SESSION #4C

CHAIR: Dr. Dominic Boccelli

Bringing New Perspectives and Knowledge into Education

Friday, Oct. 25, 2019

9:15 – 10:45 am

Papers:

1.) **Marginalized Knowledges and Education**
By Alberto Arenas, University of Arizona

2.) **Expanding Environmental Science Literacy to Include Cultural and Community Knowledge**
By Kristin Gunckel, University of Arizona

3.) **Speaking back to 'sustainable development': Land education and Indigenous perspectives**
By Austin Cruz, University of Arizona

4.) **Data Sharing and Engineering Faculty: An Analysis of Selected Publications**
By Christie A. Wiley, University of Illinois Urbana-Champaign

Paper # 1

Marginalized Knowledges and Education

*By **Alberto Arenas**, Associate Professor of Environmental and Sustainability Education, Teaching, Learning and Sociocultural Studies, College of Education, University of Arizona*

Abstract: *Marginalized knowledges* are the collection of intergenerational knowledges and skills from communities worldwide that hegemonic forces have pushed to the margins of society. Marginalized knowledges include facts, beliefs, perceptions, attitudes, behaviors, and competencies that people have about the world. All communities worldwide produce these knowledges and attempt to preserve and pass them on to future generations. It is the human capital that materially-poor rural and urban peoples have developed over time—both Indigenous and non-Indigenous communities—while being part of a given ecosystem and locality. Marginalized knowledges serve to fulfill economic, social, environmental, spiritual, or cultural needs. Although many consider poor people to be lacking adequate amounts of money or enough material possessions, they may be wealthy thanks to the knowledge and skills they may possess to fulfill basic subsistence needs along with a unique sense of identity. Some examples include knowledge that helps its users grow food, provide shelter, promote health care, make house wares, take care of plants and animals, fulfill cultural and spiritual needs, and in general, improve the community's livelihood and environmental well-being. Because these knowledges sometimes lack a real or perceived value within the market economy, they have often been prevented from being viewed as a vital asset by society at large. In this presentation I will explain the importance of marginalized knowledges in society at large. Then, I will focus on pedagogies that incorporate marginalized knowledges into different educational contexts, and strategies that are currently used (or that could be used) in schools. I will conclude with words of caution that educators should take into consideration as they seek to include marginalized knowledges in school and daily life.

Paper # 2

Expanding Environmental Science Literacy to Include Cultural and Community Knowledge

*By **Kristin L. Gunckel**, Associate Professor, Department of Teaching, Learning, & Sociocultural Studies, College of Education, University of Arizona*

Abstract: Science education for sustainability is built on the foundational premises that the public should be able to understand and use science to participate in local decision-making about environmental issues facing their communities. This vision imagines a public that is educated in scientific ways of thinking in order to make evidence-based decisions. Scientific thinking is essential for making sense of complex environmental problems, making predictions about the impacts of environmental issues on people and ecosystems, and developing strategies for preventing and mitigating problems. However, this perspective on the importance of science education does not consider the ways that science frequently alienates and often disregards the lived experiences, cultural perspectives, and traditional knowledge of people and communities who are often most affected by environmental degradation. In this presentation I provide two examples of how the inability of those most literate in environmental science to acknowledge the concerns, viewpoints, and experiences of the communities with whom they work is problematic and amplifies, rather than ameliorates, the harm caused by environmental damage. I argue that science-based decision-making does not exist outside of the sociocultural context and failure to take that into account when using scientific models to address local problems leads to increased mistrust and the perpetuation of environmental injustice. I conclude with a framework for environmental science literacy, for both scientists and the lay public, that includes an understanding of the socio-cultural-historical contexts in which environmental problems are situated, an incorporation of local and cultural knowledge of the environment, and the capacity to analyze when and how science and model-based decision-making can be tools for both perpetuating and addressing environmental and social injustices.

Paper # 3

Speaking back to 'sustainable development': Land education and Indigenous perspectives

*By **Austin Cruz**, PhD Candidate in Ecology and Evolutionary Biology, Department of Teaching, Learning, & Sociocultural Studies, College of Education, University of Arizona*

Keywords: Indigenous epistemologies, Indigenous education, sovereignty, self-determination, land, land education, land-repatriation

Abstract: The construct of *place* plays a considerable role in contemporary curricula, pedagogy, and learning with students within many academic disciplines, including "sustainable development" and "sustainability" education. While important strides have been made within the domain of place and its theoretical and operational impact on students' learning, there remain fundamental constraints of the notion of place, particularly with regard to historically marginalized students and communities such as Indigenous peoples throughout the world. One area of scholarship that not only offers a compelling critique of place for such underserved communities, but also a socially and environmentally sustainable proximal solution is the growing field of *land education*, which from an Indigenous perspective is the learning of deep social, political, and ethical relationships on and with land, and the approach of *land-as-pedagogy*, which is the understanding that the primary and ultimate teacher is precisely the land itself.

By drawing upon Indigenous scholarship and global case studies of Indigenous relationships to land (e.g. from the Arctic, Ecuadorian Amazon, New Zealand, the Rift Valley of Africa, and the U.S.), I argue that the educational implications of land education and land-as-pedagogy necessitate that curricula, pedagogy, and learning environments ought to center such ideas into *all* curricula and pedagogy irrespective of academic "subject" or discipline. Acknowledging *where* events, relationships, experiences, and understandings happen, communities and learners are afforded the opportunity to reassess and reaffirm the ontological and epistemological basis that all knowledge is contextualized, and that contextualization starts with/in land. One potential positive educational outcome of such curricular, pedagogical, administrative, and educational policy change around land is the affirmation and strengthening of Indigenous peoples' sovereignty, self-determination, and self-education, as well as the larger enculturation of non-Indigenous learners to more applied, responsible, responsive, and explicit alliances and interdependencies with land and other communities. In all, repositioning land education and land-as-pedagogy from a marginal to indispensable place and space within all learning and curricula initiates the logical consequence of such pedagogy in light of "sustainable development" initiatives: the complex, ethical, and historically informed process of Indigenous land-repatriation.

Paper # 4

Data Sharing and Engineering Faculty: An Analysis of Selected Publications

*By **Christie A. Wiley**, Physical Sciences and Engineering Research and Data Services Librarian and Assistant Professor, University Library, University of Illinois Urbana-Champaign*

Abstract: Funding agency mandates have issued memorandums requiring applicants to submit a data management plan including the support for public access to research data. This inclusion and access indicates growing trends among research journal publishers. This article examines twenty-eight engineering journal research data policies in efforts to understand the current state of data sharing, the relationship to open access, how data are shared with supplementary files, and how can we measure if the strength of data-sharing policies influences the observed pervasiveness of sharing data. The purpose of this study is to determine the pervasiveness and quality of data-sharing policies as reflected in editorial policies and the instructions to authors. Examining engineering journals scholarly communication policies provides an opportunity for data librarians to review and anticipate new data trends, opportunities, and challenges, to adjust library services, and adjust user expectations or negative preconceptions.