
From Individual Differences to Learning Communities — Our Changing Focus

The emerging picture of teaching and learning raises a host of new questions, among them: How do we create a community of inquiry in the admittedly artificial environment of the classroom?

RICHARD S. PRAWAT

Current conversations about the nature of teaching and learning differ dramatically from those 20 or 30 years ago — both in *what* is being discussed and in *who* is doing the discussing. Many researchers now include teachers as equal participants. They argue that involving practitioners in conversations about teaching and learning significantly improves the dialogue, leading to more useful and creative change. This practice coincides with the notion of “teacher empowerment,” a key aspect of educational restructuring efforts under way in many parts of the country (Prawat in press).

These changes exemplify the role of educational theory and research. Ideas from educational theory and research influence how we think about teachers, students, and subject matter; they also enlarge our field of vision. Educational theory functions more as a “conversation starter,” however, than as a final answer. It provokes better



When students share their “invented” knowledge of real-life events, teachers can guide them toward more mature understandings. Here, a 3rd grade teacher’s video footage of a tornado stimulates student response.

questions about important issues, but sometimes constrains our responses or hinders our evaluations (Prawat in press).

These observations about the past, present, and future of educational research offer a perspective on the impact of these “conversations” and could lead to additional, productive discussions.

Focus on Individual Students

Prior to the 17th century, Western philosophers equated education with inward, solitary searches for truth. Even gifted educators like Socrates were thought to play a relatively passive role in what was primarily viewed as a process of individual self-discovery. This focus on the individual

continues to exert a powerful influence on today’s education and educational research.

In 1914 Thorndike argued that researchers should focus their energies on describing the individual student. In response, his colleagues developed measures, such as intelligence tests, to assess the traits deemed relevant to individual performance in school. Before long, “individual difference” measures were used to sort students into ability groups, tracks, and special education programs.

Our preoccupation with individual differences contrasts sharply with other countries. Particularly in Asia, teachers downplay traits such as intelligence and emphasize instead “doing one’s duty” to meet social expectations or group norms.

Until recently, researchers did little to challenge the individual differences approach. Instead, they devised ways to work around certain traits, especially ability or "rate of learning." One solution in the 1950s and 1960s was mastery learning. Elements of mastery learning, such as breaking the task into smaller pieces and providing immediate feedback at each segment of the learning sequence, figured prominently in successful training programs developed during World War II. It was hoped that applying these principles to individual learning would minimize the importance of the most pervasive individual difference: ability. The argument went something like this: If instructional materials are designed so that students work at their own pace through a carefully planned sequence of tasks, then ability will cease to be an important factor in student performance.

The concept of mastery learning — to design a curriculum so powerful that it overcomes deficiencies in learners and teachers alike — represented the first version of what came to be known as a "teacher-proof" curriculum. This notion was embraced by subject matter specialists during the 1960s. Although the curriculums developed by subject matter specialists — for example, "new math" — differed dramatically from those developed by educational researchers and often focused more on general inquiry or problem-solving skills — the concept was the same. The goal was to create a compelling stimulus environment to carry students regardless of what they or the teacher bring to the learning task. The popularity of mastery learning and other similar curriculums grew logically from the focus on individuals. This perspective, in turn, was shaped in large part by the

theoretical biases then evident in the research community.

Understandably, the notion of teacher-proof curriculums turned out to be a dead-end. Mastery learning, and other such curriculums, downplayed the role of teachers too much, making them little more than managers of instructional material. Rightfully so, teachers would not allow their classrooms to be "proofed." Subsequent research demonstrated that teachers play a vital role in the educational process, although honest differences of opinion continue as to how to characterize their role. Engelmann presents one perspective (1991, p. 218):

Teachers should have a special kind of knowledge about teaching. That knowledge derives from the ability to execute the details of effective instruction. The teacher should know how to present tasks to students and should demonstrate appropriate pacing, appropriate inflections and stress, appropriate responses to students who perform well, and appropriate responses to students who make mistakes.

Engelmann adds some skills to this description, concluding that "the teacher, in summary, should be a technician." This view gained dominance in the 1970s.

