Chapter 3: What Do Students Know? Facing Challenges of Distance, Context, and Desire in Trying to Hear Children

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No task is more fundamental to teaching than figuring out what students are learning. Paradoxically, no endeavour is more difficult. In his well-known sociological analysis of teachers and teaching, Lortie (1975) found that questions about the assessment of student learning evoked significant emotional response from teachers. Although the teachers whom he interviewed believed that good teachers inform their practice by closely monitoring students, many despaired of really knowing about the effects of their teaching. Lortie nominates this as one of the endemic uncertainties of teaching, observing that

... [a]ll craftsmen must adjust and readjust their actions in line with hoped-for outcomes; must monitor their steps and make corrections as they proceed ... Yet the monitoring of teaching effectiveness, defined as achieving instructional goals, is fraught with complications. (p. 135)

Lortie analyses these complications from two perspectives. Viewed externally, he argues that assessing outcomes is complicated by the lack of shared standards, lack of clarity about cause or influence, multiple criteria and lack of consensus, ambiguity about timing of assessment, and student changeability. Comparing teaching with other occupations, Lortie claims that these complications do not exist in more ‘tangible fields’ (p. 136). Indeed, he argues, such complications are inherent to the practice of teaching. Lortie also views the complications of assessment from the inside. Interestingly, he reports a bimodal distribution in teachers’ feelings about assessing their effectiveness. Over half reported that it was problematic. Yet another third claimed that knowing whether one was doing a good job is relatively easy (p. 142). This divergence suggests that teachers live with the uncertainties differently.

However uncertain it may be, figuring out what students know is central to the everyday work of teachers. Teachers ask themselves many questions in the course of teaching: What should I do next? Is what I am doing working? Does this concept need to be reviewed? Are the girls feeling disconnected from this unit we are doing? What is that student saying? What is he thinking? Teachers are responsible for helping students learn. Minute to minute, day to day, and
week to week, teachers must constantly ‘read’ their students, making judgments about how things are going—in general and for particular individuals. They give tests, quizzes, and assignments. They ask questions, observe, listen. Yet what teachers watch, ask, and listen for varies. This variation may underlie differences in how unsettling teachers find the task of assessing what students are learning.

One way of coping with teaching’s ‘intangibility,’ including the uncertainty embedded in assessing outcomes, is to use approaches that evade or mask such complications. One oft-heard shorthand confounds classroom activities with learning. Teachers report what students have ‘had,’ or what has ‘been covered.’ Still, most people know that a description of what has been taught is not equivalent to an examination of what has been learned. A consequent desire for accurate ‘measures’ of learning can be seen in the widespread efforts to make systematic a technology of monitoring students.

Standardized multiple-choice tests, weekly quizzes checked and recorded, progress charts, carefully convergent questioning—all are measures that check students in a manner that controls both variation and sources of ambiguity.
Pimm (1987) describes a discourse pattern typical of many mathematics classrooms in which the teacher talks but leaves small openings for students to fill in key blanks:

\[
\begin{align*}
T: & \quad \text{Supposing you started with that shape and you increased its length by two, what would have happened to the area. It would simply have ...} \\
P: & \quad \text{Doubled.} \\
T: & \quad \text{Doubled—but that's only moving in, increasing in one dimension—if you've got to increase the width by two as well—then you've got to double it again. So you would be doing—first of all, times two to double the length—and then times two again—to double the width again, so altogether you must have multiplied ...} \\
P: & \quad \text{By four.} \\
T: & \quad \text{By four, by two squared. (Pimm, 1987, p. 53)}
\end{align*}
\]

In this exchange, the pupil does little more than play a part in the teacher’s script. This typical pattern ‘allows the teacher to maintain control of the discourse, while focusing attention on particular items along the way. It ... acts as a check for the teacher that the particular pupil questioned has grasped what is being explained’ (Pimm, 1987, pp. 53-54).

Enacting such approaches, teachers can feel they know something about what students know. Still, what is being examined about students’ learning is constrained—evidence often restricted to short, unprobed, and standardized answers (Cohen, 1995). Much is left unknown that teachers, parents, and the public care about—for instance, the ability to reason, to be imaginative, to construct
a convincing argument. And under the cover of simpler measures lie the tangled
— sometimes wonderful, sometimes terrible — idiosyncrasies that are the prod-
ucts of children’s sensemaking.

In a famous case study of a sixth grader named Benny, Erlwanger (1975)
probed beneath the surface. Despite the fact that his teacher thought of him as
advanced, the understandings lurking under Benny’s consistently correct writ-
ten work were wildly nonstandard. But in the individualized approach to teach-
ing used in this classroom, it was possible for him to continue to progress
officially, his personal constructions invisible to his unsuspecting teacher. Dra-
matic as this case is, it is likely not unusual. When all we ask students is to fill
in answers in constrained spaces, we block our access to views of students’
thinking.

