From the start, the PLTL community has recognized the importance of giving Workshop leaders theoretical tools to ground effective instructional practice. Currently, training materials encourage leaders to utilize Vygotskian concepts such as scaffolding, ZPDs, and the internalization of disciplinary discourse—in all, a broadly constructivist approach to facilitating conceptual change. In this article, we suggest introducing Workshop leaders to Carol Dweck’s attributional theory of intellectual engagement and performance. We believe this theory speaks to PLTL instructional practice, is compatible with PLTL’s basic developmental and constructivist commitments, and—surely important to a scientific community—has strong empirical support. As far as we can tell, Dweck’s approach has flown beneath the radar of the PLTL community. We offer a brief overview and suggest further readings.

Dweck and colleagues note that some students flourish in the face of cognitive challenge, while others—even those who have succeeded equally well up to now—find themselves overwhelmed by difficult problems. Dweck offers an attributional account of this phenomenon: how students explain their performance influences how they feel and what they do next. When a problem seemingly resists solution, students may attribute this difficulty to a lack of intelligence—a trait that about half of the college students in Dweck’s studies believe is “fixed.” Thus, failure to solve a problem is seen as indicating not just a deficit but an irremediable shortcoming. For students whose overall sense of self-worth is contingent on seeing themselves as having adequate academic ability, difficulty with an academic task will have a hefty price tag. Given a choice, these students are understandably likely to avoid challenging tasks in favor of ones where their success is assured. On the other hand, students who believe cognitive ability is “malleable”—open to development through effort and experience—were significantly less likely to be deterred by difficult (or even impossible) problems and more willing to undertake challenging tasks.

The mediating role of student beliefs about “intelligence” has an obvious bearing on the conduct of science instruction at the college level, especially because the view of cognitive capacity that students bring to a task is itself influenced by the kind of feedback instructors provide and what students read or are told about the nature of intelligence. Evaluative feedback that emphasizes students’ intelligence increases vulnerability in the face of difficulty; exposure to material that describes cognitive growth buffers them against corrosive consequences.

In our experience, Workshop leaders have had no difficulty harmonizing Carol Dweck’s approach with other theoretical perspectives presented during their training. Like Vygotsky, Dweck weighs in firmly on the side of cognitive capacity as open to change and growth. In addition, the importance attributional theory assigns to
learners’ interpretive schemas—in this case, to students’ theories about the nature of intelligence—places it squarely in the constructivist tradition. Details of the research that supports and informs this approach may be found in the suggested readings. Dweck (1999) is a very readable source for PLTL faculty; we have used chapters of it with our leaders. Dweck (2003) might be used by Workshop members as well as by leaders. Both include substantial references.

Suggested Readings