Teachers as Technicians

During the late 1960s and early 1970s, it became apparent that not all teachers were up to the educational challenges that became more visible at that time. Thus was born the body of research that came to be known as "teacher effectiveness" research. Using various teacher observation instruments and traditional measures of student achievement as the index of effectiveness, researchers tried to determine what technical skills were possessed

by more effective teachers. In an approach elegant in its simplicity, researchers sat at the back of a classroom and noted the specifics of how teachers managed and instructed a class. For example, they studied how the teacher organized the group, introduced lessons, asked questions, or gave feedback to students. These "process" skills could then be correlated with student achievement (the "product") to assess effectiveness.

Across several teacher effectiveness studies, consistent relationships emerged: Teachers who were more effective in producing gains in student achievement were well organized, minimized student disruptions by monitoring behavior, and enforced rules in a consistent manner. Effective teachers programmed their instruction to ensure success. They proceeded through the material in small, quickly grasped steps and carefully asked questions that engendered short, correct answers. Azuma terms this approach, predominant in American education, the "quick and snappy" method of conducting lessons. He contrasts it with lessons in Japan, which he characterizes as "sticky and probing." Rather than moving briskly, Japanese teachers linger over topics, encouraging students to examine important concepts from a variety of perspectives (Azuma 1983).

Teacher effectiveness research continues to exert a powerful influence. In many states, teacher evaluations are based on criteria drawn from this research, and many teacher education programs have designed curriculums with its prescriptions in mind. These teaching practices appear to be helpful not only to low ability students, who presumably need more structure, but also to high ability students.

The change in researchers' minds



If classrooms are to become learning communities and teachers community-builders, as emerging research suggests, students need the leeway to select areas of study, explore their ideas, and learn from their mistakes.

about the validity of these prescriptions can be attributed to two factors:

- the growing influence in this country of cognitive psychologists who, building on Piaget's work, have begun to listen seriously to what young people say.
- the influence of educational anthropologists like Shirley Brice Heath and cultural psychologists like Michael Cole, who have alerted us to the role of "context" or "community" in explaining what young people know.

Ideas developed from these two perspectives altered the landscape for educational research in the '80s and '90s.

Subject Matter Within Context

As cognitive psychologists have discovered, *all* children, when they enter school, bring a wealth of informal knowledge. They are not, as was believed, "sponges" soaking up knowledge according to their ability levels. They have definite views about what they are taught. Like adults, they develop theories about nearly everything, from the sublime — for example, God and death — to the ridiculous — for example, whether or not worms have bones. Children use these theories to frame their interpretation of new information. Because these theories help them make sense of their world, children often are hesitant

to change them. In one study, following an eight-week science unit on photosynthesis, less than 10 percent of the 5th graders understood that plants get their food by making it themselves. Most held on to their original theory that plants, like people, ingest their food from outside (Roth and Anderson 1991).

Piaget alerted us that "real learning" is not simply the parroting back of information. Real learning involves personal *invention* or *construction*, and the teacher's role in this process is a difficult one. On the one hand, the teacher must honor students' "inventions," or they will not share them. On the other hand, the teacher needs to guide students toward a more mature understanding, which frequently means challenging student constructions. One way to reconcile these conflicting demands is to alter classroom norms, encouraging students to view errors as natural, even useful, aspects of learning. For classrooms to be centers of intellectual inquiry, students and teachers must feel free to pursue ideas and make mistakes.

In comparing the role of specific experience with that of more general characteristics such as age and IQ, cognitive psychologists have identified "the former experience" as the most important predictor of a child's

conceptual understanding. Several studies validate this finding. One study contrasted the performance of 10-year-olds and adults on a short-term learning task: recalling the placement of pieces during various phases of a chess game. The younger subjects, who were chess players, outperformed the adults, who were novices, despite the fact that the children demonstrated *less* general memory ability on scales typically used to assess this variable (Chi 1978).

The recent focus on conceptual understanding also questions the use of achievement tests to assess student learning. Lorrie Shepard, a prominent measurement specialist, criticizes the current practice of testing isolated, discrete skills (1991). Shepard advocates the use of alternative assessment instruments that better reflect current thinking about the nature of teaching and learning.

Cognitive psychologists aren't the only ones to contribute to recent changes in our views about teaching and learning. Anthropologists and cultural psychologists remind us that context plays a key role in shaping and constraining individual learning. Some of the most interesting work contrasts learning in the classroom with learning in out-of-school contexts; these studies often highlight the shortcomings associated with our

traditional, didactic approach to formal education.

