

The Dimensions of Classroom Assessment: How Field Study Students Learn to Grade in the Middle Level Classroom

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How are assessment practices of student teachers formed by their experiences in methods courses and practicum classrooms? By contrasting the approaches of two groups of student teachers to pupil assessment, the small-scale case study research described in this report shows how student teachers emphasize the dimensions of assessment that demonstrate, both, their control of procedure and content, and their control of student behavior and learning in the classroom. These control-related aspects of the practicum experience derive primarily from pressure exerted by cooperating teachers to maintain the established classroom order, and derive secondarily from approaches that have been propounded in methods courses.

Comment les pratiques d'évaluation des élèves-maîtres sont-elles formées par leurs expériences dans les cours de méthodologie et leurs stages en classe? En comparant les approches de deux groupes d'élèves-maîtres dans l'évaluation des élèves, l'étude de cas représentant une recherche à petite échelle et décrite dans ce rapport, montre comment les élèves-maîtres se focalisent sur les dimensions de l'évaluation qui démontrent à la fois leur maîtrise de la procédure et du contenu et leur contrôle du comportement et de l'apprentissage des élèves dans la salle de classe. Ces aspects relatifs au contrôle dérivent principalement de la pression exercée par les professeurs coopérants pour maintenir le fonctionnement de classe établi et dérivent secondairement des approches qui ont été promues dans les cours de méthodologie.

Classroom Assessment

Assessment in the classroom consists of information gathering by teachers that concerns the learning of pupils, the efficacy of teaching, and the integration lesson planning into curriculum. Once assessment is

defined in this manner, however, it becomes necessary to identify the pedagogical methods and consequences of such information gathering. In short, the very effort to define classroom assessment suggests that it is important to link the means that are used with the ends that are served when teachers assess their pupils.

Recent research on classroom assessment contends that there are formal and informal procedures for pupil assessment that combine elements of instructional feedback and social control. In the pursuit of instructional feedback, teachers gather information about the capabilities, understanding, and learning of their pupils (McNeill, 1986); additionally, in the interest of classroom control, teachers regulate access to knowledge and thereby control the behavior of their pupils (Apple, 1979).

Most research has treated these issues in the context of regular classroom instruction by experienced teachers (Bobbitt, 1922; Charters, 1926; Smith & Tyler, 1942; Kliebard, 1986). There is, however, very little published research on the goals and consequences of classroom assessment in the context of pre-service teacher education – the very place at which assessment first enters into the professional life of the teacher. This fact suggests that practitioners and teacher educators would benefit from information about the approaches and implications of instruction in classroom assessment during pre-service teacher education.

At least three potential benefits should derive from the careful analysis of instruction in assessment during the time that student teachers are in the practicum classroom:

- Classroom teachers may choose to re-evaluate their assessment practices when they reconsider the ways that they originally developed their approaches to assessment.
- Cooperating teachers – those who provide initial pre-service mentoring – may recognize more clearly the long-term consequences of preferences and models that they present to student teachers who work in their classrooms during the period of their practicum.
- Instructors in teacher education programs may wish to present alternative methods to student teachers in the hope that a broad repertoire of methods might permit individual teachers to match their teaching with the learning styles, resources, and environments of their pupils.

Research Questions and Methods

With the foregoing considerations in mind, this essay reports on a small-scale comparative investigation of ways that teachers learn to use pupil assessment in the course of their instructional practicum (Kusch, 1995).

Core Questions

This essay grows out of questions that were framed by theoretical concerns about the origins of intellectual and social control in teaching – questions that have been brought into focus by practical experience gained over the 16-year period during which I have served either as a public school teacher or a teacher education instructor. Three of the most pressing questions are taken up in this essay.

First, what dimensions of assessment are most salient in the practice of student teachers? At issue here is the possibility that there are distinctive aspects of assessment that are stressed more than others in the practicum classroom. The effort to answer this question is partly taxonomic and partly descriptive. On the one hand, it is useful to differentiate between the aspects of assessment that can reasonably be expected in the practice of teaching. On the other hand, it is also useful to learn whether observations of student teachers suggest patterns in the particular dimensions of assessment that they emphasize.

