

**Division of Research PAD Seminars, Wayne State University**  
**Team Science and Interdisciplinarity: First Steps. 27 January 2012**  
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Team science is an emerging interdiscipline and focus of increasing interest across the academy, funding agencies, and national science policy bodies. This seminar launches a program of support from the Division of Research (OVPR) aimed at enhancing interdisciplinary research on campus and related education and training programs.

Materials

- Core Definitions of Interdisciplinary Research
- Article: Stokols, D., K. L. Hall, B. K. Taylor R. P. Moser (2008). “The Science of Team Science: Overview of the Field and Introduction to the Supplement.” *American Journal of Preventive Medicine*, 35(2S), S77-S89.
- “Collaboration Effectiveness of Transdisciplinary Science Initiatives”
- Media Review: <teamscience.net> forthcoming in *Journal of Clinical Anatomy*
- Feedback Form

**Beginning Resources**

- Amey, M. J., and Brown, D. F. (2004). *Breaking Out of the Box: Interdisciplinary Collaboration and Faculty Work*. Greenwich Conn.: Information Age.
- Bennett, L. M, Gadlin, H., and Levine-Finley, S. (2010). *Collaboration and Team Science: a Field Guide*. Bethesda, MD: National Institutes of Health. (PDF file)
- Derry, S. J., Schunn, C. D., and Gernsbacher, M. A. (eds.). (2005). *Interdisciplinary Collaboration: An Emerging Cognitive Science*. Mahwah, N.J.: Erlbaum.
- Facilitating Interdisciplinary Research*. (2004). Washington, D.C.: Committee on Facilitating Interdisciplinary Research: National Academies Press.
- Frodeman, R., Klein, J. T., and Mitcham, C. (eds.). (2010). *Oxford Handbook of Interdisciplinarity*. New York: Oxford University Press.
- Hadorn, G. H. et al. (eds.). (2008). *Handbook of Transdisciplinary Research*. New York: Springer.
- Kessel, F., Rosenfield, P. L., and Anderson, N. B. (eds.). *Expanding the Boundaries of Health and Social Science: Case Studies in Interdisciplinary Innovation* New York: Oxford University Press, 2003.
- Lyall, C., Bruce, A., Tait, J. and Meagher, L. (2011). *Interdisciplinary Research Journeys: Practical Strategies for Capturing Creativity*. London: Bloomsbury Academic.
- “The Science of Team Science: Assessing the Value of Transdisciplinary Research.” (2008). [Special Issue]. *American Journal of Preventive Medicine*, 35 (2S), S77–S249.
- Science of Team Science network. <http://teamscience.net/>
- Team Science Toolkit:  
<https://www.teamsciencetoolkit.cancer.gov/public/home.aspx?js=1>
- Transdisciplinarity-Net. [www.transdisciplinarity.ch/](http://www.transdisciplinarity.ch/)

## Core Definitions of Interdisciplinary Research

**Multidisciplinary** approaches juxtapose disciplinary/professional perspectives, adding breadth and available knowledge, information, data, methods, tools, concepts, and/or theories. They speak as separate voices, in encyclopedic sequence, an ad hoc mix, or a m $\acute{e}$ lange. The status quo is not interrogated, and disciplinary elements retain their original identity

**Interdisciplinary** approaches integrate separate disciplinary data, methods, tools, concepts, and theories in order to create a holistic view or common understanding of a complex question, problem, theme, or topic. "**Instrumental,**" "**strategic,**" "**pragmatic**" or "**opportunistic**" forms focused on economic and technological problem-solving differ from "**critical**" and "**reflexive**" forms that interrogate the existing structure of knowledge and education. "**Narrow interdisciplinarity**" involves disciplines with similar paradigms and methods. In "**broad interdisciplinarity,**" they differ.

### Indicators of Interdisciplinarity in Knowledge Fields

- a critical mass of individuals and programs in a national network
- capacity for generating new knowledge, self-defined epistemology, or paradigm
- a new category of knowledge that is greater than the sum of its disciplinary parts
- shared philosophical and thematic principles with unifying core concepts
- a metadiscipline that overrides specialist interests at a global level
- reconfiguration of pertinent concepts in disciplines and the rise of new subfields

### Indicators of Interdisciplinarity in Research

- progressive sharing and cross-testing of empirical and theoretical work
- generation of new insights, disciplinary relationships, and integrative constructs
- joint definition of a project, research problem, questions, goals, and framework
- collaborative inputs with on-going communication and interaction
- interdependence, "teamness," new community of knowers, hybrid interlanguage
- mutual learning from team members and equal power sharing

**Transdisciplinary** approaches are comprehensive frameworks that transcend the narrow scope of disciplinary worldviews through an overarching synthesis, such as general systems, feminist theory, sustainability, and cultural critique. More recently, the term also connotes a new structure of unity informed by the worldview of complexity in science, a new methodological and conceptual paradigm of health and wellness, and problem-oriented participatory research with stakeholders in society.