The learning that people do outside of school frequently surpasses what they can do in the classroom. In one study performed in a commercial dairy, workers used error-free arithmetic typical of 8th or 9th graders to fill orders despite the fact that they only had a 6th grade education (Scribner and Fahrmeier 1982).

Contrast that with what researchers find when they examine in-school performance. In one study, three-quarters of the 2nd graders interviewed by a researcher "solved" the following problem by simply adding the numbers 26 and 10: There are 26 sheep and 10 goats on a ship. How old is the captain? (Schoenfeld in press). The suspension of sense-making seems to be less common in out-of-school settings. Why?

Meaningful activity is perhaps the most salient feature of out-of-school learning. Out-of-school learning focuses on overall goals and strategies, the "big picture," rather than on isolated details. In the classroom, students are expected to master the details and may never see the big picture. A study that ties children's ideas about reading to their reading group experience illustrates this. Children in the lower reading groups, where the focus was on isolated skills, defined reading as "using materials correctly and sounding out words," all discrete skills. Children in the higher reading groups, who were encouraged to read for meaning, stressed the importance of comprehension in their definitions of reading (Eisenhart and Cutts-Dougherty 1991).

Shared activity is another key feature of out-of-school learning. In apprenticeship situations, novices often learn as much from each other as they do from the master craftsman.

Collaborative learning tends to be more the norm than the exception. In contrast, the focus in school is almost always on the individual. The most important activities — listening to the teacher, homework, in-class exercises — are carried out by individual students, operating in splendid isolation from each other.

Just as Piaget's research opened up the possibility of a learner who is continually developing and testing important theories about the world, so have anthropologists and cultural psychologists altered our views about the context of teaching. Not only do we more fully appreciate the importance of social environment in the learning process, we also appreciate that a school's learning environment — with its emphasis on individual learning and the mastery of isolated knowledge and skill — differs from most other cultural learning arrangements. Clearly, we should no longer consider the classroom the prototype of effective learning. It is just one among many such arrangements. While it may be disconcerting to talk about the inadequacies of current classroom environments, the talk liberates us to search for alternative ways of structuring instruction. More important, it lessens the likelihood that school culture will be used as a benchmark for evaluating other learning environments. In the past, this practice led teachers and researchers alike to consider alternative environments as deficient compared to that norm.

By no longer viewing the school culture as an absolute standard for teaching and learning, we may value the contributions of other cultures. This puts behavior that used to be considered incompetent in a new light. Heath's classic study, *Ways with Words* (1983), illustrates how teachers can come to see differences in a child's

The learning that people do outside of school frequently surpasses what they can do in the classroom.

language use — the child's use of stories to entertain and control, for example — as an asset rather than a liability during reading group. Thus, behaviors initially regarded as evidence of a deficiency in manners can be seen as an alternative form of self-expression upon which the teacher could build.

The Teacher as Community-Builder

This emerging picture of teaching and learning contrasts dramatically with that of the recent past. Our long fixation with individual differences appears to be waning. If learning is a social act, more akin to the process of socialization than instruction (Resnick 1990), the criteria for judging teacher effectiveness shifts from that of delivering good lessons to that of being able to build or create a classroom "learning community."

This, of course, raises a host of new questions for teachers and researchers to ponder: What is the nature of the classroom working environment? Does the work resemble authentic or realistic out-of-school activity or performance? Is there, for example, any relation between what students are asked to do in school mathematics or history and the kinds of activities engaged in by

practitioners of those disciplines? Too often, school history involves the memorization of facts, and "problem solving" in school mathematics is little more than the search for syntactic cues in story problems — like the word "left" in "How many are left?"

Another vital question relates to the norms of interaction that govern how members of the community relate to one another: Do the ground rules for classroom discourse establish a context conducive to collaborative problem solving on the part of *all* students?