Second, how does assessment actually enter into the practice of student teachers? In this regard, it is useful to trace some of the ways that the influence of a methods course instructor compares with the influence of a cooperating teacher in the practicum classroom. If it is possible to distinguish some of the precepts that are taught in a methods course from those that are advanced by a cooperating teacher, it may be possible to delineate the interplay of methods instruction and practice on the part of student teachers.

Third, what are the likely consequences of stressing certain dimensions of assessment during the practicum experience? In short, once the interplay of assessment instruction and practice has been clarified, it is appropriate to consider the broader issues that arise when student teachers learn to assess pupils in the practicum classroom.

Methods

At a public university in the United States, the simultaneous offering of two courses on instructional methods in mathematics made it possible to

are likely to have applications in other content areas. At the very least, the results of this study are sufficiently rich in practical and theoretical implications that they might be pondered by others who wish to reevaluate their approaches to classroom assessment.

The Dimensions and Practice of Assessment

Since the literature on assessment is notably imprecise in its treatment of ways that teachers learn to conduct classroom assessment, it has been necessary to distinguish the aspects of assessment that can be observed in both early and mature teaching practice. Tables 1 and 2 present a taxonomy of the instructional dimensions of assessment that were examined during the study which served as the basis for this report. The primary frame of reference in identifying intersecting dimensions of assessment concerns the degree to which the focus of information-gathering ranges between individual pupils and larger groups or classes. Seven dimensions of assessment (summarized in Table 1) focus primarily upon the individual pupil; another four dimensions of assessment (summarized in Table 2) focus primarily upon the groups or classes to which pupils belong.

These dimensions of assessment are constructs that correspond to a kind of aggregate consensus of previous scholarship on the topic (reviewed in Kusch, 1995). Where there are distinguishable emphases in assessment theory and practice, the taxonomies presented in each table cite the appropriate leading scholarship.

Significantly, however, in the practice of the student teachers who were tracked closely for this study, six of the 11 dimensions of assessment proved to be more important than the others. The dimensions of assessment that were most prominent in student teaching throughout the practicum experience are marked by asterisks in the listings presented in Tables 1 and 2, and are described in the paragraphs which follow.

Table 1. *Dimensions of Assessment that Focus Primarily on Individual Pupils*

**Assessing Pupil Understanding, Thinking, and Achievement*

- emphasizes specific course content
 - compares pupils to each other and, usually, to an external set of achievement standards to ascertain and demonstrate how well pupils have learned content
 - considers standards objectively and subjectively, and weights standards by social, cultural, and ecological constraints that are felt by the teacher (Carpenter, Fennema, Peterson & Carey, 1988; Burns, 1992).
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Assessing Pupil Effort

- gauges the relative intensity of pupil work in learning course content
 - considers, subjectively: amount of time pupils take to work on content under study, number and types of questions asked, and types of social and physical activity exhibited during work on content (Jackson, 1968; Goodman, 1985; Bullough, 1989; McNeill, 1983).
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**Sanctioning Pupil Thinking*

- selects the knowledge that is appropriate for certain pupils
 - across whole classes, includes decisions about the segmentation of lessons, and the requirements that must be satisfied before pupils can move on to new content (Goodman, 1985)
 - within classes, includes subdivision into groups according to the attributed abilities of their members
 - controls access to certain topics, resources, materials, privileges, peers, and recognition.
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**Policing Pupil Behavior*

- regulates the physical activity and communication that takes place in a classroom.
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**Labeling Individual Pupils*

- produces a summary statement of a pupil's performance
 - assigns (usually) a symbolic letter or numeric grade for pupil scholarship, initiative, attitude, cooperation, and improvement (Hanson, 1993; Kandel, 1936; Terman, 1917; and others).
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Record Keeping

- accumulates information that monitors pupil needs and progress in working through assigned content (Popkewitz, Tabachnick, & Wehlage, 1982)
 - requires that needs and content be measurable.
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as checks for understanding of textbook content, and quantifiable measures of pupil performance that were provided in textbook and worksheet answer keys.

Cooperating teachers clearly expressed their expectation that student teachers would take lessons to a point at which grades could be assigned to pupils. Content and instruction faded into secondary importance; instead, comparisons with achievement standards became the primary concern of student teachers – even those who attempted to blend assessment with instruction. For students from the methods course which focused on instructional reflection, the emphasis of cooperating teachers upon this dimension of assessment limited the emphasis that they could place on exploring and thinking about content; for students from the methods course which focused on instructional efficiency, this dimension of assessment underscored the emphasis that they had been taught to place upon checking understanding in uniform and objective ways.

