

# Eco-thinking and Informal Science Learning

*Building a Journal for Everyone*

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As founding co-editors, we welcome you to the launch of the *International Journal of Informal Science and Environmental Learning* (IJISEL). These are exciting times to begin a new journal that focuses on informal science and environmental learning. We share with you our aspiration to create an academic space that brings together the informal science and environmental education communities through an open-access platform - accessible to a diverse and international audience. In aiming to draw a collection of original research, the new journal will document and describe a diversity of research from around the globe. We will address this goal in two ways. First, the journal will reflect a diversity of voices/cultures conducting research across these global fields of inquiry. Second, the journal will further illuminate research diversity by highlighting an eclectic range of methodologies. From established to emergent methodologies we aim for papers to describe learning in science and environmental contexts in ways that push our collective thinking about what is possible.

In 2003, the Informal Science Education ad hoc committee of the National Research in Science Teaching stated that research focused on science learning outside the classroom needed to be fostered with a goal of developing, "... a more holistic, large-scale understanding of the entire learning process, both inside and outside of schooling environments" (Dierking, Falk, Rennie, Anderson, & Ellenbogen, 2003, p. 109). Nearly 20 years later, this statement still continues to serve as a catalyst for current research in the ISEL community.

Over the past 30 years there has been a rapid growth of research that discreetly focuses on out-of-school learning as well as the growing body of literature that examines the connections between learning across formal and informal contexts. IJISEL grew out of this trend and the need to develop one resource devoted to bringing the fields of informal science learning and environmental learning in dia-

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logue where authors may communicate their own work and engage with the work of others.- While there are numerous journals publishing articles that emphasize informal science learning, IJISEL is unique in a) bringing informal science and environmental learning into conversations, b) centering a globality of scholarship and c) providing a space that is practice-oriented allowing for community and/or youth-voiced articles to be featured.

We, the coeditors, intend to publish an array of articles from various professional perspectives, methodologies, and theoretical standpoints. IJISEL will include a broad range of topics, research methods and techniques, and locations (e.g. community-based contexts, museums, zoos, aquariums, outdoor, camps, parks). As longtime researchers and practitioners in these fields, we recognize that many innovations in formal science and environmental learning have emerged from research in informal learning/out-of-school settings, especially in community-based and culturally-resonant contexts. We will amplify this latter orientation to learning by publishing articles that emphasize indigenous/indigenizing, decolonial, and liberatory work, especially for the most marginalized learners. These emphases and practices will allow for a critical mass of authors to come together to promote, discuss, and analyze the emergent topics in ways that stimulates an exchange of new ideas and advances learning in these respective fields towards more equitable and justice-oriented frameworks and practices.

As we reflected on current socio-scientific issues (e.g., global pandemics, climate change), we revisited Dierking, Falk, Rennie, Anderson and Ellenbogen's 2003 informal science education policy statement published in the *Journal of Research in Science Education*. Their work established the presence of the field within the National Association of Researching Science Teaching. They advocated for research that considers the features of learning beyond the classroom, e.g. the cumulative, ecological, and sociocultural nature of informal and environmental science learning, the importance of context and place, sociocultural links to learning, and the product and process of learning. Since their recognition of the importance of learning outside the classroom, researchers have addressed the intersection of neurological, bio-cultural, and/or material aspects of learning; epistemological, ontological, and axiological considerations in learning; and research design. These new ideas and thoughts about decolonizing, indigenizing, and unsettling are pressing us to reexamine our teaching, learning and research. Our desire is that IJISEL will be a place to publish these ideas and experiences.

Similar to other venues, articles will go through a peer review process to ensure rigor and relevance. However, we are excited about features that will make our journal stand out from existing science education journals.. As a first example, we plan to initiate a practitioner section, Notes from Practice (NfP), that will emphasize research to practice. We will also have shorter practice-oriented pieces to accompany larger research articles. These articles will highlight the key points that are relevant to practitioners who design and facilitate informal and environmental learning experiences.

Lastly, we extend a special thank you to David Zandvliet at Simon Fraser University as his university provided us with the platform Open Journal Systems to launch the new journal. Additionally, as part of developing IJISEL we absorbed and extended the previous journal *Eco-thinking* with a desire to expand its scope to the informal science community. By launching a new journal under the IJISEL

banner, we intend to broaden the scope of the original journal to include all forms of ‘out of classroom’ learning. The new name also reflects the strong overlap between environmental and informal science learning while offering an opportunity for these two communities to communicate. Additionally, we are delighted to work with Michel Lockhorst at DIO Press who has previously worked for other publishers including Brill, Sense, and Springer. The new venture of DIO Press is very exciting and is pushing boundaries for what is possible in academic publishing. Additionally, Michel was instrumental in advocating for the publication of another journal: *Cultural Studies of Science Education*, a well-respected venue for socio-culturally centered science education research. Thank you Michel, for your support and your energetic ideas as we launch IJSEL.

