

RETURNS

# *the Future of Higher Education*

Technology is Changing the  
Delivery of Knowledge

## **MODERATOR**

**Kelly Baxley**, *account executive, Siemens Building Technologies*

## **SPEAKERS**

**Dr. Jacques du Plessis**, *interim associate vice chancellor for information technology, University of Wisconsin Milwaukee*

**Dr. Linda Hanson**, *president, Hamline University*

**Dr. Ellen Junn**, *provost and vice president for academic affairs, San José State University*

“Higher education is at a crossroads,” Kelly Baxley declared as he introduced the plenary session at the APPA 2013 conference in Minneapolis last August. “The sector urgently needs to innovate because becoming a savvy user of technology is now a requirement, regardless of industry or career path. The vast proliferation of mobile devices demands that education become green, global, and mobile,” he said. “Emerging areas such as cybersecurity, big data, predictive analytics, and the Internet of everything are generating new challenges and opportunities for many industries, including higher education.” Further, he noted that the advent of massive open online courses (MOOCs) has introduced new dimensions to discussions about online and physical campus experience.

In their presentations and their responses during the Q&A session that followed, the speakers discussed the impact of these technologies on higher education, including their own institutions’ challenges and responses. Repeatedly, they stressed the need for an integrated approach, from the ground up, with academic, technology, and facilities sides of the house collaborating to achieve sustainable institutions and thriving communities of student-centered learning.

#### CONTINUOUS TECH INNOVATIONS

The Internet and constant advances in technology have radically changed higher education delivery. These advances are moving the industry to evaluate not only what new facilities are needed and how to equip them, but also what facilities are less in demand and how to repurpose them.

Tech upgrades are ubiquitous. For example, Provost Ellen Junn reported that San Jose State University (SJSU) has tripled Wifi access and has plans for 51 classrooms equipped for interactive HD remote instructors and guest lecturers, lecture capture, and other features. All classrooms, conference rooms, and offices can use WebEx teleconferencing, and there is also a VOIP (voice over Internet protocol) phone system. In April 2013, the *Chronicle of Higher Education* named SJSU President Mo Qayoumi (an APPA Fellow) among the top ten technology innovators in the United States.

However, President Linda Hanson of Hamline University pointed out that, even as they upgrade, many institutions find that they no longer need to supply a variety of equipment they had previously provided, such as desktop and laptop computers, video production studios, etc. Both SJSU and Hamline stress a new practice for students: BYOD—bring your own device. In fact, Hanson noted that the variety of cutting-edge devices that students bring to campus is driving change. “This is a change that all institutions of all sizes, staff sizes, and budgets have to deal with,” she said. “Students expect the colleges to have the resources to support the devices they bring—and to support their learning outcomes 24/7/365.”

Hanson explained that Hamline’s response is to pursue an integrated model, with facilities and tech departments creating what is needed for the student learning outcomes they want. This includes providing mobility (students can be anywhere, learning on any device), flexibility (students can access course materials, group work, etc.), sufficient capacity, and virtual and physical support.

In addition, Hanson said, the university is expected to help faculty support these devices. But she admitted that there were a number of older faculty members who believe their job is to know their discipline and interact personally with students, and *not* to have to learn new technology, a task for which they have no time and are not paid.

By Anita Blumenthal



BYOD also directly affects the university's built environment. For example, Junn notes that these days, every college no longer needs to have its own physical computer lab. Further, Hanson says that Hamline's law library comprises many shelves of volumes that are little used because students use online databases. "So what should the physical library look like in the future?" she asked. Whatever the eventual answer, Hanson said that facilities need to "demonstrate a commitment to sustainable learning and living environments." Whether new or renovated, they "cannot be imagined without planned integration and adequate investment to sustain the rapid pace of changes in technology."

New digital technology can also offer new communications models that can transform the functioning of the entire campus, according to Jacques du Plessis of the University of Wisconsin

Milwaukee. He calls the field "intellification of information," which uses an "expanding array of sensors...that can measure and be aware of so much. All this information is digital, so it comes in and is stored.... This information is understood, and [therefore] when something happens, it can trigger something else" (such as turn off an automated sprinkler system when sensors send the message that it is raining).