Sanctioning Pupil Thinking

Teachers use assessment to sanction the thinking of their pupils by serving as gatekeepers or guardians over the topics that are to be taught and the pupils who are to be exposed to particular content. In brief, teachers decide the knowledge that is appropriate for certain pupils.

For example, when a teacher requires that a certain number of correct answers be obtained by pupils before they can move on to different material, the emphasis in teaching shifts subtly from the appraisal of patterns in pupil understanding to the evaluation of readiness for further education. During this study, sanctioning activities ranged between the decision by a student teacher to continue her or his lesson "if most of you [pupils] have at least three correct [answers]," and the lesson plan that tersely outlined the following decision rules:

The lesson is the 27th in a series. We will start with 12 oral practice problems that lead into Worksheet #27. If they do alright on the oral practice set, I'll assign the worksheet. After WS #27, they will need to pick up speed with the new strategies to be ready for the "time test."

Although student teachers from the methods course that emphasized self-critical practice endeavored to identify and build on the distinct intellectual accomplishments of individual pupils, their cooperating teachers required that they fragment course content into installments that promoted uniform assessment. The student teacher's search for

uniqueness among pupil accomplishments was replaced by the cooperating teacher's demand that accomplished pupils demonstrate certain traits in common with other pupils. In contrast, student teachers who had been coached in the techniques of efficiency did not have to contend with a discontinuity between their preparation and the expectations of cooperating teachers. Their methods course had emphasized the need to develop measurable objectives that could be assessed at stages in the instructional plan.

Cooperating teachers treated the sanctioning of pupil thinking as an opportunity to reduce content to a sequence of separable elements. This approach to assessment fragmented lessons into components that served as intellectual check-points on the way to more comprehensive tests – that would be administered once all requisite check-points had been passed.

Policing Pupil Behavior

Just as teachers use assessment to govern the cognitive activity of pupils, they also use assessment to regulate the physical activity and communication that takes place in a classroom. Indeed, the sanctioning of pupil thinking is often closely related to the policing of pupil behavior. For example, the decision that pupils are ready to move on to a segment on measurement in mathematics grows out of assessments of pupil thinking; however, the decision that permits pupils to work with such manipulatives as compasses or rulers, or to collaborate in interactive groups, grows in part out of assessments of pupil behavior. When access to classroom resources or group-work is at issue, the pupils who do not meet teacher criteria for acceptable classroom behavior are treated differently from those who satisfy the behavioral criteria of their teachers.

Student teachers from each methods course were indistinguishable in their use of assessment to police pupil behavior. In addition, cooperating teachers generally performed a role that was secondary to that of student teachers when the policing of pupil behavior supplanted other instructional objectives. Whenever it was difficult to develop pupil interest in the topic of a lesson, student teachers switched their attention from orderly learning to orderly behavior, out of an explicit concern that they would lose both their reputation for capability and their opportunity to teach if on any given day they "lost control" over their charges.

Labeling Individual Pupils

Assessment enters teaching practice when it is deemed necessary to develop a summary statement of a pupil's performance. This statement is often expressed in the form of a letter or numeric grade, and sometimes accompanied by a teacher's written commentary. The consequent reduction of a pupil's experience to a single measure, or to a small number of measures, effectively labels the pupil on such matters as scholarship, initiative, attitude, cooperation, and improvement (Hanson, 1993; Kandel, 1936; Terman, 1916).

Student teachers who had been taught to emphasize reflective approaches to instruction and assessment generally tried to involve pupils in their own assessment. They asked pupils to explore their own thinking about the content that they were taught, and to record their own ideas about the grades that they should receive. In contrast, student teachers from the course that emphasized efficiency rarely solicited the ideas of pupils when devising assessment strategies or when recording final grades. Instead, they – often gratefully – adopted the assessment categories and labels established by cooperating teachers prior to their entry into the practicum classroom.

