

## PART A

### Section 1: Research Abstract

#### Title: A Comparative Informatics Research Approach to CSCL

#### **Abstract**

My CSCL research interests are in investigating systemic cross-cultural/linguistic/national variation in the appropriation of affordances and technological intersubjectivity in computer supported collaborative learning environments. Informed by a theoretical framework integrating culture, affordances and intersubjectivity, this research program studies how culturally diverse participants relate to each other and appropriate technological resources in collaborative learning and how this affects learning outcomes. Affordances are action-taking possibilities and meaning-making opportunities in an environment relative to an actor. Technological intersubjectivity refers to technology supported social relationship among participants. This program of research has implications for the design of culturally inclusive CSCL environments and for a better understanding of the social basis of learning.

CSCL involves both (a) interacting with computers and (b) interacting with other persons. There is strong empirical evidence about cross-cultural variation in social behavior (Hofstede, 1997; House, Hanges, Javidan, Dorfman, & Gupta, 2004), cognition (Nisbett & Norenzayan, 2002), communication (Hall, 1976), and interacting with computers (Vatrapu & Suthers, 2007). Interacting through technology is not unproblematic. First, it makes interaction more difficult (Clark & Brennan, 1991; Olson & Olson, 2002). Second, it may not mean, feel and afford the same thing to everyone. In many ways, there is a productive tension between the future possibilities envisioned in "Beyond Being There" (Hollan & Stornetta, 1992) and the present realities documented by "Distance Matters" (Olson & Olson, 2002). Computer Supported Collaborative Learning Environments (CSCL) in particular and Information and Communication Technologies (ICT) in general are often designed under the implicit assumption that members of different cultures equally view a given functionality as appropriate for carrying out a given act, or that another member observing a given act in the online environment interprets it as originally intended by the actor. In a technology driven world, it is no longer safe to operate under such assumptions.

**(Word Count: 299/300)**

### Section II: Future Research Plans

Future work includes comparative laboratory and field studies of appropriation of affordances and technological intersubjectivity in controlled and natural CSCL settings.

Current collaborations include:

- Dr. Dan Suthers and Richard Medina at the University of Hawai'i on Representational Guidance, Uptake Analysis, and Representational Practices (Medina, Suthers, & Vatrapu, in press; Suthers, Vatrapu, Medina, & Dwyer, 2007; Suthers, Vatrapu, Medina, Joseph, & Dwyer, 2007, 2008; Vatrapu, 2008; Vatrapu & Suthers, 2007, 2009; Vatrapu, Suthers, & Medina, 2008).
- Dr. Scott Robertson at the University of Hawai'i on Digital Government and e-participation (Robertson & Vatrapu, 2009; Robertson, Vatrapu, & Abraham, 2009; Vatrapu, Robertson, & Dissanayake, 2008).
- Dr. Bonnie Nardi at the University of California-Irvine and Dr. Scott Robertson at the University of Hawai'i for Comparative Informatics.
- Dr. Torkil Clemmensen at the Copenhagen Business School on Cultural Usability (Vatrapu & Pérez-Quñones, 2006).

Potential collaborations include:

- Teaming up with CSCL researchers at European universities and institutes for comparative informatics oriented CSCL research. I have started conversations with Prof. Pierre Dillenbourg, Dr. Jakko van der Pol and Dr. Nikol Rummel. I would also like to work closely with Prof. Frank Fischer's research group to empirically investigate the comparative aspects of CSCL scripting.

**(Word Count: 200/200)**

### **Section III: Topics I would like to see addressed at the Early Career Workshop**

My dissertation research benefitted substantially from my CSCL 2005 Doctoral Consortium participation. Participating in the doctoral consortium provided me with an opportunity to get constructive feedback from the panel as well as from my peers. It also helped me forge collegial bonds and friendships that were nourished since then and cherished again at CSCL 2007. Between now and then, I have grown intellectually and have journeyed from being a graduate student to a junior researcher. I had a similar positive experience at the ICLS 2008 Early Career Workshop (ECW).

As an aspiring young academic, I think that the CSCL ECW will be an ideal forum to discuss not only my research program with senior academics but also to gain a deeper understanding of the research agendas of my peers. The ECW is the ideal place for getting constructive feedback, exploring possible future directions, and forging new collaborative bonds with peers and elders. Learning sciences is both multidisciplinary and interdisciplinary and participating in the ECW would enhance my appreciation of diverse research problems, approaches, and methods. My primary specialization is in human-computer interaction and it would benefit me immensely to meet and interact with peers with primary specializations in, for example, educational psychology. Specifically, I seek help in better analyzing learning process measures and learning outcomes in my dissertation data set. I have over 120 hours of screen recordings besides 60 individual post-test essays and software logs. I have rich cultural data both at the individual level and at the group level. If selected to participate in the ECW, I will make a sample subset of my data available for ECW peers and mentors. I also think that my research agenda can make a significant positive contribution to the ECW as cultural influences on behavior, communication and cognition may affect students' interactional processes and outcomes in technology supported learning environments.

