The UCSB brownbag forum on spatial thinking

Presents

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The Role of Spatial Ability in Medicine: Applications in Selection and Training

Ellison Hall 5824, 12:00 p.m., Tuesday, 22 April 2008

Abstract: The study of anatomy, one of the fundamental components of medical training, includes many spatial concepts, such as the shape of anatomical structures, their relative locations, and how they are connected. When carrying out medical procedures the internal structures of the body are not directly visible, so that medical professionals have to rely on mental models of these structures. Spatial cognition is also central to understanding medical images, including those produced by CT, MRI, X-Ray, and ultrasound. In this talk I will report on a project in which we examined the role of spatial visualization abilities (internal visualizations) and interactive 3-d computer visualizations (external visualizations) in enhancing spatial thinking in the context of medicine. The research conducted during the 4 years of the project included (1) basic research on the role of spatial abilities in the medical professions of surgery and dentistry, (2) development of psychometric tests to measure spatial skills in these professions, (3) studies of how people use external visualizations while making inferences from 3-D spatial representations and (4) studies of the development of surgical skills and anatomy learning using 3-D virtual models.

Mary Hegarty is Professor and Vice Chair of the Psychology Department at UCSB. She received her BA and MA from University College Dublin, Ireland and Ph.D. from Carnegie Mellon University. The main goal of her research is to study the nature of spatial thinking in complex activities such as comprehension, reasoning, and problem solving. Specific topics of current interest include comprehension of complex visual displays, e.g., weather maps and animations, understanding individual differences in spatial cognition at both behavioral and neural levels, and training of spatial thinking in the context of science and medical education. She is a fellow of the American Psychological Society, a former Spencer Postdoctoral Fellow is on the editorial board of Journal of Experimental Psychology: Learning, Memory and Cognition and Spatial Cognition and Computation and is a member of the governing board of the Cognitive Science Society. Her current research is funded by the Office of Naval Research and the National Science Foundation.