The Incoherence of Contemporary Pedagogical Reform

Metacognition through Crossdisciplinary Lenses

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Abstract

This paper critiques the historical partnership between Education and Psychology in their coordinated search for theorizations of learning and teaching. Psychologists' construction of learning as an integrated set of processes (albeit complex and multifaceted) subserves the historical imperative of this preparadigmatic science to achieve paradigmatic consensus as a mature science. Joining with Psychology, Education loses the ability to address learning theory as the fragmented, locally coherent domain that it is today. The disadvantages of the integrative interpretation of learning are illustrated in this paper with respect to the contradictory roles played by metacognition in contemporary programs of pedagogical reform.

Perspective / Theoretical Framework

Theorizing about good teaching is complicated by the preparadigmatic status of learning theory, the existence of separately conceived and independently coherent notions of learning championed in various branches of psychology (e.g., behavioral, developmental, cognitive, sociocultural) (Cobb, 1994; Sfard, 1998). Historically, educators have responded by partnering with one or another of the schools (usually the dominant one, as with behaviorism or cognitivism through much of the last century). More recently we've aligned with dialectical theories like situated cognition theory or social constructivism that explore the complementarity of independently conceived notions of learning within a complex unity (Ernest, 1998; Lave, 1988). Each of these solutions is problematic, the former because any individual conception of learning is incomplete with respect to the agendas of education, the latter because dialectical syntheses tend to be theoretically intractable and intuitively opaque (Author, 1998).

The current paper stakes out a new response for education to the preparadigmatic state of learning theory. Our pedagogical discourse frequently identifies a trio of discrete learning goals for instruction: skills, knowledge (concepts), and dispositions (AERA, 2005; NCATE, 2002). Diverse branches of psychology (behavioral, developmental, sociocultural) conceive of associated learning processes in theoretically heterogeneous ways. The commonsense strategy advanced in this paper is to elaborate separate genres of teaching, each indexed to a single notion of learning. This strategy retains a strong connection between theorizations of learning and teaching without sacrificing the scope of learning goals valued by educators (and without promoting competition between advocates of different schools). I call the framework of learning theories and associated pedagogical practices *crossdisciplinary* because it coordinates together a range of psychological theories, rather than seeking an integration of theory, as in interdisciplinary scholarship (Kirshner, 2002).

A Sociology of Scientific Knowledge Perspective

The dominant paradigm in pedagogical theorizing against which crossdisciplinarity must contend comes from the learning sciences community oriented by cognitive science, an interdisciplinary field that is heterarchical, incorporating influences of behavioral, developmental, and sociocultural psychology as well as a broad range of other disciplinary influences (Sawyer, 2006). The goal for learning theorists is “integrating insights from these strands in order to create transformative theories of learning” (Bransford, Stevens, et al., 2006, p. 210). This integrative theoretical agenda plays into a vision of rich pedagogical engagements designed to produce learning synergies (Bransford, Brown, & Cocking, 1999; NRC, 2005).

Separate genres of teaching, or an integrative vision?

Typically we think of such questions as problems of theory and evidence to be resolved through the careful adjudication of data. Certainly I could build up a case on theoretical and empirical grounds that generic models of good teaching are too diffuse or else too abstruse to be of much use to practitioners who, therefore, resort to copying the surface features of instructional methods: "Activities, as opposed to ideas, are the starting points and basic units of planning, and little thought is given to the intellectual implications of an activity" (Windschitl, 2002, p. 138); in contrast, crossdisciplinary models are both powerful and accessible because they link practices of teaching to specific learning outcomes within a determinate theoretical frame.

But such a discursive strategy ignores existential implications of the genres question for both education and psychology as fields of study. Fields of study are not only intellectual enterprises, they also are social institutions whose knowledge products are constrained by sociological and historical imperatives (Collins, 1983; Pinch, 2007; Whitley, 1972). Although "psychologists believe they are making rational and technical decisions ... they forget that the historical development of the discipline has preselected the kinds of alternatives realistically available to them" (Danziger, 1990, p. 182).