#### **I would find the following topics of panels or mini-classes to be useful:**

1. European and Asian perspectives besides the predominantly North American emphasis of the Early Career Workshop at ICLS 2008.
2. Micro-analysis of video data.
3. Transcription, visualization, presentation of multimedia data.
4. Learning and teaching across countries and cultures.
5. The various flavors of determinism in learning sciences explanations: Social, Cultural, Cognitive, Interactional, and/or Technological.

#### **Acknowledgments**

I would like to thank my dissertation advisor, Dr. Daniel D. Suthers and my junior researcher supervisor, Dr. Scott P. Robertson for their critical comments, advice, and support through these years.

#### **References**

- Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. In L. B. Resnick, J. M. Levine & S. D. Teasley (Eds.), *Perspectives on Socially Shared Cognition* (pp. 127-149): American Psychological Association.
- Hall, E. (1976). *Beyond Culture*. New York: Anchor Press.
- Hofstede, G. (1997). *Cultures and Organizations: Software of the Mind, Intercultural Cooperation and its Importance for Survival*: McGraw-Hill.

- Hollan, J., & Stornetta, S. (1992). *Beyond being there*. Paper presented at the Proc. SIGCHI Conference on Human Factors in Computing Systems (CHI'92), May 3-7, 1992, Monterey, California.
- House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, Leadership and Organizations: The GLOBE study of 62 societies*. Newbury Park, CA: Sage Publications.
- Medina, R., Suthers, D., & Vatrappu, R. (in press). "I have an interesting way of looking at this problem": Representational practices in VMT. In G. Stahl (Ed.), *Studying virtual math teams*. Cambridge: MIT Press.
- Nisbett, R. E., & Norenzayan, A. (2002). Culture and Cognition. In D. L. Medin (Ed.), *Stevens' Handbook of Experimental Psychology* (3rd ed., pp. 561-597).
- Olson, G., & Olson, J. (2002). Distance Matters. *Human-Computer Interaction*, 15(2/3), Reprinted in J. M Carroll (Ed) *Human-Computer Interaction in the New Millennium*. (pp. 397-417). New York: ACM Press.
- Robertson, S., & Vatrappu, R. (2009). Digital Government. *Annual Review of Information Science and Technology*.
- Robertson, S., Vatrappu, R., & Abraham, G. (2009). Note Taking and Note Sharing While Browsing Campaign Information: Design Tradeoffs Between E-Democracy and E-Participation *42th Hawai'i International Conference on the System Sciences (HICSS-40)*, January 5-8, 2009 (pp. (CD-ROM)). Big Island, Hawai'i.
- Suthers, D., Vatrappu, R., Medina, R., & Dwyer, N. (2007). *Information Sharing and Interaction in Collaborative Convergence*. Paper presented at the 15th International Conference on Computers in Education (ICCE2007), Hiroshima, Japan.
- Suthers, D., Vatrappu, R., Medina, R., Joseph, S., & Dwyer, N. (2007). *Conceptual representations enhance knowledge construction in asynchronous collaboration*. Paper presented at the Computer Supported Collaborative Learning (CSCL2007).
- Suthers, D., Vatrappu, R., Medina, R., Joseph, S., & Dwyer, N. (2008). Beyond Threaded Discussion: Representational Guidance in Asynchronous Collaborative Learning Environments. *Computers and Education*, 50(4), 1103-1127.
- Vatrappu, R. (2008). Cultural Considerations in Computer Supported Collaborative Learning. *Research and Practice in Technology Enhanced Learning*, 3(2), 159-201.
- Vatrappu, R., & Pérez-Quñones, M. (2006). Culture and Usability Evaluation: The Effects of Culture in Structured Interviews. *Journal of Usability Studies*, 1(4), 156-170.
- Vatrappu, R., Robertson, S., & Dissanayake, W. (2008). Are Political Weblogs Public Spheres or Partisan Spheres? *International Reports on Socio-Informatics*, 5(1), 7-26.
- Vatrappu, R., & Suthers, D. (2007). Culture and Computers: A Review of the Concept of Culture and Implications for Intercultural Collaborative Online Learning. In T. Ishida, S. R. Fussell & P. T. J. M. Vossen (Eds.), *Intercultural Collaboration I: Lecture Notes in Computer Science* (pp. 260-275): Springer-Verlag
- Vatrappu, R., & Suthers, D. (2009). Technological Intersubjectivity in Computer Supported Intercultural Collaboration *ACM 2nd International Workshop on Intercultural Collaboration*: ACM Digital Library.
- Vatrappu, R., Suthers, D., & Medina, R. (2008). *Usability, Sociability, and Learnability: A CSCL Design Evaluation Framework*. Paper presented at the 16th International Conference on Computers in Education (ICCE2008), Taipei, Taiwan.