INTRODUCTION

Perspectives on Learning Science

Because research and practice in science education are grounded in theories of learning, it is necessary to constantly maintain conceptual clarity about these theories. This is a difficult task as ideas about learning are uniquely interpreted by individual scholars, coopted by other theories, and combined with personal beliefs and practices. What results is an amalgamated perspective of learning that may only loosely resemble its original form. A quick example: In the early 20th century, John Dewey laid out a sophisticated and coherent system of ideas about learning. Science educators adopted his ideas immediately as they struck a resonant chord with the general ethos of progressivism. The spirit of active, student-centered learning was later reinforced in 1960s in the influential work of Jerome Bruner. Although Bruner was certainly familiar with Dewey, his view of learning drew more from the developmental theory of Jean Piaget. More recently, Kuhn and Posner’s analyses of scientific practice, postmodernism, feminism, and sociocultural perspectives have also become part of enlightened discourse in science education. Dewey’s ideas are still evoked in the name of progressivism, but his original ideas now come to us in the swirl of nearly 100 years of interpretation.

The blending of ideas from various psychological, sociological, and political sources is to be expected and encouraged. However, there is a distinct tendency toward conceptual muddledness where ideas and terms become either ambiguous or practically devoid of meaning altogether. One has to look no farther than the term constructivism for an example of how theory and practice in science education requires constant attention to conceptual clarity. Effective scholarship in the JRST community requires that clarity and common ground be continuously established and reestablished as ideas evolve. Granted, a certain amount of taken-for-granted, assumed common ground is necessary for communities of practice to function efficiently. However, because scholarship about learning deals in the abstract, personal, contextual, and historical, the need to maintain clarity in the meaning of our terms and ideas is especially important in our field. Thus, the goal of this JRST article set is to facilitate the process of constant, careful reflection on the conceptual basis for our work. The conventional practices of citing other work or using particular terminology are insufficient for maintaining the kind of communication required of productive scholarship. We must periodically take time to specify as clearly as possible our assumptions, terms, and ideas.

In this article set, three perspectives on learning are presented: sociocultural, feminist, and Deweyan. These three articles do not claim to represent all points of view within sociocultural, feminist, and Deweyan camps. Important variations undoubtedly exist within each perspective and are essential to that community’s overall vitality. That being said, the viewpoints presented

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in this article set—however limited—should at least be conceptually clear and thereby function as a solid starting point for further scholarship.

The Design of This JRST Special Section

In special journal issues, paper sets, and conference symposia, the central goal is usually to foster productive exchange among divergent points of view. Unfortunately, this is an exceptionally difficult task and the whole usually ends up being less than the sum of its parts. To lessen the tendency toward diffused discussion, this article set was designed to have the authors address a set of common core issues. In their pieces, these authors agreed to a two-part organizational structure.

In Part 1, the purpose was to establish a common ground for discussion. Each author agreed to address, in no particular order:

- two to four specific examples of work in that perspective,
- the major assumptions and ideas of the perspective,
- the intellectual, social, or political origins of the perspective,
- variation within the broader perspective, and
- a real or hypothetical science lesson that enacts the major ideas of the perspective.

In Part 2, the purpose was to generate a productive dialogue about the specific ideas presented. Drafts of the first part of the manuscripts were exchanged between the contributors. With drafts of the other perspectives in hand, authors addressed the following issues:

- the important similarities and differences between their perspective and the other perspectives as represented in the manuscripts,
- the significance of these differences—that is, the degree that perspectives are compatible or incompatible, and
- their recommendations for future work based on analysis of the similarities and differences.

Unlike many paper sets or symposia, there is no discussant to analyze and synthesize the various perspectives. This task is accomplished by the individual authors themselves.

As a final note, some readers may wonder why these three perspectives were chosen. I considered making the argument that these three viewpoints are more powerful, more important, and less antiquated than others. I decided, though, that I could be neither persuasive nor honest in that justification. Instead, this choice has mainly to do with familiarity: that is, most JRST readers are likely to be acquainted with Deweyan, feminist, and sociocultural ideas. With familiarity comes the risk of a mischievous kind of confusion: the kind that has us unaware of its presence. It is actually healthier to be slightly unsure about meaning—and thus aware of our uncertainty—than to take it for granted. Thus, I contend that because of widespread familiarity with these three perspectives, there is also widespread need for conceptual clarity.

Again, the choice of these three perspectives is not intended as a statement of their value. In Deweyan pragmatism, the value of an idea has less to do with its popularity, heritage, or age and more to do with its effect: that is, what it yields for those who take it seriously. In that light, no one can fully predetermine the worth of an idea for others. Instead, members of the JRST community must decide for themselves what these ideas yield in their own worlds. This being said, I present
these three perspectives as a few of many potentially important perspectives on learning. Other perspectives—conceptual change, philosophical and historical approaches, and connectionism to name a few—deserve similar treatment in future issues of this journal and others.

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