As sociological entities, both Psychology and Education have good reason to be wary of crossdisciplinary theorizing. Consider first the historic subservience of Education to Psychology (Lagemann, 2000). One of the first preoccupations of scientific psychology was transfer of training assumptions of faculty psychology (e.g., Thorndike & Woodworth, 1901). These early studies found the prevailing belief in broad transfer of learning to be unwarranted, effectively dislodging the existing foundations for educational practice (Hall, 2003; Hilgard, 1996). As a result, education attached itself to the new science, not as a separate and independent field of inquiry, but as a client discipline, dependent upon psychology for our legitimacy and intellectual authority.

As a preparadigmatic science the historical imperative for Psychology is to establish a paradigmatic consensus that unites the field (Flyvbjerg, 2001; Kuhn, 1970): As Vygotsky (1927) put it, "he who can decipher the meaning of the cell of psychology, the mechanism of one reaction, has found the key to all psychology," (vol. 3, p. 320). Thus across the broad terrain of psychology, there is only one orthodoxy to which learning theorists of every persuasion adhere: a single perspective (eventually) should encompass all of the relevant phenomena of learning.

Putting together these observations, we see how unwelcome the crossdisciplinary proposal is likely to be for both psychologists and educators. In choosing to deal with learning theory as the fragmented, locally coherent domain that it is, rather than as the integrated and unified science psychologists hope it will become, we would deprive psychology of a valued domain in which to work out its designs, and to showcase its utility to the broader society (Lagemann, 2000). At the same time, educators would give up the intellectual stature that accrues from our partnership with an established social science.

Unfortunately, the marriage of convenience between psychology and education is not productive of a viable intellectual culture of educational practice.

Objectives and Modes of Inquiry

The crossdisciplinary framework identifies 3 metaphors for learning–learning as *habituation* (skills), *construction* (concepts), and *enculturation* (dispositions)–and associated pedagogical methods. The claims for the crossdisciplinary framework are not ontological; I am not claiming the human organism comes equipped with distinct mechanism for learning corresponding to the three metaphors. Rather these metaphors are posited as constituting our cultural commonsense about learning, consequently underlying all possible pedagogical agendas for student learning. The pedagogical methods of the crossdisciplinary framework are presented as a distillation of the pedagogical intuitions currently entangled in our integrative discourse about good teaching (Kirshner, 2002).

How does one go about establishing such sociology-of-knowledge claims? My strategy is to demonstrate the clarity of vision that obtains from donning crossdisciplinary lenses–from refracting pedagogical proposals into their constituent learning metaphors

rather than viewing them holistically. Previous papers have provided a new typology of Critical Pedagogies (Kirshner, 2005), and detailed the dissimilarity of learning concerns underlying the Math Wars and the Reading Wars (Kirshner, 2007). The present paper focuses the crossdisciplinary lenses on the pedagogical reform movement, finding that metacognition plays contradictory roles within a pedagogical method that lacks basic coherence.

The method of crossdisciplinary analysis is straightforward. The pedagogical practice is described, the learning intentions analyzed, and the instructional methods evaluated in reference to the pedagogical principles articulated within the crossdisciplinary framework for that genre of teaching. In case multiple forms of learning are addressed, the coordination of learning goals is evaluated with respect to consistency and coherence of the support provided to learners (Kirshner, 2008).

Theoretical Analysis

The pedagogical reform movement sometimes labeled constructivist, social constructivist, student-centered, progressive, or authentic has many variations, but also some general commonalities. Frequently instruction is focused around *inquiry groups, communities of learners, knowledge building communities* or other such collaborative fora intended to promote deep understanding of conceptual content as well as valued dispositions including autonomy, critical thinking, and creativity (e.g., Brown & Campione, 1994; NRC, 2000, 2005; Scardamalia & Bereiter, 2003).

