

Teaching Philosophy

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I teach science as a way to interact with nature, as a creative yet critical practice of asking falsifiable questions, and as an exciting and important means to understand our own place in the world. The following are some tenets I use to guide my teaching.

1. Motivate students to think like an organismal biologist or a paleobiologist. Have them experience the worldviews, questions, and skills inherent to each discipline.
2. Encourage bold participation. Frequently use non-graded exercises, classroom discussions, and engaging activities.
3. Always highlight four foundations:
 - The power and uniqueness of scientific inquiry
 - The unifying concepts and processes (heuristics) underlying each scientific discipline, such as reproduction and feeding; natural selection and other evolutionary mechanisms; phylogenetics as an organizing tool; biotic influences of a changing environment; and their consequences over long time scales
 - Particular examples demonstrating how nature supports these principles, as well as when exceptions are important for clarifying these principles
 - Scientific and cultural world views shaping how science advances, such as adaptationism/uniformitarianism and contingency/catastrophism
 - The powerful role of data in testing scientific hypotheses and drawing appropriate conclusions
4. Say it; say it again, say it differently. Design courses around these important, overriding foundations, and address them repeatedly throughout the course. Understanding develops through reiteration in changing contexts, and different students learn in different ways.
5. Keep the focus on students. Engage students in active learning by having them reappraise their prior constructs and draw connections with their own observations and experiences.
6. Learning is an action. Emphasize applying over memorizing, deconstructing and rebuilding complex ideas from first principles rather than reciting empty formulae, and practicing science rather than passively reading or hearing about it. Allow students to engage in their own process of discovery.
7. Allow time for curiosity and thoughtfulness. When suitable, use take-home essays and semester-long projects that use real-life and topical case studies and that foster synthesis of course material. During class, allow time for students to develop their thoughts and questions.
8. Encourage written and oral communication. We best develop our thoughts and acknowledge our own understanding by writing and by teaching others.
9. Be concrete. Go out into the field and to museums, use live organisms and specimens, use local examples, invite participation from local experts, and draw on current topics whenever suitable.
10. We are mutual learners. Inform your own teaching methods through regular evaluation and self-reflection.
11. Model curiosity. Inspire students to appreciate nature and to use this curiosity to pursue interesting questions when they leave the classroom.