Undergraduate Study Strategies from the Perspective of Cognitive Neuroscience

At the NSF-funded CELEST Science of Learning Center, leading neuroscience researchers, engineers, and students are able to collaborate on research in ways that enhance the education and training of both graduate and undergraduate students. CELEST has launched a new initiative to supplement undergraduate education through a summer research program and tutorial workshops.

CELEST is helping students to excel at a time when the United States scientific reputation is flagging. A recent study on international science performance conducted by the Programme for International Student Assessment (PISA) ranked the United States 24th among 57 countries. At an individual level, however, the United States was found to have nearly the same percentage of high-performing students as the top-ranked country. PISA conducted a follow-up study in 2009 that concluded that the scientific performance of high-performing students was largely influenced by their own beliefs that they had the skills and capabilities necessary to perform well.

One of CELEST’s current projects is a workshop and complementary workbook that will focus on the development of academic study habits and skills in ways that employ insights from research in cognitive neuroscience. The first version of this workbook is being designed primarily for undergraduates at Boston University’s new neuroscience major. The workshop will consist of a mini-symposium in which faculty members give 20-to-30-minute presentations on their research, within the framework of CELEST’s four organizing functions: planning, exploring, communicating, and remembering. The research will then be discussed with the intent of providing links to effective academic study habits and skills. Later, students can use the workbook to reflect on their current study strategies and assess how they could be improved.

In addition to illustrating how students can enhance their confidence in learning and self-efficacy, the workshops will also support two other primary strengths PISA found to characterize high-performing science students: viewing the science as relevant to themselves and anticipating continued future use of the science beyond the associated course(s). Thus, imparting strategies that promote successful long-term academic performance from the perspective of cognitive neuroscience is also likely to provoke an interest in neuroscience (or related sciences) by showing a personally relevant application.

This workshop will enable CELEST’s neuroscience research to come full-circle with the Center’s educational aims, and help inspire undergraduate students to pursue careers in the sciences while simultaneously providing them with the skills to excel in their undergraduate studies. Future development of the workshops and workbook will expand the audience beyond neuroscience majors to others considering any domain of science as a career option.