Report on Provost's Forum on Innovative Classroom Design

University Assembly Committee on Information Technology
Subcommittee on Instruction
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August 8, 2006

On May 11, 2006, 50 members of UMSL's faculty and staff gathered at a forum sponsored by the Provost, Information Technology Services, and the Center for Teaching and Learning to discuss learning environments and innovative designs and uses of technology-enriched classrooms. The purpose of the meeting was to help faculty and staff recognize the learning habits of today's student, rethink concepts of learning spaces, and generate ideas for new technology-enhanced classrooms driven by pedagogy and student needs. The following is a report of that meeting and its results.

Background

The "Millennial Generation," made up of students born between 1980-1995, is more technologically attuned than any previous generation. Having grown up with computers, this generation has had greater access to networked and related technologies than any previous generation. A recent U. S. Department of Education (2004) report shows that 90% of children between ages 5 and 17 use computers, while 94% of online teens use the Internet for school-related research. A 2002 Pew study finds that 85% of college students own their own computers, 66% use at least two email addresses, 44% do file sharing, and 42% do Instant Messaging (IM) to socialize online (Jones, 2002).

These students are not just technologically literate, but are skilled and creative in assimilating technologies and in finding ways to use them creatively in their daily lives. These young people are discovering, perhaps without even knowing, that learning can happen virtually anywhere and at any time on demand through such methods as Google searches, email discussions, blogs, wikis, and a variety of Internet downloads. The potential for teaching and learning with these new technologies is great.

Challenges

Our technology resources at UMSL are many and varied, but they are being presented in classrooms that were designed more than 50 years ago when concepts of education were based on teacher-centered, lecture-based instruction that depended on paper-bound print and physically-defined teaching materials. Even the designs of our more recently developed Technology-Enhanced Classrooms are strongly influenced by concepts of lecture-based instruction. While these classroom designs work well for teachers who lecture most of the time, they do not work as well for teachers who use other pedagogical

approaches. Student-centered, collaborative methods are inhibited in these classrooms partly because of the physical configurations of desks, chairs, podiums, and projectors, but also because of the psychological and emotional expectations and social behaviors of students and teachers that are defined by lecture-based learning spaces. (Brown, 2005; Johnson and Lomas, 2005; Chism and Bickford, 2002)

A survey of UMSL faculty before the forum found that 86% of faculty used lecture-based methods in some way when teaching their classes. The survey also showed the many other methods used:

Small groups	69%
Large groups	60%
Demonstrations	53%
Tech training	26%
Studio/workshop	17%

Other: Clicker activities, simulations, guest/student presentations, group projects, Internet research, CAI activities

A classroom design that is pedagogically based to support teaching and learning while taking advantage of new technologies and today's student skills and behaviors must accommodate all of these pedagogical methods.

Eight years ago, a taskforce of researchers assembled by the American Association for Higher Education, the American College Personnel Association, and the National Association of Student Personnel Administrators published its assessment of a number of studies and initiatives about learning conducted since the 1970s. This taskforce synthesized those studies and initiatives into ten principles of learning that they recommended to be used to inform innovative developments in education. Of these ten principles, five seem most relevant to classroom design issues.

1. *Learning takes place formally in traditional venues, but also informally and incidentally.* It happens everywhere and anywhere students feel comfortable and interested. Students construct their own understandings as they learn, formally during lecture in the classroom, informally out in the hallway, or incidentally by way of a casual remark in the cafeteria, library, or parking lot.

2. *Learning is about making and maintaining connections.* The potential for learning occurs as students interact with each other, with objects, materials, ideas, and experience, and process new information with old. With stimuli bouncing from all directions at varying rates of frequency, students pick up new things, make new connections, create new results.

3. *Learning occurs most effectively when students are actively involved in the process.* As their involvement increases, the extent of their processing of information increases and their learning deepens.

4. *Learning occurs in a social context.* Students learn from each other through social and other kinds of networks. But they do so only when they feel that being social is safe and welcome.

5. *Learning is situated in and affected by the educational climate.* The educational climate is influenced by all kinds of things that we can address through classroom design, such as ambience, creature comforts, furniture, and technology that make the classroom stimulating and encouraging. (AAHE, ACPA, and NASPA 1998).

Participants in the Provost's Forum were given design principles based on this research about learning and on additional research about learning spaces, and were asked to generate ideas that might inform innovative classroom designs on the UMSL campus. The design principles follow:

- Learning spaces must be flexible to accommodate differences in teaching and learning styles, activities, content. Flexibility could be achieved through portability of furniture and equipment, the array of technologies and media, and the variable ambiance of the space. (Johnson and Lomas, 2005)

- Learning spaces must also be social spaces that enable collaboration and interactivity during class time. They must encourage students and teachers to feel safe enough and comfortable enough to encourage the kinds of open social interaction that sparks informal and incidental learning. (Chism and Bickford 2002)

- Learning spaces must also address creature comforts and ambiance because these can enable learning in significant ways. Lighting, acoustics, temperature, furniture, walls, artwork, and carpeting were among the factors considered. (Cornell 2002; Fielding 2000)

- Learning spaces, their equipment, facilities, and furniture must be accessible to students and teachers. Students and teachers themselves must be easily accessible to each other by eliminating any barriers or obstacles between them. These learning spaces must also be ADA compliant. (Johnson and Lomas 2005)

Forum Results

Participants developed lists of ideas for designing innovative learning spaces; these lists have been compiled and categorized by "Facilities," "Equipment," "Capabilities," and "Continuing Issues." The complete list is appended to this report. The list does not cover issues directly related to IT Services, particularly issues involving maintenance, compatibility, reliability, and sustainability. These issues, it was determined, were better addressed at another time.

