



I-WISE Wholistic¹ Education Strand

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Wholeness

Wholeness is not the division of reality into constituent parts then subsequently synthesizing them into a working whole. Wholeness is about starting from an undivided whole and not fragmenting that whole. Wholistic education must be looked at from that perspective, meaning that, as much as possible and from as wide a perspective, teaching must be done from an inclusive and relational approach, and not from a fragmented, disciplinary, and specialization approach. Wholistic education is not about replacement: it is about continuous adaptation and adjustment.

Naturalizing a Wholistic Approach

Wholistic approaches, because of their broad perspectives and seeming complexities, are difficult to explain and capture their wholeness. As a consequence, wholeness is best explained via example, illustration, and analogy. An example, illustration, and analogy is a 'person'. A person, in addition to his/her physical makeup, consists of individual and social beliefs, experiences, retained knowledge, and wisdom. This psychological and social makeup of person is fragmented and compartmentalized into neat little categories by our educational methodologies: that is what Western language and culture attempts to do. But in fact, the total psychological and social makeup of person is always working as a whole. Whether it be in the day-today-life of the person or through his/her lifetime, the person is always continuously adapting and adjusting. So it goes with group sports. A team, though made of different players with different skills, has to play as a total unit. Depending on the opponent, continuous adjustments and adaptations have to be made.

In view of the above examples, a wholistic approach to education is the utilization of a broad spectrum of pedagogical approaches and methods to impart knowledge to students. In Western education we colonize our teachers to teach from the old "one right way, one right answer" method. Teachers need to not only teach the 3 R's but must include in their teaching: ethical and moral reasoning, creative expression, scientific and social inquiry. These kind of inculcations are not readily subject to measurement but, nevertheless, are skills students should walk out of classrooms with. Don Pepion, in his *Blackfoot Ceremony*:

¹ Plenary speaker Elder LeRoy Little Bear (Kainai Nation of the Blackfoot Confederacy) prefers this spelling, which avoids confounding the sacred "holy" with the secular "holistic." The colonizer's English spelling excludes his Kainai meaning captured by the term "wholistic."

A Qualitative Study of Learning points out 17 ways of learning. Those 17 ways of learning are much broader in scope than the Western ways of learning from which teachers draw to impart knowledge. In other words, native pedagogy is much more wholistic. That wholistic approach makes for flexibility and ease of adjustment and adaptation.

Our schools must de-emphasize accumulation of knowledge but re-direct education toward renewal of knowledge, relationships, and relational networks. In other words, education has to be approached from “all my relations.” “All my relations” speaks to the interrelatedness of all existence.

Learning from Place

Wholistic education thrives in the context of place-based learning. Place embraces the emotional, spiritual, intellectual and physical dimensions of a location where people live. It includes an amalgam of their language spoken, their knowledge developed, and their wisdom accumulated. Place is a verb because it is the interacting processes among “all my relations” centrally situated in familial, historical, ceremonial, social, economic, political, and memorable human experiences. Place constitutes self-identities: “We are the land, and the land is us.” Although Place is associated with what is local land, its outer boundaries reach into the night sky, as experienced by that locale. Paradoxically, Place includes everything, but is unique to where certain people live in Mother Earth. In short, Place is intrinsically wholistic.

Place offers contexts and themes for wholistic teaching and learning aimed at “knowing how to be a good person in the world.” Living a sustainable life environmentally and culturally nurtures health and healing in Indigenous communities. Wholistic education is local, experiential, transdisciplinary, cross-cultural, and with a focus on resiliency, the community’s well-being, and life-long learning. Wholistic lifelong teaching, learning, doing, and refining are preserved through the practices of ceremony, language and culture, performing and applied integrated arts, sustainability, and caring for all resources as the responsibility of families, communities and nations.

I-WISE Dialogue

Indigenous voices perpetuate practicing wholistic education in contexts that include the collective impacts of Indigenous peoples and their places and histories. Through traditional ecological knowledge, opportunities for restoring and creating a new Indigenous World Informal Sciences Education have rapidly occurred. This is enhanced through dialogue and exchanges so that NGSS becomes a natural fit with the NSF initiatives to support informal science – science in which applied inquiry is reflected in communities of reservations and nations. Environmental knowledge and observations are sustained through culture, language, ceremony, and the integration of the arts with science.

Participants contributed through dialogue, and storytelling, sharing their cultural examples where Indigenous informal science is context- and place-based. Other reflections included countering these discussions by reporting their observations that existing imbalanced power relationships between dominant mainstream institutions and American Indian nations still occur in mainstream education systems. These I-WISE forums nurture declaration of Indigenous ecological knowledge. And they provide for safe dialogue among different points of view that can be examples of threatening reflections, such as a sense of loss from past colonization to present day neo-colonization. These strength-based reflections today converge through future transformations concerning human diversity, so that “not all knowledge is in one house,” and “the learning is in the doing.” This I-WISE conference strengthens future pathways that are going to be sustained by I-WISE.