#### **BUILDING TOMORROW'S LEARNING SPACES**

The accelerating use of technology raises major issues regarding physical plant: How do you construct a building for a school of science, for example, when the institution does not know what size or configuration it will need in just a few years?

We need "faculty-designed and discipline-specific, technologically enabled classrooms that maximize usage efficiency," Hanson said. To achieve this, she said, there must be a close connection between the faculty, who know how they want to deliver their courses, and the sides of the house that can help us design it.

Many changes have already occurred. Hanson pointed out that computers and technology-enabled modeling have replaced tasks that used to be done in labs and classrooms. "More and more professors do not want theater-style lecture halls," Junn said, "but rather want



*Dr. Ellen Junn, provost and vice president for academic affairs, San José State University*



furniture that can roll, allowing small group work, and they want tech-enabled classrooms.”

“Flexible facilities enable high-impact student learning,” Hanson said. “We know that; we can quantify that.”

Junn suggested that facilities managers learn about such impressive examples of this new approach as SCALE-UP (Student-Centered Active Learning Environments with Upside-down Pedagogy; see <http://scaleup.ncsu.edu/>), aimed at large introductory science courses that had previously been considered places to weed out students who wouldn’t succeed as majors in the subject, rather than serious learning opportunities for non-majors.

#### **HYBRID COURSES—PART ONLINE, PART CLASS/LAB**

Although MOOCs are much in the news, the panel also discussed other options along the continuum, including hybrids and limited-availability online for-credit offerings.

Junn described two programs, both in their initial stages. First, in collaboration with MIT, San Jose State is testing a hybrid version of one of original courses designed by edX (the Harvard/MIT MOOC). The course is the same SJSU’s Electrical Engineering 98, Circuits and Electronics course, an upper division class required for all engineering majors. The SJSU format has online components (short videos, quizzes, virtual lab, textbook) and in-class small group work, individual/group quizzes, and mini-lectures. Junn reported that the traditional classroom format averaged a 59 percent pass rate. In fall 2013, the first time the hybrid Edx version was taught, the pass rate was 91 percent. The spring 2013 pass rate was also over 90 percent.

Junn noted that the University of Florida has experimented for years with different formats, and studies have found that students prefer the hybrid model. “They are still interested in the face-to-face aspect of the university experience,” she said.

#### **ONLINE COURSES**

In its second pilot, San Jose State is collaborating with another MOOC provider, Udacity, to offer completely online courses (with support from the Gates Foundation and the National Science Foundation to study the data). The spring 2013 offerings had more than 200 students, with a focus on disadvantaged students and included remedial math and introductory courses in algebra and in statistics. The summer 2013 offerings expanded the limited enrollment to 2,000 students from the United States and abroad and offered remedial math and introductions to algebra, statistics, psychology, and computer programming. SJSU is analyzing the results and will recommence courses in spring 2014.

The summer courses were offered in the extension section of the university. Unlike MOOCs, they were not open to all, they carried university credit, and they cost \$150. Junn suggested that this approach, given the possible volume of students who might want to take credit-carrying courses online could raise significant revenue and help students take courses toward graduation that they could not otherwise fit in.

However, Junn warned that the transition to online coursework is not seamless. “Just because [students] know how to interact with some kinds of media does not mean they are digitally literate,” she said, “nor do students understand what it is like to learn in a completely different modality. Learning in an online course is radically different from taking a



*Dr. Jacques du Plessis, interim associate vice chancellor for information technology, University of Wisconsin Milwaukee*

face-to-face class. So we have found we also have to educate even our digitally native students about how to approach and change behavior on an online course in order to succeed.”

Du Plessis of UW Milwaukee discussed the importance of completely online education for remote regions, as well as for people who can learn without classrooms. He said that the University of South Africa, with 350,000-plus distance-learning students, is working on a new model of education, which would require only a tablet—on which all textbooks would be loaded—a cell phone, and a solar panel to charge the devices. He also noted the strong trend toward competency-based education and testing. The idea that people can learn without classrooms is “a very inconvenient truth,” he said, but it is important to work out a way to be “receptive to people who can learn on their own and provide them with a way in which they can verify their skills.”

