

Research Interests

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My research interests, like my education and experience, are interdisciplinary. These are some of the areas I am pursuing research in.

Earth Smarts, or Socioecological Literacy

My dissertation research describes earth smarts, a kind of street smarts writ large. Earth smarts, or socioecological literacy, is a practical, nonpartisan educational framework that describes the qualities individuals and societies need to justly maintain or improve their quality of life in a changing world. It is based on respect and justice as fairness, and is a freely available, Creative Commons licensed tool designed for researchers, educators and policy-makers. This work relates closely to efforts in environmental literacy and place-based education, including the No Child Left Inside initiatives.

Linking Classrooms & The World

I am interested in improving the curricular and pedagogical links between classrooms and the world outside them, including nature, community, and science centers. I think the pragmatic and affective aspects of formal education could be improved considerably by better coordination, while simultaneously improving the rigor and relevance of the learning that takes place during visits. I am also working on ways to better integrate educational technology and interdisciplinary curricula with real and virtual field trips; this is partly based on my environmental education and wildlife research background, which involved experiences which are not available to the vast majority of students, particularly in urban areas.

Environmental Attitudes

I am interested in how education contributes to societies that have impressive environmental & ecojustice credentials, such as Belize, where I worked with local Garifuna communities for four winters, and Dominica, the Caribbean's "Nature Isle". This interdisciplinary work examines how education, policy, geography and culture interact, and incorporates the importance of local and/or indigenous knowledge to science. I also study how specific teaching techniques and modules may affect environmental attitudes as measured by the New Ecological Paradigm⁴ scale.

Socioscientific Issues

While teaching science methods courses I have been examining attitudes towards teaching evolution in public schools, and their implications to understanding the nature of science. This mixed methods work includes an instrument I designed (the TEPS¹) in conjunction with the Views on Science & Education (VOSE²) questionnaire. Recently I have been exploring the overlap with challenges in climate change education, and the implications of denialism to scientific and environmental literacy. I have also worked with colleagues on a variety of classroom-based SSI research projects.

Sensory Ecology

My masters research examined how sound production related to the behavioral ecology of rockfishes (*Sebastes spp.*), and I maintain contact with my colleagues in marine sensory ecology. This work, which involves field deployment of dataloggers, can also be applied to freshwater and terrestrial species that produce sound, and is conducive to research with graduate and undergraduate students. I also have extensive field experience tagging and tracking wildlife species including bears, wolves, fishes, killer whales and dolphins.

Writing & Reading Science

I am encouraged by recent efforts to reintegrate science and the arts, and am working on a framework that would make it easier for teachers and parents to write locally relevant, engaging stories with their students. Using techniques from narrative fiction, the stories would encourage exploration and creativity, while incorporating local and national standards for reading, writing, science, and social studies. In addition to integrating more art and science into core reading and writing class time, the framework would help educators harness the considerable power of young imaginations to escape the social and logistical limitations of their classrooms.

Avoiding Dissonant Information

My journalism background has contributed to an interest in how cognitive dissonance may contribute to avoidance of anomalous data. In a media rich world, are families increasingly able to avoid information that conflicts with the worldview of one or both parents? I am examining the implications this has for conceptual change as it relates to Chinn & Brewer's³ framework for anomalous data, and what role it may play in evolution and climate change education.

Citizen Science

I think it is important that citizens in a democracy are scientifically literate, and becoming part of the day to day process of science can help. Advances in communication and technology have increased the opportunities for everyone to become involved in the collection of important scientific data. From programs to monitor water quality in your local lake, to bird, frog or fish counts, there are an increasing number of ways for interested citizens to contribute, particularly with the explosion of mobile technology like smart phones. I have been involved in citizen science through programs and organizations such as the Reef Environmental Education Foundation, The Georgia Strait Alliance and Coral Key Conservation, and remain interested in the research possibilities and potential benefits.

References

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3. Chinn, C. A., & Brewer, W. F. (1998). An empirical test of a taxonomy of responses to anomalous data in science. *Journal of Research in Science Teaching*, 35(6), 623-654.
4. Dunlap, R. E. (2008). The new environmental paradigm scale: From marginality to worldwide use. *Journal of Environmental Education*, 40(1), 3-18.