Dialogue Pathways

The Wholistic Education preface builds a foundation that gives voice to the need for informal science learning with challenging concerns and opportunities for Indigenous knowledge restoration, creativity, innovation, invention, and spiritual energies. Our strand’s main agenda of defining Wholistic Education, informed by Indigenous worldviews for both Indigenous and NSF audiences, evoked intuitive responses and behaviors mindfulness and empathy in the hearts, minds, and souls of a number of Indigenous and non-Indigenous participants. Our *intellectual* agenda of defining Wholistic Education was challenging. It required broad range conversations to re-establish frameworks of exchanges with *wisdom-based* understandings inherent in Indigenous worldviews. Therefore, the NSF’s ethos of intellectual objectivity becomes strength-based opportunities for the Wholistic Education dialogue. Discussions became a foundational framework to foster integrating informal science through Indigenous worldviews as Wholistic Education. The strand’s initial discussion was perceived as a blank tablet ready for recording data. Discussions about historical contexts of colonization, and at times domination and oppression by mainstream institutions were not being collectively understood or accepted. Instead, telling a story of our collective histories caused a transitional shift in the dialogue towards declaration of informal science as definitive to current developments, applications, and place-based opportunities. These will continue to build anew through our stories from the past, present, future, and future past. This shift to supporting a Wholistic Education enhances a direct relationship to Indigenous ways of knowing. This dialogue is based on the integration of relational contexts about informal science as exploring many cultural integration pathways.

Place is also linked to lineage/genealogy and is specific to ancestors and ancestral ways of knowing, doing, being, and becoming. These specific places are past, present, future, and future past across unending time, space, distance, and energy. It is wholistic as singularity is relational to those things observed and unseen. Recorded through our stories, crafts, arts, songs, dances, chants, and ceremonies are paradigm shifts in observations documented through our Indigenous lens. Thus, we declared that Wholistic Education is our Indigenous ways of knowing. Those ways are our Indigenous epistemologies of inquiry, just as informal science is through observations.

Recommendations for Research (based on discussions and a research report ²)

Research is needed to:

1. learn from local Indigenous communities what they want their children to gain from practicing, creating, innovating, inventing and applying science education to solving community needs.
2. document and explain the relational linkages between an Indigenous sense of Place as context and urban Indigenous student perspectives of places.
3. document the extent to which science teachers understand both the culture of Euro-American science and the Indigenous nature of Place, in terms of student wholistic learning.
4. determine a repertoire of best practices for initiating teacher candidates (pre-service) and practicing teachers into wholistic and culturally responsive science teaching.
5. describe the complexities of developing a degree of culturally responsive science teaching; including teachers' motivations as well as the systemic challenges and barriers that impede or inhibit these processes.
6. describe the degree to which, and in what ways, do science teachers enhance their classes with Indigenous wholistic perspectives by using curriculum guides, Indigenous Elders, Indigenous knowledge keepers, and specific print or digital resources.
7. document the effects/outcomes on non-Indigenous students in science classes where culturally responsive science teaching, evaluation, and assessment occur.
8. gather systematically illustrations of wholistic education in action, across various content and applied in context to the school's community..
9. identify students' values and strengths that lead to resilience and survival in education institutions.
10. identify education institutions' values and strengths that encourage and sustain Indigenous students' success in those institutions.
11. collaborate with Indigenous communities to determine research agenda and questions that will benefit the community in predictable ways.
12. monitor outcomes and uses made of the research results to insure that ownership of those results is respected by others.

Research and development (R&D) projects are needed to:

13. develop collaboration among science educators, Indigenous communities, educational jurisdictions, businesses and industries, and Departments/Ministries of Education, in order to:
 - a. set priorities for students' learning from Place,
 - b. develop implementation plans,
 - c. monitor the presence of culturally responsive science teaching, and

² Inspired by: H. Michell, Y. Vizina, C. Augustus & J. Sawyer (2008, p. 134), *Learning Indigenous Science from Place*. <http://portal.usask.ca/docs/Learningindigenousscience.pdf>

- d. produce teaching materials and create student inquiries, projects, and activities; which support and sustain teachers' culturally responsive science teaching.
14. take advantage of technologies that will support students' learning from Place, without discouraging the interpersonal relationships that make schools a culturally responsive human enterprise.

“Article 31” of the United Nations Declaration of the Rights of Indigenous Peoples,

1. Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their **sciences**, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.