Journal of Universal Computer Science, vol. 2, no. 10 (1996), 660-662
submitted: 15/10/96, accepted: 15/10/96, appeared: 28/10/96 © Springer Pub. Co.

A Word from the Guest Editor

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1 A Classroom Without Walls

The topic "Classroom of the Future" calls to mind ideas of distributed learning and the virtual classroom. Certainly, distance education (asynchronous learning) and its attendant issues have their place in any discussion of computers and the classroom. However, in putting together this issue, I was also looking for articles and points-of-view that focused more on the metamorphosis of the static traditional classroom to a dynamic, "window on the world" through enabling technologies.

In my „call for contributions“, I was especially interested in finding authors who could speak to the new synergy of teacher, computer-mediated instructional devices, and students -- all working within the context of the same environment – to move beyond current definitions and stereotyped roles. In short, I was looking for visions of the "classroom without walls," a learning environment that merges new pedagogies, advanced media, and collaborative learning to meet the needs of knowledgeworkers of the 21st century.

To elaborate, the spatial metaphor of the traditional classroom is one of self-containment, somewhat detached from the world (despite field trips), homogeneous in makeup (even though we tout diversity), and mostly dedicated to the acquisition of facts and skills (no matter how much we laude creativity and critical thinking). However, advanced information technologies – both the access to information and the new habits of mind they engender – make possible radical new metaphors for *places* of learning and *methods* of teaching. Such change brings a host of issues. The list below names only a few:

- The Politics of Acceptance and Integration
- New Pedagogies and Epistemologies of Learning
- Training Teachers for the 21st Century
- The "Learner's Workstation" – Hardware Design Beyond Ergonomics
- Questions of Economics and Equity
- Assessment and Evaluation
- Cognitive Principles of Design for Instructional Software
- Case-studies and Ethnographic Studies Documenting the „New Learning“
- Groupware to Mediate Collaborative Learning
- "Orchestrating" the Richness of Multiple-Source Learning Environments
- "Architectonics" of the New Classroom

2 Toward a Definition of „The Classroom of the Future“

The six articles collected here present compelling examinations of a changing metaphor for educational delivery and instruction enhancement. These articles provide understanding for a complex socio-technological shift and serve as the basis for more informed decision-making among all constituencies concerned with education. I have grouped the six papers into three clusters: (1) discussions that give a systemic look at the classroom of the future, (2) articles that focus more closely on a major element in the system – such as classroom architectonics and advanced media, courseware development, and teacher training as the key to technology transfer, and (3) examinations of particular instantiations of a „classroom of the future.“

2.1 Systems of Education: Identifying the Issues

Vivet's „The Classroom as *One* Learning Environment of the Future“ and Muldner and Nicholl's „Computer-Supported Human Cooperation in Electronic Classrooms“ take a broad view in delineating the physical structure, hardware and software media, and dynamic patterns of human interaction in the electronic classroom. Both describe an enhanced, student-centered environment where learners are constantly challenged but never overwhelmed.

Of equal importance to the mediating of information technologies embedded into learning, both articles sound a cautionary note about thinking that modern education can exist either by displacing the teacher or by doing away with a physical location. If anything, the projections from these authors envision both the locus (a meeting place to serve as an anchor) and the physical presence of a community of learners (teachers and peers) as having crucial – but changed – roles in future education.

2.2 Elements of Development: Examining the Process

The second cluster of articles looks more closely at specific elements implicit in the global perspectives of Vivet and of Muldner and Nicholl. For example, Muhlhauser's „Interdisciplinary Development of an Electronic Class and Conference Room“ provides an insightful view of the design process for a venue that engenders collaborative communication, individual investigation, teacher mentoring, and mediates learning as well as disseminates the products of learning. Perhaps as important as the idea of „classroom landscaping,“ Muhlhauser gives a compelling discussion of how information technology must become malleable enough that teachers can „author“ and customize electronic teaching materials to suit the needs of the particular lesson, just as they currently create „consumables“ (transient artifacts such as transparencies and handouts) to supplement teaching.

Continuing with the theme of the human dimensions of technology transfer and educational change, Diem's „Preparing Teachers to Use and Apply Technology“ posits a model for knowledge transfer and for facilitating acceptance. As studies of

the impact of technology on society have affirmed, technologies develop more quickly than a prudent understanding of their value and their use can emerge. Diem first examines systematic, organizational change from the perspective of „context," „process," and „content." He then devises a model for helping teachers (K-12) to accept advanced media and to integrate them gracefully within their teaching.

2.3 Examples of Courses : Assessing the Effect

The third cluster examines specific examples of electronically enhanced classrooms. These articles broach the most significant question to be asked of the classroom of the future: Can the benefits of the new technologies to learning be documented? In other words, these articles address the very pragmatic concern of what works and why? Schrum and Lamb's „Groupware for Collaborative Learning" examines two courses for which groupware either enhanced teaching or became the sole vehicle for teaching. Rada's „Teaching on the WWW: Assignment Focus and Information Indexing" considers a totally electronic, de-centralized, and asynchronous course delivered over the World Wide Web. Both of these articles offer intriguing chronicles of an emerging delivery system for education. They also point to the increasing importance of assessment, case studies, and „lessons learned" discussions for understanding the many dimensions that make up modern pedagogy, instructional materials, and learner participation.

3 Future Talk or Dialoguing Change

Schoolrooms, textbooks, paper-and-pencil quizzes, classmates, copybooks filled with notes, chalkboards, teachers lecturing, students in various stages of engagement with the task: the iconography of education from grade school to post-graduate resounds with these traditional images which seem to be resilient to change. (Consider that the basic design of the book has not really changed for over 500 years.) And these images tend to be remarkably consistent across countries and cultures.

Paradigms of consistent content, economy of scale, and mass production dominated nineteenth century education and created a system that served a century of industrialization well. How we change the environment, the content, and the enactment of education to accommodate an information age is only now in the formative stage. Nevertheless, it goes without saying that new roles for teachers, for learners, for instructional materials, and for classrooms are in the offing. This special topics issue of J.UCS invites you to consider some of these new directions. I hope that you find the issue thought-provoking. Both myself and the authors welcome your comments and look forward to continuing the dialogue.