We are very excited about this venture and grateful to have the support of many colleagues who are also key thinkers in informal science and environmental learning.

### Meet the Editors (in alphabetical order)

Jennifer D. Adams is a Canada Research Chair and Associate Professor at the University of Calgary. She has research and teaching experiences across formal and informal settings at the secondary and postsecondary levels. Her work centers equity and fostering spaces of belonging and mattering for learners who have been historically marginalized from meaningful STEM learning experiences.

Patricia G. Patrick is an Associate Professor at Columbus State University and a Fulbright Scholar. She has 27 years of experience teaching in science education which includes 15 years researching learning outside the classroom. She authored the book *Zoo Talk* and is editor of the book *Preparing Informal Science Educators*.

David Zandvliet is a Professor at Simon Fraser University and holds the UNESCO Chair in Bio-Cultural Diversity and Education. He served as the founder and lead editor of *Eco-thinking* for 5 years. He has created a space for diverse and international authors to disseminate research and practice on environmental teaching and learning.

### Articles in this Issue

This journal focuses on informal science and environmental learning and addresses the need for placing this work in a one location. The journal is timely as it will be a compilation of evolving perspectives on informal science and environmental learning. The compilation of articles for this inaugural issue represent research from five countries and celebrate diversity in research and methodologies. The work recognizes that environmental education and science education are tools we may use to address social justice and promote equality. Additionally, the articles reflect the diversity of methodologies—qualitative and quantitative methodologies. The articles are written by leaders in the field who are researchers and practitioners of informal science education and environmental education. The articles reflect empirical work supported by an understanding of the context of learning

outside the classroom and underpin the need for work which supports growth between formal and informal learning spaces.

Ash & Race emphasize the importance of defining power and identity through discourse. Employing cultural historical activity theory, they explore the words shared during field-based preservice secondary science teacher professional development programs focused on environmental education. Their data insinuates tensions emerge in equity-based pedagogy, but they suggest equity may be achieved by providing resources based on need. While their findings are complex, the findings are a starting point for conversations that must take place in teacher development programs and within environmental education.

Schneiderhan-Opel & Bogner followed 10<sup>th</sup> graders through a citizen science activity (Barcoding Fauna Bavarica project) to elaborate on the relationship between and interest in biology and environmental values and if interest in biology and environmental values were predictors of content knowledge. Organizing the relationships in this manner provide allowed the authors to provide schema of the mediators for biology interest and preservation. Their work acknowledges the positive role of environmental values and biology interest on environmental learning and underpins the relationship between learning inside and outside classrooms.

Traditional classroom educators teach using the fundamentals of epistemology, learning theories, and pedagogy. Ritchie & Morrison provide a study focused on adjusting our ideologies about learning by considering the values and practices of indigenous people—Māori, the Indigenous peoples of Aotearoa, New Zealand. They accomplish their work by grounding their methodology in local indigenous Māori theory and narrative. Their results indicate a close affiliation between student success in school and extended family support. Additionally, schools included Māori and Western knowledge domains and students were empowered to make decisions and identify their commitment to the environment. Ritchie & Morrison raise important implications for current and future pandemics. Indigenous knowledge and teaching must be imbedded as part of the formal classroom curriculum and educator practice.

Makerspaces are touted as resources for democratizing science education. In their article, Tan & Barton problematize this by utilizing the Rightful Presence framework for justice-oriented education to unpack the relationships between the materiality of making and the artifacts youth produce. The illustrative vignettes that they describe demonstrate how youth design and create artifacts that necessary for their and their communities' well-being and futurity.

As many ISE organizations have missions that include equity, Tran & Gupta urge institutions to go beyond simply forwarding statements. Rather, it is imperative that ISI staff engage in praxis of critical consciousness in ways that creates cultures of belonging. Building on a model from youth development scholars, Tran & Gupta forward an approach to professional learning for ISE staff that includes include humility, compassion, and belonging. These ideas must be embodied throughout the organization, from individual staff into the collective organization before they can be genuinely practiced. Without these components structural inequities will persist despite effort to do otherwise.

## Reference

Dierking, L. D., Falk, J. H., Rennie, L., Anderson, D., & Ellenbogen, K. (2003). Policy statement of the “informal science education” ad hoc committee. *Journal of Research in Science Teaching*, 40(2), 108-111.