Reform instruction typically involves open-ended questions, non-routine problems, or projects that students work on and discuss in collaborative groups. The tasks are chosen for their rich conceptual affordances. Having students' own thinking about the task (rather than the teacher's ideas) become the focus of attention is what allows deep understanding of the content to emerge along with the valued dispositions exercised in the collaborative process (Brooks & Brooks, 1999). Whereas sometimes such pedagogies have a more psychological constructivist orientation and sometimes a more social constructivist flavor, reform is best characterized as "a useful synthesis ... [wherein] knowledge is personally constructed and socially mediated" Windschitl, 2002, p. 137). Metacognition is highly valued within this nexus of engagement as the glue that enables "adaptive expertise"–the marshaling and coordination of otherwise independent and isolated learning products (Bransford, Barron, Pea, et al., 2006, p. 28).

Current theoretical interest in metacognition traces back to foundational work of Vygotsky and Piaget (Fox & Riconscente, 2008). From Vygotsky's sociogenetic perspective, metacognitive (and other higher) functions originate in social interaction: "The very mechanism underlying higher mental functions is a copy from social interaction; all higher mental functions are internalized social relationships.... Their composition, genetic structure, and means of action–in a word, their whole nature--is social" (1981, p. 164). Olson (2003) carries this perspective forward to show how metacognitive capabilities can emerge within collaborative groups as internalization of argumentation: "The normative practice of reason giving and metacognition run

together. Explanation, the giving of explicit or public reasons, is ... the route to metacognition, that is, cognition about cognition" (p. 241).

Metacognition also figured centrally in Piaget's genetic epistemology. Piaget understood conceptual restructuring as resulting from perturbations that arise from cognitive conflicts between expectations and experiences (Brainerd, 2003). However, this is a chancy process, as "the effectiveness of cognitive conflict depends on the way comprehension is monitored. It depends, first, on the individual noticing the inconsistency and, second, on the way it is resolved" (Otero, 1998, p. 149). This is evident in Piaget's (1975) notion of *reflective abstraction*, the primary mechanism for conceptual restructuring:

> Reflective abstraction always involves two inseparable features: a "reflechissement" in the sense of the projection of something borrowed from a preceding level onto a higher one, and a "reflexion" in the sense of a (more or less conscious) cognitive reconstruction or reorganization of what has been transferred. (p.41, quoted in von Glasersfeld, 1991)

Results / Substantiated Conclusions

This dual analysis highlights the contradictory ways that metacognition is incorporated into reform pedagogies. On the one hand, metacognition serves as a valued enculturational goal of instruction to be achieved through discussion and argumentation. On the other hand, metacognitive capabilities are the prerequisite for students' construction of valued conceptual content while engaged in collaborative activities. Thus reform pedagogy is revealed as a fundamentally incoherent agenda for student learning, like a cat trying to catch its tail, always just out of reach.

The problematic character of the reform agenda does not imply that reform teaching can never be successful. Indeed, effective reform teachers have learned to support the cultural dynamics of small group interaction while constantly monitoring the conversations, worrying that discussions may not be productive conceptually, and making judicious moment-by-moment decisions about whether (and how) to intervene as a mediator of conceptual construction while doing minimal damage to the agenda of student autonomy and exploration (Ball, 1993; Marshall, 1994; Schifter, 1998; Schön, 1983; Williams & Baxter, 1996). In short, these teachers have implicitly adopted a crossdisciplinary perspective, coordinating independently coherent agendas of enculturation and construction. However, the reform discourse does not support the development of such expertise. Theorization of learning as an integrated set of processes serves to construct good teaching as a self-consistent set of practices, thereby obscuring from teachers the contradictory demands of diverse learning goals, the need to "'walk... the pedagogical tightrope'" (Wood, Cobb, & Yackel, 1995, p. 421).

Scholarly Significance

In this paper, I set out to show that integrative theorizing about learning obscures the contradictory functions of metacognition embedded in pedagogical reform, at considerable cost to the efficacy of the reform movement. Unfortunately, integrative assumptions about learning are not mere theoretical assumptions subject to review and revision in the normal course of scientific debate. Rather integrative theorizing attends to the sociological imperative of psychology to move from preparadigmatic to paradigmatic status. The severing of Education's interests from Psychology's based upon sociological analysis is unlikely to be readily embraced by either party: "For many scientists ... it is anathema to explain the development of science in terms of social factors. ... it is profoundly destabilizing" (Pinch, 2007, p. 266).

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