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Shifting Socioecological Paradigms while Processing Interdisciplinary Topics

Christine M. Yukech
The University of Akron, Akron, Ohio, USA

cmy5@zips.uakron.edu

Abstract

This paper explores the notion of scholarly inquiry from a variety of science education perspectives which allows the individual to view scientific phenomenon from a variety of epistemologies to solve socioecological problems. The proper translation and conceptual modeling can have implications for social and interdisciplinary connections. Concept models are used to simplify relationships towards understanding social-ecological systems as communication tools. Models are more or less quantitatively delivered by abstract or empirical data, they define questions and concepts which generate hypothesis and predictions and determine the relationships between the whole and parts. Models explore the behavior which helps to explore new paths and to determine what we know and what don't know. Scientists from different fields sorted by applied or theoretical, social scientist or natural scientist are more likely to be able to communicate and interpret information about diverse social systems, including forests, desert, northern lakes, agricultural systems, and urban landscapes. Common language for interdisciplinary research, includes the place for human and ecology, and questions about processes and functions using scales. Common language becomes a process so that restoration is not just lip service or a patch to an ecological problem but a real solution to a real world problem in the field and allows for values, ideas, opinions, and beliefs into one box representing human mental ideas which were discrepant to the social scientists way of thinking. The social scientists discuss how human behavior caused by human values and behaviors acted out. For example, a hydrologist needs to know the needs of the people that live at different vantage points of a mountain in order to design the right systems to collect and utilize a water shed. Some concept models include symbols such as energy pathways and flow, consumer transformation of energy, dialectic field, propaganda to promote something. The products of concept model building reveal suggestions for solving interdisciplinary problems, distinguished between types of people, (fishers or farmers), types of behaviors, (political or economics), mental processes, (values and attitudes). Ecological systems problems are not as easy to reveal as daphnia and fish do not complain when their behavior is under represented. Each field representation explains the socio-ecological suggestions for solving the management of natural resources. The groups discuss how scales can determine the management decisions that the social and interdisciplinary research problem solving reveals. The models work when producing interpretive discussion which helps determine the things that the research scientists agree or disagree about. The models were constructed by the interdiscipnary research teams so that they could interpret data and rationalize results. There is hope that this type of communication will sort anthropogenic and biological factors that push for ecological change. The communication needs to be synergetic in that it needs to cross many socioecological boundaries. It can however clarify research questions and designs. For a true interpretive shift to take place the policy makers, concept models, anthropologists, ecologists, biologists and social scientists need to look beyond just details and agendas and listen to the problems at the sites communicated from multiple entities.

The barriers include the ability to address complex scientific dilemmas with disciplinary specialization which does not guarantee the ability to solve complex problems. Crossing barriers requires; A. Funding & Time – joint proposal writing/doctoral preliminary exams B. Cross disciplinary cooperation/ integrated technical training D. Getting around turfism E. Getting around egos F. Getting past differences in methodologies The design of research questions integrate theoretical knowledge with practical problem solving. This research shows the outcomes that need to impact the knowledge structures of each represented disciplinary product and construct ways to create a critical awareness towards understanding the need for interdisciplinary research. The spectrum of integration of the projects requires coordination, collaboration, combined inquiry, sharing, creation, synthesis of the knowledge among the research from various disciplines. Training and resource issues that cause bridges and barriers require technical training through integrated networks. Funding through grants and graduate stipend provide funding for professional travel. The groups were given time for joint proposal writing, doctoral exams, and coordinated proposal writing. Recommendations for establishing accountability strategies included the following: A.) Develop formal and informal communication strategies, B.) Select team members thoughtfully and strategically address temporal and spacial scale issues, C.) Recognize and respect timing issues, D.) Define focal themes and research questions jointly and clearly, E.) Emphasize the problem definition and team proposal writing, F.) Target interdisciplinary training, and G.) Identify mentors on team integration.

The codes for bridges and barriers help to discern and practice the integration for interdisciplinary research framework which provides order for social ecological changes to take place. There needs to be a platform for creating the space to dialogue and way to put the ideas into motion.

Keywords: Socioecological Paradigms, Concept models

Biography

Christine M. Yukech has a B.S. Secondary Education/Integrated Science from Youngstown State University and an M.S. in Secondary Science Education with a focus in Chemistry Education & Technology, also from Youngstown State University. She chose the University of Akron for her Doctoral Studies and is in the department of Curriculum and Instruction in Secondary Science Education

She taught 8 years of 7th/8th grade Science for the Salem Board of Education from 1992-2000. While she worked on her masters degree she taught at Youngstown State University in the Arts & Science department: Chemistry, Biology, & Physics lab based courses. She also taught in Teacher Education as an adjunct & supervised the secondary science education students Education. She then taught at Cardinal Mooney High School- Biology, Anatomy & Physiology, Bio 2 from 2006-2012. In the spring of 2008 she taught an Advanced Science Methods course through a grant cohort. The University of Akron Wayne Campus- Adjunct instructor - Intro. To Bio Chemistry (Spring 2011).

She is a Field Study research assistant for YSU & Hiram University & Penn State University (Summer 2012). She created Curriculum for the Cuyahoga Valley National Park on Biodiversity and presented at NSTA 2008.

Her research interests are cognition/ assessment and Concept Tests in Secondary Science Education.