Throughout, cooperating teachers performed the crucial role in using assessment to label pupils. In both their observed behavior and in follow-up interviews, student teachers acknowledged the need to develop methods and work products that would blend seamlessly with the assessment methods and labels that were employed by their cooperating teachers. Thus, one student teacher from the course that emphasized reflective practice stated in an interview that

I went in thinking that I (we) should grade ... holistically, and in terms of how a child's work on a lesson fit in with all of the other work that they had done. My cooperating teacher explained that she graded the class according to the answer keys in the textbook. That gave her "hard information" to support the grades that she gave on report cards. After she told me how she graded, I was unsure if the ideas that I felt were right.

No other dimension of assessment distorted the efforts of student teachers as much as the ultimate need – perceived by student teachers and their cooperating teachers alike – to label pupils according to assessments of their work. Lessons were to prepare for homework assignments that could be graded; homework assignments, in turn, were to prepare for quizzes that could be graded; quizzes were to prepare for

section and term tests that could be graded; and so on. The cumulative process provided a purpose that justified its very content: classroom work was geared by both student teachers and cooperating teachers to the production of graded and labeled pupils.

Plotting and Sequencing Strategies and Topics

In mathematics, and in many other content areas, assessment is central to the organization and sequencing of instructional strategies and topics. Sequential instruction among topics has been emphasized in the work of influential learning theorists, such as Piaget (1953), Inhelder and Piaget (1969), Ausubel and Fitzgerald (1962), Gagne (1965), and Dienes (1964). These writers start with the insight that learning falls into clear stages, and argue that assessment makes it possible to consider the difficulties that pupils will encounter within these stages. Consequently, each theory advocates that content be covered in a progression that starts with relatively simple material and moves toward more complex material.

Student teachers who had been trained to emphasize reflective practice made tentative efforts to develop their own sequences of topics. However, their temporary status in the practicum classroom prompted them to conform to the larger scheme that had been determined by the cooperating teacher who had opened the classroom up to them. In contrast, the student teachers who had been trained to seek efficient methods of instruction made very little effort to develop special instructional sequences, and made no apologies for their reliance upon previously established instructional sequences.

The cooperating teacher's influence thus extended into the arrangement of material that student teachers chose to present to pupils. The pre-existing temporal order of practicum lessons impressed student teachers from both methods courses, and compelled them to modify their planning so that they could conform to the lesson and assessment sequence that had been designed by cooperating teachers. For example, a student teacher from the course that emphasized reflective teaching stated the following in her lesson plan:

The lesson plan begins with 12 "mental math" questions. We'll work on these in the first 10 minutes of class. If they meet criteria on those questions we'll go on to new material. If they do not get at least 70% of the mental math we'll go back and review In either case the main point of the lesson will move to a

discussion of "real life uses of multiplication of decimals," on which we will spend at least 20 minutes. If they seem to understand today's topic, I'll assign worksheet #3, if not, then the worksheet they did with Ms. F.

During presentation of this lesson, the student teacher read directly from the script in the teacher's edition of the worksheet. She then noted items that seemed difficult for the pupils, and selected those items to use with the "Power Builder" set of lessons.

The established order told student teachers what content was to be assessed, and when; it represented the manner in which the cooperating teacher conceptualized assessment in time; and it directed student teachers to employ assessment in relation to regularly spaced intervals.

Appraising the Efficacy of Lesson Planning

Student teachers also assess pupil performance to judge the efficacy of their lesson planning. For example, they might plan to teach a skill that involves a set number of problems; if they cover all of the intended problems that they treat in the lesson plan then they might conclude that the lesson went well. If they fail to finish the plan, or if other problems emerge during its presentation, then the teacher will decide to implement some modification. Scriven (1974) refers to this process as formative assessment, while Eisner (1985) refers to it as curriculum revision.

The student teachers who had been taught to emphasize reflective practice understood that assessment is an act that is embedded in the lessons that both precede and follow any given lesson. In contrast, student teachers who had been taught to pursue efficiency understood that assessment would produce scores on quizzes or tests at the end of an instructional sequence, and assumed that such scores would serve as valid measures of their effectiveness in presenting content.

Despite the latitude that cooperating teachers offered in the matter of linking assessment with lesson planning and revision, student teachers found that it was difficult to accommodate any disjunctions that arose when their approaches differed from those of cooperating teachers. In practicum classrooms, student teachers from both methods courses discovered that their approaches to assessment did not help them ascertain the efficacy of their lesson planning. Those from the course that emphasized reflection produced subjective evaluations that could not be

squared with the more inclusive plans of their cooperating teachers. For example, one student teacher stated during a post-lesson interview that

I discussed [with my cooperating teacher] how different children in the class went about thinking in the set of decimal problems that they did – why decimal points should be lined up, why the decimal point is used, period. This [had gotten] them thinking about different ways to do the problems, and I saw different ways to assess them because, when I knew why they were answering, there was more to go on than just whether they got the right answer.