#### **PLANNING—MORE DIFFICULT THAN EVER**

Planning has always been important in facilities management, but with the radical changes taking place—and undoubtedly with many more to come—what happens to the idea of master planning? Hanson listed numerous challenges, including how to design spaces for future technology and determine the balance between physical and virtual learning spaces, as well as amounts to spend on them.

Master planning tries to predict the future, but perhaps it's rather a matter of predicting direction. For example, Junn said that today, SJSU is responding to the new fields that did not exist 10 or 20 years ago (e.g., cybersecurity, big data, learning analytics). She is responding by hiring faculty across different colleges. Also the university plans to expand the number of grad students in the STEM subjects (science, technology, engineering, math), "so we can expect to expand faculty, labs, equipment, and office space," she said. However, she admitted, "We know there will be new fields of study that do not exist today that will exist 10 or 20 years from now. How do we plan for them?"

Besides, Hamline's Hanson noted some pitfalls of the formal, long-term planning process, which can take 18 months and end by losing sight of the initial vision. Further, the plans can be derailed by unforeseen events. "We've started to think of it as a rolling plan," she said. "It must always be flexible, constantly factoring in impediments."



**Dr. Linda Hanson, president,**  
*Hamline University*

Du Plessis suggested that an important step to anchor any planning process is to ask, "What is the 'form factor' of the institution? How does the form limit or support you in serving your clientele? Define your clientele (rich/poor, particular discipline, ethnic groups, gender, etc.) and define your big purpose. If you focus on the form factor you have," he said, "you can understand strategically who you are and where to direct your future. "Do not try to emulate an institution that does not share your form factor," because that could result in unwise spending, among other things.

Also, du Plessis said it was important to pick up trends and directions early. "Be where you know you need to be—not what you do well," he said. "Listen to Darwin. Who survives? Who ever adapts best."

No speaker could avoid the problem of current and future funding, especially now, as Junn pointed out, with 46 states

decreasing their appropriations for public higher education, moving toward zero. However, du Plessis warned, "It is not sustainable to put the burden of financing on students," whose numbers, in any case, are dwindling in the United States. He noted more creative approaches such as compacts to share resources with other campuses and partnerships with private institutions that would, for example, contribute to building a laboratory and then use the facility as well.

#### **EVERYONE AT THE TABLE**

The changes and challenges multiply: tech-enabled classrooms; ever-smarter devices; continuous support requirements; ever-increasing capacity, flexibility, and access. "Not changing is not an option," Hanson said. "We cannot sit on our laurels, even of what we did 18 months ago." Further, she said that everyone, from governing bodies to faculty, funders, students, and alumni, must understand that "we are in and of that very porous inside-of-academia/outside-of-academia world."

The speakers agreed that the way to respond lies in an integrated model: Everyone from all sides of the house—academic, tech, and facilities—should have a place at the table and should have knowledge of needs and resources. In one example of closer coordination, Junn noted that many schools now have a separate academic technology component, concerned specifically with using technology in academics, in addition to the institution's in-

formation technology services center, often under the chief financial officer.

Du Plessis advised the tech and facilities departments to educate

themselves about how their contributions could improve student learning. "Don't just sit back and say [to the education leadership], 'Tell me what you want and I'll do it.' That is abdicating a very important part of your responsibility," he said. Facilities managers must be able to debrief the education leaders about all the possibilities. "Show them your expertise in knowing what's out there," he said. "You've got to deliver some pieces [to which they can respond], 'Ah, that gives me an idea.' And then, the conversation starts." ☎

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**A video of this plenary session is available at**  
[www.youtube.com/watch?v=yTe7al\\_e0Ko](http://www.youtube.com/watch?v=yTe7al_e0Ko)



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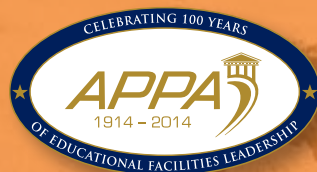


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