Perhaps one of the most important realizations was that not all classrooms needed to look alike. Classrooms could be designed individually to accommodate disciplinary needs and common pedagogical activities. Classrooms fitted with certain technologies or capabilities might be useful to only certain disciplines, but might also be used creatively

by teachers in other disciplines and thereby encourage interdisciplinary thinking (and knowledge transfer between disciplines).

Portability and flexibility appears as the most dominant themes. In terms of technology, wireless networks would enable students to access technologies from anywhere inside and outside the room, and would enable net-based collaboration and interaction regardless of the furniture configuration. It would also give teachers better access to students during class time, especially during lectures or presentations. More microphones around the room (especially for language courses), and more ways to display more media (projectors, smartboards, whiteboards, corkboards, etc.) would enable greater flexibility by making it possible to use two or more media, or display systems, at once.

These themes of "portability and flexibility" also extend to comments about furniture and classroom design. Groups often mentioned moveable furniture, including desks, tables, chairs, and podium as ideals of an innovative classroom. They often related these comments to concepts of "open" classroom designs, i.e., easily configurable classrooms, outdoor classrooms, and spaces that would connect faculty to students and students to each other, such as social spaces outside of faculty offices and student classrooms, and small group workspaces for collaboration.

Improving environmental conditions to better support teaching and learning was another common theme. Many participants commented on the need to improve the ambiance of classrooms through natural lighting, temperature control, and artwork for the walls.

Participants also mentioned the importance of continuing education and training opportunities for faculty, especially on new technologies and at times that accommodate variable schedules. They also mentioned the importance of ongoing discussions between faculty and administration about classroom design and scheduling.

Recommendations

Developing innovative classroom designs from this information should be a collaborative effort. Therefore, we recommend forming a consulting committee made up of one representative from each University college, and from ITS, Facilities, the Access Office, and the Center for Teaching and Learning. This committee could advise a smaller committee (made up from it's own body?) as it develops plans for classroom designs. This committee could

1. Determine short-term and long-term goals for innovative classroom development
2. Recommend short-term solutions for classrooms to help the university meet its obligations for classroom development
3. Provide oversight for ongoing classroom renovation
4. Identify external funding sources to promote innovate classroom design and construction
5. Assess the impact of ongoing improvements to campus learning spaces

References

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Attachment

Wish List

The following list of ideas for developing innovative classroom designs was transcribed from the notes taken during group brainstorming sessions during the Provost's Forum on May 11, 2006.

Facilities (Spaces)

- Open spaces
  - Open classroom design—configurable spaces
  - Outside classrooms accessible via wifi (patio areas- between MSC & the PAC)
- Integrate faculty offices with congregating spaces, Syracuse's Maxwell School- interdisciplinary.
- Gathering spaces (in and out of classroom)
- Small group workspaces.

Facilities (Furniture)

- Flexible, durable, and comfortable furniture
- Table designs
  - Sectional—allowing multiple configurations
  - Round Nesting tables
  - Accessible
- Moveable podium, computer "stick"
- Chairs that swivel & lock and have wheels
- Hallway and outdoor furniture to encourage collaboration, gathering
- Places to hang, stash, store backpacks, coats [21st century lockers-locks swipes and fit into chairs]
- Wireless carts/ charging vs. student owned- issues.

Facilities (Walls, ceilings, etc.)

- Moveable walls
- Full spectrum, adjustable lighting
- Climate controls in classrooms
- Mesh window shades that can double as projection screens, and/or other room darkening devices
- Wall coverings, art work, creative painting
- Cork boards
- Acoustics
  - Sound deadening agents for walls
  - Fabric covered panels
- ADA concerns
  - Accessible spaces and furniture

- outlets need to be higher and more
- Universal design

Equipment

- Wireless/full room microphones
- Surround sound
- Smart Boards. (Multiple white boards)
- Multiple Projectors and retractable screens
- Digital displays
- Other Boards- Magnetic, cork, chalk

Capabilities

- Transparent technology integration
- Lecture halls so presenter can move into audience [wireless mics, lavalier, mics, mouse, pointers, remote presentation control]
- Computers on sticks- (wireless): more of them in every room!
- Variety of classroom designs and technology levels, with classrooms made available through online assignment system

Continuing Issues:

- Ongoing faculty/administration discussion on classroom design and availability
- Online classroom assignment system allowing for faculty choice in room assignment, and greater flexibility in sharing spaces.
- More training opportunities for faculty
    - New technologies: podcasting, wikis, blogs, video streaming, and blended learning
    - Variable schedules (day, evening, weekend)
    - Hands on/task oriented focus
    - Online training
- Innovation grants