

***Inductive reasoning contexts for generating principles about
effective practice and the natural world***

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The *Teaching to Learn* philosophy is based on the ideas of Vygotsky and Dewey as well as on the basic principles of scientific induction. Learning is viewed as a social practice embodied in changing participation, identities, and institutional norms. A central mission of the project is educational transformation at all levels. In addition to attending to curricula and learning contexts for students, attention must be focused on and leveraged with learning environments suitable for K-12 teachers and university faculty. The *Teaching to Learn* project leverages environments for multiple stakeholders in math, science, and education (students, K-12 teachers, university faculty) in which participants have opportunities to experience the phenomenon of interest and then are provided adequate time and space for focused reflection and analysis of their experiences, with the goal of collaboratively inducing principles that govern the experience (whether the experience was a laboratory experiment in science class, an instructional intervention performed by a teacher, or large-enrollment, college course transformation). I present samples of these *Teaching to Learn* environments (as well as how they are leveraged with one another) for the stakeholders mentioned above. I support claims of effectiveness with data from our studies. I conclude with ideas about future directions for broader-scale transformation necessary for realizing our goals of engaging students in the process of conceptual and social learning.