In contrast, student teachers from the course that emphasized efficiency produced quiz and test scores that – while compatible in format with those of the cooperating teacher – did not tell them whether students had merely been well trained for the test or whether they had internalized the content of the lessons involved. For example, in another post-observation interview a student teacher declared that

I planned to teach the lesson so that they would understand Greatest Common Factor better. But after we graded papers, I didn't really know if they knew it any better than when the lesson began. There was just a set of scores to go by!

For student teachers from the course on reflective teaching the problem lay in the disjunction between methods that they sought to employ and methods that their cooperating teachers had previously adopted; for student teachers from the course on efficient teaching the problem lay in the fundamental unintelligibility of data obtained from standard assessment methods.

The remaining five dimensions of assessment were not central to the plans and practice of student teachers followed in this study.

Assessing Pupil Effort

Assessment enters into teaching practice when teachers gather information about the relative intensity of pupil efforts to learn course content. Assessments of pupil effort consider several factors, including the amount of time that pupils take to work on the content under study, the number and types of questions that pupils ask about content, and the types of social and physical activity that pupils exhibit as they attempt to work on content. In the main, these kinds of assessment are relatively free of the impact or imprint of people who are external to the classroom. When teachers assess pupil effort, they do so in light of their own

attitudes towards pupils, their expectations and observations concerning pupil work and social activity, and (finally) the normative expectations that predominate among their colleagues (Jackson, 1968; Goodman, 1985; Bullough, 1988; McNeill, 1983). Although it is important for a teacher to be cognizant of pupil effort when groups are formed and lessons are planned, teachers provide clear evidence that such an assessment has taken place when they comment on (or modify) a grade that they have assigned to individual pupils.

The group of student teachers observed in the course of this study were not explicitly required to characterize the effort of their pupils. Moreover, since the cooperating teachers reserved the obligation of developing final grades for pupils in the practicum classroom, student teachers had very little opportunity to offer their assessments of pupil effort at the point when they were most likely to be applicable.

Record Keeping

When teachers differentiate between the performance of individual pupils, they are obliged to test and keep records that will help them to discover and monitor pupil needs. In developing procedures to keep records, teachers may rely solely upon standardized testing formats, or they may rely upon their own judgements for processing information about pupils. In either event, the need for teachers to maintain records has a direct bearing upon the ways that they gather information for grading. Teachers may first judge whether content that they teach is measurable, before they proceed to teach the material. If content is complex or theoretical, teachers may fragment the content so that students can work with it and teachers can measure and grade it more readily.

All student teachers were constrained by the record keeping schema that had previously been established in the classroom that served for the practicum experience. Cooperating teachers regarded the record keeping aspect of assessment as an immutable practice, and they urged their student teachers to employ pre-existing assessment practices. Teachers took as "given" both the Hunter format and the assessments presented in textbooks, since both were widely used in the school where this research was conducted, and since the resulting records were immediately intelligible when it was necessary to pass pupils between group levels and grades.

External Accounting

Assessment is central to the kinds of reporting that teachers and schools are required to make – both to educational and governmental agencies, and to the public. "Teaching to the test" is the common response of teachers who feel that they must get their pupils through the material; consequently, instruction and learning become synonymous with successful test scores (Goodman, 1985). The relation between instruction and assessment for external purposes often prompts teachers to use drill-and-practice methods of instruction, in place of more interactive approaches to teaching, since it is expected that the former methods will raise pupil scores on standardized tests. Additionally, when working toward an eventual external accounting, teachers often defer to expert forms of knowledge when they choose an approach to lesson planning and implementation.

Student teachers from both methods courses demonstrated very similar approaches to the external accounting dimension of assessment. Since cooperating teachers had embraced the Madeline Hunter School Improvement Process (Gentile, 1988), which encourages teachers to define their responsibilities in terms of preparing, arranging, and grading textbook or worksheet assignments according to standardized answer keys, the work of student teachers conformed closely to that of their cooperating teachers.

