• Paper / Proposal Title:
Understanding Metacognition: A Study of Cognitive Processes and the Development of Expertise

• Author(s) Name:
Prof. Matthew Powers, Ph.D.
Prof. Sallie Hambright-Belue

• University or Company Affiliation:
Clemson University; School of Architecture; Clemson, South Carolina

• Abstract (300 words):
Design pedagogy and its relationship to practice shifts and evolves based on many complex and occasionally contradictory factors. One such factor is the role of cognition in design learning. Cognition, often synonymous with design thinking, encompasses concepts ranging from creativity and innovation to problem-solving and the development of expertise. In contemporary studios, most design educators expect their students to become cognitive engaged in their projects by generating multiple iterations, assessing alternative ideas, and generally thinking critically about the process of designing and the many decisions underlying performance. In doing so, design educators build their pedagogies around a belief that to prepare students for practice one must model the types of cognitive processes, environments, and behaviors used by practitioners. In this presentation, we will discuss one such cognitive process: metacognition.
Metacognition is most easily explained as one’s “thinking about his or her thinking" or “knowledge about knowledge." Research shows that using metacognitive strategies is highly correlated with greater academic achievement and enhanced problem solving (Zimmerman & Pons, 1986). For example, Bransford, Brown, & Cocking (2000) report that “An emphasis on metacognition can enhance many programs that use new technologies to introduce students to the inquiry methods and other tools that are used by professionals in the workplace" (p. 68). Richard E. Mayer argues that “When the goal of instruction is the promotion of nonroutine problem solving... metacognition... is central ....because it manages and coordinates the other components" (1998, p. 51). This presentation describes how designing and metacognition work in concert to shape how students and practitioners think and perform during design projects. A series of structured interviews and surveys with landscape architecture and architecture students and practitioners infuse the presentation with real-world applications. The presentation concludes with a series of metacognitive-based pedagogic strategies aimed at bridging the complex worlds of education, design, and practice.


• Author(s) Biography (200 words each):

Matthew ‘Matt’ Powers, Ph.D., Associate Professor, is the Director of Landscape Architecture and Undergraduate Programs in the School of Architecture at Clemson University. He holds a Bachelor of Science in Landscape Architecture from West Virginia University and a Master of Landscape Architecture and Ph.D. in Environmental Design and Planning from Virginia Tech. Matt has taught a range of studios and seminars focusing on instructional design, research planning, and environmental design at various scales. He regularly teaches courses at the bachelors, masters, and doctoral levels. His primary research interests include design pedagogy, healthy campuses, and learning landscapes. Prior to entering academia, he worked in landscape architecture and community design studios in West Virginia, South Carolina, and Virginia. He is the author of the book ‘Self-regulated Design Learning: A Foundation and Framework for Teaching and Learning Design’.
Sallie Hambright-Belue is a Licensed Architect and an Assistant Professor in the School of Architecture at Clemson University. Her teaching and research is focused in three areas, which relate to the discipline of Architecture as well as the rural place of Clemson, South Carolina. These focus areas are Beginning Design Pedagogy; Intersection of Architecture and Agriculture; and Collaborative Practice Pedagogy. She serves as the First-Year Coordinator in the Bachelor of Arts in Architecture degree program.