Call for Workshop Contributions

ENGINEERING LEARNING
http://www.engineeringlearning.org

Palmer House Hilton Hotel, Chicago, IL, USA
June 28 2010

A preconference event of the
9th International Conference of the Learning Sciences

Organizers: Aditya Johri (Virginia Tech) and Barbara Olds (Colorado School of Mines)

The objective of this workshop is to bring together scholars in the area of the learning sciences, engineering education, and mathematics and science education, with mutual interest in theoretical issues related to how people learn engineering.

There is increased activity in the engineering education community since the seminal issue of Journal of Engineering Education in 2005. Many scholars are now engaged in research on different aspects of educating engineers including organizational and institutional issues, faculty training, teacher preparation, and so on. Our aim is to focus on an area with relatively little work – learning issues related to engineering. We hope to develop an understanding of engineering learning based on core concepts of learning. ICLS2010 is an apt venue given the wide representation of learning sciences researchers and the focus of this year's conference on learning in the disciplines. The workshop will culminate a short report and in planning of an edited volume on the topic of engineering learning.

Proposals for participation are due April 2, 2010 and acceptance notifications will be sent on April 8, 2010.

DESCRIPTION

To develop theory in the area of engineering student learning it is essential to distinguish between learning in engineering versus learning in other domains. Engineering builds on concepts from basic sciences and mathematics but it is an applied science and a science of design – it is closely tied to professional practice. Engineers develop an identity as an engineer which is often multifaceted and complex. These characteristics of engineering have the potential to make engineering learning different than learning in other content areas but the nature of those differences still remains unexplored. Furthermore, theories from learning sciences that can apply directly to engineering need to be identified. Learning theories are based predominantly on early childhood education and research in K-12 settings and there we need to reassess their application in the context of engineering. Consequently, some of the questions that will form the basis for workshop discussion include: What are the unique challenges in engineering learning (misconceptions, threshold concepts, retention and skills)? What is generic about engineering reasoning and problem-solving? What is unique about content areas like energy balance, dynamics or signal processing that make them especially challenging for students? What kind of research projects would address these areas? How do students develop agency and identity as engineers or do they? What should innovation in engineering education look like? What forces will be necessary to displace conservative forces such as textbooks and faculty?

At the end of the workshop, a short report will be produced containing a discussion of major issues discussed at the workshop and tentative outlines of 10-12 chapters. This will serve as a prospectus for an edited volume on Engineering Learning. Tentative chapters/topics include: Engineering Design Learning; Learning in Professional Settings; Engineering Identity; Conceptual Misconceptions in Engineering; Integrating Technology in Engineering Learning; Lessons from Science Education for Engineering Learning; Lessons from Medical Education for Engineering Learning; A Review of Learning Sciences Research with Implications for Engineering Learning; Cyberlearning and Engineering Learning; Methodological Innovations for Engineering Learning.

FORMAT (Full day workshop)

Morning Session
9:00 AM: Introductions and brief overview of area of interests/expertise of each participant; aims of workshop outlined
10:00 AM: Participants grouped based on interests for a brainstorm and discussion session on their topic (discussion to continue over break)
11:30 AM: Report back on group discussion to the whole group

Lunch 12:30-2:00 PM

Afternoon Session
2:00 PM: Structure of chapter provided to each group and overall aim of the report and edited volume explained
2:30 PM: Groups work together to produce a chapter outline (continue over break)
4:00 PM: Present to the whole group and discuss commonalities across chapters
5:00 PM: Future plans and submission deadlines discussed

APPLYING FOR PARTICIPATION
Interested researchers should submit at least a two-page abstract to ajohri@vt.edu AND barbara.olds@is.mines.edu by March 31, 2010. (Late applications will be considered on a space-available basis). Organizers will choose a limited number of participants. Acceptance letters will be sent out by April 15th, 2010.

SCHEDULE
Friday April 2, 2010: Deadline for submission for participation
Thursday April 8th 2010: Notification of acceptance
Friday May 14th 2010: Workshop website updated with revised proposals and opened for comment/discussion

CO-ORGANIZERS
* Aditya Johri
* Barbara Olds

Send all submissions to
ajohri@vt.edu **AND** barbara.olds@is.mines.edu

An online copy of this CFP and further information may be found at
http://www.engineeringlearning.org