Sorting Groups of Pupils

Assessment lies at the heart of efforts to characterize the educational achievements, capacities, and efforts of whole groups of pupils. Within any given school building, this kind of assessment creates groups that can be "tracked" over the course of pupils' educational careers in the school; and within any given classroom, this kind of assessment creates groups which are differentiated by their skill levels for instruction in particular topics (Oakes, 1986). The techniques that are used to make these distinctions include standardized achievement tests, and subjective judgements by classroom teachers (Hanson, 1993).

Student teachers from both methods courses embraced uncritically the existing groupings and implicit assessments of group members that had been established by their cooperating teachers. Their acceptance of the status quo in classroom organization and method derives from their awareness that they were "guests" in the classrooms of established

teachers, and that they were expected to conform where possible to the mentoring and advice of cooperating teachers.

Appraising the Efficacy of the Curriculum

When teachers implement novel curricular forms, such as the "new math," they may attempt to assess the efficacy of the new curriculum in ways that are not entirely analogous to the individual teacher's assessments of lesson planning. The new and the old curricula are generally compared over time. Alternately, when newly hired or transferred teachers first encounter an existing educational system, the curriculum in place is considered in light of the fit between personal styles of thinking about content, and how well the curriculum in place matches lessons that the teacher is used to delivering. In making such comparisons, several factors may be considered: class preparation time, pupil involvement, implementation time, resource availability and allocations, and community responsiveness.

The curricular dimension of assessment was not addressed by the student teachers who participated in this study. Student teachers generally acquire such a strong sense of humility when confronted by the gap between their competence and that of their cooperating teachers and administrators, that they restrain themselves in commenting for the record on broad curricular issues.

Conclusions

We can derive three broad conclusions from the ideas and observations that have been treated in this essay.

Salient Dimensions

Salience of a particular dimension in this study comes at the cost of relegating other dimensions to secondary roles. In this context, it is encouraging to observe that student teachers emphasized the dimensions of assessment that are closest to the core of the educational enterprise: they focused on pupil understanding and thinking, and on the sequencing of topics in their lessons; but they gave only secondary attention to sorting groups of pupils, record keeping, and external accounting. To the degree that teachers in general are faulted for "teaching to the test," and that national and state standards are dominating debates about curricular reform and teacher accountability,

student teachers are keeping their eyes fixed on events that take place within their classrooms.

Sources of Assessment Practice

The material and instruction of methods courses made a difference in the assessment practice of the student teachers who participated in this study. Of at least equal importance, however, is the fact that experience in the practicum classroom, and particularly the admonitions and practices of cooperating teachers, have a strong influence on the assessment practices that are emphasized by student teachers. The fact that cooperating teachers exert a substantial influence on student teachers is not startling news – unless one is cognizant of the fact that half of the student teachers considered in this study were taught methods in the course that explicitly rejected the philosophy and methods that cooperating teachers are generally using in their classrooms. Thus, when the call for change in the school room is sounded in the university methods classroom, it must be seconded and implemented by cooperating teachers if it is to have a significant immediate effect on the practice of future teachers. This latter conclusion suggests that cooperating teachers should be brought into debates on desirable change in the philosophy and methods of teaching perhaps through direct participation in university methods courses.

Implications of Observed Assessment Practice

If instructional feedback and social control are observed consequences of classroom assessment in the larger context of teaching practice, it is particularly significant that student teachers receive their first experience in serving these ends while they are in the practicum classroom. That said, however, the narrowness of student teachers' focus upon matters pertaining to *classroom* tasks suggests that the service of *societal* goals later in the career of teachers must take place as part of larger social interactions that have their origins in many places – and not primarily in the instruction of future teachers. The small number of student teachers observed for this study prompts caution; if teachers do indeed act as agents of *social* control it is not necessarily the case that they learn to serve in that capacity during their pre-service education.

Classroom assessment is a process that is multi-dimensional both in its means and in the ends that it serves. While it is valuable to know that

there are at least 11 different ways that teachers go about the process of assessment, it is at least as valuable to observe that there are patterns in the emphasis that they place on different kinds of assessment. During the practicum experience, at any rate, those patterns tend to reproduce the practice that is established at any given time within a particular school and classroom. It would now be valuable to know how patterns develop in assessment practice after preservice training – when beginning teachers make the transition from novice to experienced teachers.

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