of the setting, which is more than the interrelations among variables. In the section that follows, we propose some ways of meeting this goal.

WHAT ARE THE FUTURE DIRECTIONS FOR THE STUDY OF CLASSROOM CONTEXTS?

In closing, we would like to address the following question: Where do we go from here? We propose that there are three major directions that should be pursued simultaneously, not separately or piecemeal, if we are to improve our study of classroom contexts. The goals of such pursuits would include reconnecting teaching and learning as these processes evolve in classrooms, making our research relevant to educators, developing theory, and extending our understandings of classroom contexts.

First, there is a need for more multimethod approaches. Many studies of classroom context have been, we believe, limited by methodologies, research designs, and the lack of description and explanation of what is happening in classrooms (Blumenfeld, 1992). More specifically, methodologies in educational psychology, including those directed at the measurement of classroom variables, have been mostly deductive and quantitative; research designs have involved one or two snapshots of phenomena; and there has been little exploration of the how and why of learning, motivation, or social processes because there have been few descriptions of classroom interactions. One response to those limitations is to adopt *mixed method* and *mixed model*[1] approaches to studying context in classrooms (Tashakkori & Teddlie, 1998). This means that researchers can use both inductive and deductive reasoning and both qualitative and quantitative methods simultaneously and as complementary modes of inquiry, data collection, and analysis. In this way, researchers can take advantage of the strengths of each approach while also compensating for weaknesses. Some of the purposes of such designs are: (a) triangulation—seeking convergence of results among methods (e.g., qualitative and quantitative), sources (e.g., surveys and interviews), and investigators; (b) complementarity—examining overlapping and different facets of a phenomenon, such as motivation; and (c) initiation—discovering paradoxes, contradictions, or fresh perspectives (Tashakkori & Teddlie, p. 43). We have called this *pushing theory* and have included some informative examples of mixed method studies in Table 1, including those of Ashton and Webb (1986), Blumenfeld et al. (1992), McCaslin and Murdock (1991), Marshall and Weinstein (1986), and Turner (1995).

Second, we need to address the lack of context in our theories. Because we have come from an individual difference background in psychology, we have to create new theories or modify old ones to account for contextual explanations. The point is not to say that each situation is unique and that generalizations are not possible. Rather, we have learned that most general principles need to be qualified in more complex ways to understand and explain a context. For example, we began our study of students' involvement in mathematics classrooms with the theoretical perspective of intrinsic motivation. We expected that when students experienced appropriate challenges and had the skills to meet those challenges that they would report positive qualities of experience because they were operating at their fullest capacity. Our predictions were only partially confirmed. To our surprise, we found equally positive responses (e.g., happy, cheerful, alert, strong, clear, open, cooperative, relaxed, and involved) to the classroom instruction in one of the classes where students consistently reported boredom. A classroom climate had evolved in which the teacher strove to make her students safe and comfortable, and students could essentially take a mental vacation while the teacher did most of the thinking for them. We had to adjust our theory to take into account an aspect of socialization that valued control over challenge and where easy work rather than learning was seen as enjoyable.

Because theories often do not consider the context of learning, they may fail to explain much of the observed behavior. For example, there is a growing body of research that suggests that students will find moderate challenges intrinsically motivating when the social norms place value on taking risks but not in milieus in which safety, self-satisfaction, and control are the desired ends. Our research also suggests that not all teachers and students strive to create and maintain challenging learning environments as part of their instructional and learning goals. The role of research should be to help us qualify theories to increase their explanatory power of classroom contexts.

[1]Mixed model studies, as defined by Tashakkori and Teddlie (1998), mix not only methods but also approaches at other stages of the research process. The research process consists of three stages and the model used at each stage may differ, resulting in six different models. The three stages are (a) type of investigation (i.e., exploratory or confirmatory), (b) type of data collection and operations (i.e., quantitative and qualitative), and (c) type of analysis and inference (i.e., qualitative and statistical analysis and inference).

Finally, there is a need for explicit definitions of the parts of classroom context or the level of classroom context being investigated. As Table 1 illustrates, there are many useful research models for us to consider as we approach the studies of context; we can learn a great deal from each other. We would like to make two points about the question of definition. The first point is methodological. In educational psychology, we come with a history of studying instructional settings through using individual difference methodologies and analyses and focusing more on the inputs and outputs of classrooms than on classrooms themselves. Because of our historical roots, we have been inclined to view context as one or more elements, pieces, or variables of the classroom environment, such as student perceptions or teacher talk, but context is greater than the sum of the variables.

As we stated previously, we believe that research can weave the individual threads of the piece to create the whole cloth of life in classrooms by taking the multiple perspectives of all participants, inducing and qualifying theory, searching for the how and why, and involving the researcher in classroom settings. However, researchers will be called on to explain and demonstrate their processes of data collection, integration, reduction, and analyses so that they will not be accused of going beyond the data. They will have to carefully demonstrate how variables are woven together to create the big picture. They also will have to become adept at explaining why synthesizing data is as valid as analyzing it. Both researchers and journal editors may experience a period of adjustment if our attempts to do this kind of research come to fruition because we will ask different questions and use different methods and interpretive frameworks to present our research.

The second point is philosophical. In essence we have developed a folk definition of context that we think we all understand but truly do not use coherently or cohesively. We are not arguing for a common definition. In fact, we would argue that a common definition is not possible or preferable given different theoretical perspectives within the discipline of educational psychology. To enhance the dialogue and advance our scholarship, we need to be explicit about how we use the term *context* in our work. For example, our research is focused on the context of a lesson. Therefore, we are interested in being in classrooms as lessons within units unfold over the course of 1school year. We have examined students' perceptions of lessons through surveys, interviews, and experience sampling. We have studied teachers' instructional strategies through analysis of their discourse and interviews. We have triangulated these student and teacher data sources with our observations of the classrooms. Our context is also content dependent—we have examined mathematics and literacy lessons in elementary grades. Therefore, we are interested in the languages of mathematics and literacy as understood by teachers and students. Such is the type of definition of context that can help to situate a research program and inform other researchers and educators.

SUMMARY

As educational psychologists, we believe that our ultimate goal is to understand teaching and learning in context. Thus, as the key to this understanding we must take students and teachers in classrooms seriously. Although we acknowledge the debt we owe to our colleagues who have helped us understand basic processes of cognition and motivation, we argue that now is the time to explore how those basic processes are synthesized to create classroom contexts. If we believe that psychology has a contribution to make to education, then we must do research that is relevant to teachers and responsive to their needs and questions. Otherwise, the very real contribution that we have to make will be ignored and devalued.

The importance of context in understanding the interrelations among teaching and learning processes appears to have been a difficult lesson to acknowledge. We do not need a larger research literature base that presents as a basic principle that "everything depends on context." Instead, we need to explore what it means to create a learning context and how or whether processes become context dependent. Perhaps we have been reluctant to address contextual influences because they challenge a basic premise of educational research: Instructional effectiveness can be predicted accurately (House, 1991). We hope that the study of context will allow us to lay aside our crystal balls of prediction that satisfy us in being able to understand the synergy of the classroom and to explain what is happening, why it is happening, and how it is happening. Studying classroom contexts is complex and difficult, but it presents endless possibilities for educational research. If researchers can move from predicting the connections among the inputs and outputs of classrooms to understanding them within the life of classrooms, then their discoveries will be as exciting and challenging for practice as they will be for the future of theory and research in educational psychology.

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