



IU BLOOMINGTON

# EMERGING AREAS OF RESEARCH

## Abstract Template -- Due June 30, 2017

Title of initiative to be proposed:

Understanding Creativity: Drawing and the Brain

Name of lead PI, with title, department/school:

PI: T. Kelly Wilson, Associate Professor/Director of IUCA+D, SOAD (School of Art and Design)  
wilsontk@indiana.edu/(812) 375-7588

Key team member names and departments/schools (up to 10 names):

Co-PI: Sharlene Newman, Associate Professor/Director of Imaging Research Facility, Department of Psychological & Brain Sciences; Team Members: Robert Goldstone, Chancellor's Professor of Psychological and Brain Sciences, Department of Psychological & Brain Sciences; Karin James, Associate Professor, Department of Psychological & Brain Sciences; Marleen Newman, Sr. Lecturer, Associate Director of IUCA+D, SOAD (School of Art and Design); Caleb Weintraub, Associate Professor of Painting, SOAD (School of Art and Design)

Description of area to be proposed. What constitutes this area of research or creative activity as emerging?  
(Word limit=500)

Creativity is a highly sought-after attribute, yet it is hard to define or teach. Recent breakthroughs in brain science may throw light on this elusive quality. This proposal seeks to address this issue by leveraging IUB's significant strengths in Cognitive and Brain Science and Art and Design, thus leading the university to become an innovator in both the science and the pedagogy of creativity.

As an emerging area of research, the study of creativity in its simultaneous relationship to drawing and to developments in understanding brain function is generating surprising results. In 2015, the d. School at Stanford (Hasso Plattner Institute of Design) completed a study of drawing and creativity, showing that the cerebellum, usually thought to be limited to coordinating muscular function, and not the cerebrum, generally associated with high level thinking, is responsible for creative activity. Activation of the "... brain's executive-control centers — the parts of the brain that enable you to plan, organize and manage your activities — is negatively associated with creative task performance," says Allan Reiss, Howard C. Robbins Professorship in Psychiatry and the Behavioral Sciences. His team found that "the more you think about it (being creative) the more you mess it up." The study's findings represent advancement because it established baseline information on creativity's underlying neuro-physiological processes.

Similarly, a recent study in the American Society for Cell Biology's Life Sciences Education journal argues that learning to draw promotes model-based reasoning among science students. IUB is ideally situated to build on the current research linking drawing with basic learning and conceptualization. With the establishment of a new School of Art and Design and a new and innovative professional graduate program in architecture, IUB is emerging as a force in the area of art, design, and architecture. Linked with IUB's established reputation in Cognitive and Brain Sciences, this creates a perfect synergistic environment for ground breaking studies in creativity and the brain.

An example of the possibilities at IU may be found in the recent and highly successful conference "Drawing and the Brain" held in the spring of 2016 at the IUCA+D (Indiana University Center for Art and Design). The conference attracted a national and international field of scientists, engineers and designers. It sparked a powerful dialogue about the linkages between creativity, drawing and the brain, further establishing IUB as a potential leader in the field.

Studies:

- Randomization of curriculum/comparison of results from classes with and without drawing.
- Use brain imaging to determine neural activities related to intelligence and creativity.
- Can information about brain function and structure increase successes in learning to be creative?

Outcomes:

- Understand creativity and learning with respect to drawing.
- Understand what the brain is doing while the hand is moving.
- Understand the value of creativity and drawing in the curriculum.
- Understand drawing as a function of learning and of creative thinking.
- What curricular changes should be instituted to keep IUB current with recent developments in the understanding of creativity with respect to learning to draw?

Please submit to [earprogram@indiana.edu](mailto:earprogram@indiana.edu)