ABSTRACT

It is widely recognized that the great challenges of the 21st century cannot be understood or addressed through one discipline operating in a silo of research. Solutions to grand scale problems require varied expertise and multiple disciplinary methodologies to generate feasible solution strategies. Individuals involved in transdisciplinary research projects must be capable of employing scientific methods and traditional research skills, as well as engaging additional methods of inquiry such as those used in an art or design studio.

Current investigations in the Nature Lab look at the literature on transdisciplinarity and note the pattern of importance placed on the transdisciplinary individual. We hypothesize that studio pedagogy is integral to fostering the growth of the transdisciplinary individual capable of multi-modal inquiry practices.

MARKERS OF TRANSDISCIPLINARY COLLABORATION

1. Transdisciplinarity involves society in the research process (Gibbons & Nowotny, 2001).

   There is a communication and exchange of information between multiple disciplines, stakeholders, and actors associated with the problem, valuing both ‘hard’ and ‘soft’ science (Gómez-Gómez & Hochberg, 2014). Transdisciplinary spaces allow researchers to combine experiments conducted alone and with others (McNiff, 2013; Malina, 2006; Gibbons & Nowotny, 2001).

2. Problems are formulated at the beginning through dialog with a large number of actors and stakeholders who bring varied skills and expertise. The scope of a problem is not externally imposed on the research by a PI, but identified jointly by the transdisciplinary team, even when a PI is designated for securing grants or disseminating research communications. Further, the complexity of the problem is considered critical to the transdisciplinary understanding and is not reduced to an exploration of its parts (Jacobs & Nienaber, 2011).

3. Transdisciplinary research is carried out through the context of application and iteration. Problems are recognized as being situational, existing within the specific context surrounding the problem and the response must be tested within that context or deliberate variants (Jacobs & Nienaber, 2011).

4. The group maintains accountability and quality measures. Rigorous approaches from science and societal voices from science and society to identify deliberate variants (Jacobs & Nienaber, 2011).

   Open to Different Ways of Knowing

   Holistic Thinkers

   Internally Motivated

   Transdisciplinary individuals must be flexible in their thinking, demonstrate awareness of complexity, able to build networks of information, understand the relative nature of their own perspective, and capable of integrating their own curiosity and passion into the work.

Traditionally, schools teach convergent thinking, asking students to distill material by piecing together facts and data to arrive at a single answer. This type of information gathering and condensing is easily assessable through standardized tests, but does not move students to higher levels of transferable critical thinking.

The nature of art practice is to ask questions not yet asked, and find answers that have meaning and relevance based on our personal interpretations of the world. In the studio, researchers reveal multiple ways of knowing, co-develop knowledge, reveal relationships in context, and are motivated through individual passions and questioning.

While disciplinarity has allowed for the cultivation of specialized expertise, addressing the world’s biggest problems now requires a different educational experience. Studio-based educational models facilitate the strengthening of both divergent and convergent thinking to explore a topic, increasing opportunity for creative insight (Malina, 2006).

There is much to gain by further research that investigates effective interdisciplinary experiences rooted in studio pedagogy on cultivating the attitudes and skills critical for transdisciplinary practitioners.

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