A different way of coping with the ambiguities of assessment is to see it as
ongoing, drawing on multiple and varied sources of evidence. To make the ex-
amination of learning more complex is to admit of its subtleties and requires
broadening both the objects and methods of assessment. Students are presented
with open-ended tasks that have no single constrained ‘right answer’ and which
invite application, imagination, and extension. Such assessments seem more
satisfyingly ‘authentic,’ to have more relevance to the enterprises for which
teachers strive to prepare their students (Darling-Hammond, Ancess, & Falk,
1995). At the same time, the open-endedness increases the uncertainty of inter-
preting and appraising student progress and makes it more difficult to share
common standards across students, groups, and settings (Cohen, 1995). More-
ever, the context of the task, necessarily constructed by each individual student,
make it that much more complex to ascertain what students know. How is the
context affecting the student’s response in ways that are idiosyncratic to the par-
ticulars of the situation? Issues like these challenge core epistemological and
psychological assumptions about what it means to ‘know’ something. Although
some researchers claim that students who engage in close reasoning about per-
formance-oriented problems have deep ‘insights into the structure of the subject
matter’ (Hiebert et al. 1996, p. 17), others express reservations about the assess-
ment of abstract ideas which are usable across settings (Anderson, Reder, & Si-

[W]e have little evidence about how well the newer assessments
represent students’ ‘understanding’ of mathematics or reading, in part
because this assessment technology is very young. It seems reasonable
to think that performance assessments could do a better job than norm-
referenced standardized tests, but researchers are only now turning their
attention to what understanding might be, how it might be assessed, and
what satisfactory assessment of understanding might be.
Despite these uncertainties, enthusiasm is high for focusing on what students understand and can do through ongoing and performance assessment (Darling-Hammond et al., 1995). Widely eschewed among reform advocates are the traditional measures that constrain the problems of ‘measuring’ what students know. But this current press for ‘authentic assessment’ moves central ambiguities of practice to the public stage of school accountability. The new assessments reveal the uncertainties of interpreting what students know and have learned and yet situate such tenuous information in the political context of schooling.

In this chapter, I return to and extend Lortie’s (1975) examination of the sources of endemic uncertainty resident in assessment. Writing from the perspective of practice, I investigate challenges inherent in the central task of figuring out what students are thinking and learning. I explore the problem from three angles:

- Teacher knowledge: First, I review briefly recent work on teacher knowledge. What have researchers identified as key elements of teaching knowledge and how do these play a role in hearing and assessing students’ thinking and learning? What kind of knowing is knowing students, and how well do we as teachers, researchers, teacher educators, and parents understand the nature of what we know (or think we know) about students?
- Challenges embedded in practice: Second, I analyse conceptually what makes the task of assessment so difficult in practice. From the perspective of the teacher, what persistent challenges influence efforts to figure out what students are learning?
- Learning to know about students: In the final section of the chapter, I turn to an examination of what is involved in preparing teachers to hear their students. What do teachers need in order to be prepared to figure out what students know, and what are some ways in which they can develop and enhance such capability?

TEACHER KNOWLEDGE: BEING BOTH RESPONSIBLE TO SUBJECT MATTER AND RESPONSIVE TO STUDENTS

I begin with a brief look at recent developments in research on teaching and teacher thinking where issues of what teachers need to know have occupied center stage. In particular, over the past decade the role of subject matter knowledge has claimed considerable attention among researchers and teacher educators. In a seminal presidential address to the American Educational Research Association, Lee Shulman (1986) referred to subject matter understanding as
‘the missing paradigm’ in research on teaching and teacher education. With a sweep of convincing argument, he attracted renewed interest in the nature and role of teachers’ subject matter knowledge — and in a new kind of knowledge, pedagogical content knowledge. Not only do teachers need personal understanding of the material they were teaching, Shulman and his colleagues argued, but they also need to know ways in which key ideas might be compellingly, engagingly, and helpfully represented. Teachers need a repertoire of metaphors and analogies, problems and tasks, pictures and diagrams. They need to be aware of topics with which students often had difficulty, and of common misunderstandings (Shulman, 1986; Wilson, Shulman, & Richert, 1987). In short, they need ways to see into the subject matter through the eyes, hearts, and minds of learners. And their task is to ‘transform’ the content in ways that make it accessible to students (Wilson et al., 1987) while maintaining its integrity (Ball, 1993b; Bruner, 1960; Lampert, 1992).

Responsibility to the subject matter is only one part of the equation. In making subject matter ‘accessible,’ teachers also need to know students. Teachers need understandings of students in general — patterns common to particular ages, culture, social class, geography, and gender; patterns in typical student conceptions of the subject matter. But, more to the point, teachers must know their students (Peterson, Carpenter, & Fennema, 1989). Face to face with actual children who are particular ages and gender, culture and class, teachers must see individuals against the backdrop of sociological and psychological generalizations about groups. Often to simplify the enormous complexity of teaching, teachers may presume a ‘shared identity,’ mistakenly assuming that students share their teachers’ experiences of school and of the world (Jackson, 1986). Teachers are themselves particulars in the social tapestry and different from their students. They are separated at least by generation and in multiple other ways as well. For example, women teachers will teach boys and middle class teachers poor children, while non-religious teachers teach devout Christians (Delphy, 1988; Paley, 1995). Yet teachers must build bridges across the chasms of difference. In order to make the subject matter accessible to students, the more they know about student experiences, backgrounds, understandings, and interests, the better equipped they will be, so the argument goes.

Much of the recent work on pedagogical content knowledge has advanced our understandings of what teachers need to know about students to inform ‘the ways of representing and formulating the subject that make it comprehensible to others’ (Shulman, 1986, p. 9). In ‘transforming’ the content for instruction, teachers examine critically the topic or text at hand and select a way of representing it, adapting particular representation in light of what they know in general about students (Wilson et al., 1987). Wilson and her colleagues describe the interplay between the teacher’s understanding of the specific content and of the
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