That many educators are grappling with these complex issues illustrates the role that educational research and theory typically play in education. They encourage us to look at the world through new conceptual lenses, thus creating new opportunities for development and change in classroom teaching. In addition to changing existing practices, educational research can bolster creative practitioners who decide to "teach against the grain" (Cochran-Smith 1991) based on their personal experiences with students. Susan Moran is one such teacher. She provides a moving example of the sort of practice current research supports. Her goal, she wrote, was to dispel the idea that English majors are the only people who know how to talk about books. She abandoned the practice of having her 8th graders read one book together. Instead, students were invited to choose their own books, talk with one another about the books in class, and write to her about them in their journals:

To get things under way, I asked students to bring in their favorite book from the summer. The next day, the first person to speak was Matthew, who had brought in *The Incredible Journey*. "It's the best book I've ever read," he announced. "Actually," he added quietly, "it's

the only book I've ever read all the way through." I held my breath when the first hand shot up, afraid that someone might sneer at Matthew for having read such a "babyish" book. Instead, there was an outpouring of enthusiasm for this book and praise for Matthew for having discovered and read it. "Didn't you hate for it to be over?" Tali asked.

We were off and running. The classroom became . . . like a dining-room table, where people could converse easily about books and poems and ideas. I would watch my students leave the classroom carrying on animated conversations about which book was truly Robert Cormier's best, why sequels are often disappointing, which books they planned to reread . . . (1991 pp. 437-439).

As this passage suggests, in classroom learning communities, individuals engage in animated conversations about important intellectual issues. Ideally, such conversations will occur at the school level as well, involving all teachers and focusing on concerns about curriculum, learning and teaching, alternative approaches to assessment, and the like.

Many reformers believe that the creation of schoolwide learning communities is a necessary if not sufficient condition for the creation of classroom learning communities. Figuring out how to accomplish these two goals is a task that could engage the productive energies of teachers and researchers well into the next century. If this comes to pass, current educational theory and research will have pointed the way. □

References

Azuma, H. (1983). "Two Models of Teachability: U.S. and Japan." Unpublished paper, Shirayuri College, Tokyo.
Chi, M. T. H. (1978). "Knowledge Structures and Memory Development." In *Children's Thinking: What Develops?*,

edited by R. S. Siegler. Hillsdale, N.J.: Erlbaum.
Cochran-Smith, M. (1991). "Learning to Teach Against the Grain." *Harvard Educational Review* 61, 3: 279-310.
Eisenhardt, M. A., and K. Cutts-Dougherty. (1991). "Social and Cultural Constraints on Students' Access to School Knowledge." In *Literacy for a Diverse Society: Perspectives, Practices, and Policies*, edited by E. H. Hiebert. New York: Teachers College.
Engelmann, S. (1991). "Teachers, Schemata, and Instruction." In *Teaching Academic Content to Diverse Learners*, edited by M. Kennedy. New York: Teachers College.
Heath, S. B. (1983). *Ways with Words: Language, Life, and Work in Communities and Classrooms*. Cambridge, UK: Cambridge University Press.
Moran, S. (July/August 1991). "Creative Reading: Young Adults and Paperback Books." *The Horn Book Magazine*: 437-441.
Prawat, R. S. (In press). "Teachers' Beliefs About Teaching and Learning: A Constructivist Perspective." *American Journal of Education*.
Resnick, L. (1990). "Literacy in School and Out." *Daedalus* 119, 2: 169-185.
Roth, K., and C. W. Anderson. (1991). "Promoting Conceptual Change Learning from Science Textbooks." In *Improving Learning: New Perspectives*, edited by P. Ramsden. London: Kogen Page.
Schoenfeld, A. (In press). "On Mathematics as Sense-Making: An Informal Attack on the Unfortunate Divorce of Formal and Informal Mathematics." In *Informal Reasoning and Education*, edited by D. W. Perkins and G. J. Voss. Hillsdale, N.J.: Erlbaum.
Scribner, S., and E. Fahrmeier. (1982). "Practical and Theoretical Arithmetic: Some Preliminary Findings. Industrial-Literacy Project." Working Paper No. 3. Graduate Center, City University of New York.
Shepard, L. A. (1991). "Psychometricians' Beliefs About Learning." *Educational Researcher* 20, 7: 2-16.

Richard S. Prawat is Professor and Chair, Michigan State University, College of Education, Department of Counseling, Educational Psychology and Special Education, East Lansing, MI 48824-1034.

Copyright © 1992 by the Association for Supervision and Curriculum Development. All rights reserved.