

WFS Learning Section
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FUTUREtakes publishes the *WFS Learning Section Bulletin* by special arrangement with the World Future Society (WFS) Learning Section Steering Team. Issues of the *WFS Learning Section Bulletin* typically include foresight education exercises, an educator spotlight column, and synopses of the annual WFS Education Summit.

Synopsis!

WFS Education Summit 2009

Innovation and Creativity in Learning

Amplifying and adding to various key points of the first-ever WFS sponsored education summit in 2008, more than 80 educators, education innovators, and students participated in Education Summit 2009. **Jay E. Gary**, former director and professor, School of Global Leadership and Entrepreneurship, Regent University, and a member of the WFS Learning Session Steering Team, served as moderator.



A pervasive theme was the enabling power provided not only by new digital tools including mobile devices but also by innovative approaches to learning – enabling power that extends beyond students and educators, extending to prospective employers. As various presenters reported, students and educators alike are reaping the benefits of instant access to information and to an expanded pool of teachers and library resources in a “beyond books” sense that extends to rural communities, while digital-enabled customized learning accommodates different learning styles (e.g., visual or auditory) via automated transfer of content across media. Armed with resources that enable continual feedback and online mentoring, some teachers are seeing a profound increase in student engagement, as some of the presenters observed.

However, the innovations are not limited to the development and use of digital tools, nor are the payoffs confined to the traditional learning environment, emphasized other presenters. The cultivation of 21st century skills – collaboration, creative and critical thinking, leadership, speaking, writing, trans-disciplinary thinking, and proactive anticipatory thinking – is welcome news to a growing number of employers, as is the increased focus on addressing real challenges in economics, the environment, science and technology, and the sociopolitical arena.

The new learning approaches presented at Education Summit 2009 ranged from non-mainstream trans-disciplinary topics to nurturing anticipatory thinking, from cultivation and leveraging of curiosity to student creation of their own learning material. Recognizing the need for flexibility and diversity in all aspects of education ranging from content to pedagogy to

organizational modus, various presenters shared their own perspectives and observations on the next frontiers in education, some of which transcend commonplace notions of educational institutions – for example, partnerships with businesses and NGOs, cross-border course offerings and degree programs, and trans-institutional academic “credit banks.” Near-universal was the recognition that learning will become less institution-centric and compartmentalized, with personal experience playing an ever-increasing role.

The presenters were also quick to point out some challenges that educational innovators continue to face. Some of these challenges are inherent in digital technology, for example bandwidth limitations, infrastructure implications, avenues for academic dishonesty, and lack of vision and understanding in how to use the technology. An additional challenge, one also recognized earlier in Education Summit 2008, is institutional resistance encompassing “bureaustatics,” pervasive buy-in to the notion of separate disciplines and to mainstream pedagogy, and an equally prevalent focus on immediate value added in preference to long-term payoff. The learning environments of tomorrow present the additional challenges of measuring student performance and of expectations management, added one presenter.

As if to echo portions of Education Summit 2008, there was a general recognition of the mismatch between today’s students and the educational methods of the past, which are becoming progressively less effective in engaging students and creating academic learning futures.

How Web 2.0, Collaboration, and Public Information Are Changing Higher Education

Michael Rahini, president and CEO, Koofers.com



Leading the presentations was Michael Rahini, who opened with a brief discussion of various Web-based and digital tools that are already transforming higher education:

1. Wikipedia, a self-generating, self-updating, and self-correcting encyclopedia
2. Blog posts that can receive feedback from students, teachers, parents, etc.
3. MIT open courseware – free online course materials that have inspired other universities to follow suit
4. Echo 360, which captures lectures and converts them to podcasts and other media for playback-on-demand
5. Wordle.net, which creates high-impact graphic images from key words and phrases in a document
6. Slideshow.net, a search engine for slide show presentations
7. Livesubscribe’s smart pen, which records professors’ lectures and posts notes online
8. Web-based collaboration tools.

Adding that textbooks are becoming digital and in some cases open source, Rahini emphasized that digital textbooks offer capability for instant access to any book chapter or page, in some cases complete with in-app e-mail capability. Furthermore, they offer alternatives to purchasing complete texts – specifically, options to rent books and to purchase individual chapters – and students no longer need to tote several heavy books. Examples of these new resources include Kindle, iPhone, Flatworld Knowledge, Iceberg Bookshelf, bookrenter.com, and skoobit.com.

However, even with all of these resources, only 10% of Web 2.0 users contribute posts and only 1% account for 90% of the posts, observed Rahini. In his view, the challenge is to encourage and facilitate giving (“posting”) as opposed to just taking (“lurking”).

As an example of capabilities that digital tools are making possible, Koofers (Rahini’s own company) represents a next wave in online learning and empowers not only students and professors but even prospective employers. Its name derived from “coffer” (an organizational repository), Koofers connects students and professors across campuses, so that any participating professor can answer students’ questions. Likewise, it connects current students with former students and with course notes and previously taken exams that are saved for future use as study guides. In this way, it levels the playing field for students who are not members of fraternities and sororities. Participating employers, given tools such as these, can identify the specific courses that students have completed. Also available from Koofers are professor ratings, course ratings, grade distribution information, and even a class scheduling tool. However, with these new capabilities come new needs – for example, more tools that can distinguish online collaboration from plagiarism, concluded Rahini.

The Future of Mobile Devices in Learning

Gloria Steele, education consultant, Technology and Innovation in Education

Noting that South Dakota has a 1-to-1 laptop/tablet initiative for all high school students and teachers, Steele opened with results from a survey that addressed several key factors in the educational environment – for example, teaching methods; levels of student interest, frustration, and effort; and ease of obtaining help on assignments. The survey asked participating students how well their schools taught them to

- Be good readers
- Speak and write clearly and effectively
- Analyze and solve math problems
- Learn effectively on their own
- Think critically about problems, ideas, and current events.

Additional survey questions focused on how often teachers asked the students to

- Collect, organize, and analyze information and data
- Solve real world problems
- Explore topics in depth
- Relate instructional content to real life problems
- Work on multidisciplinary projects
- Participate in community or work based projects or internship.

Teacher questions focused on topics such as co-teaching, obtaining feedback from other teachers, and workload reduction (for example, in grading papers). Teachers identified several advantages that mobile devices offer in the learning environment:

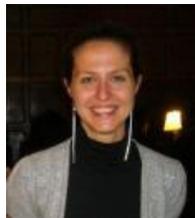
- Customized learning using a combination of teaching methods, resulting in improved learning and student achievement
- Instant access to online content
- Instant feedback – for example, on problem-solving skills, or on writing styles and content
- Increased participation by shy students
- An expanded pool of teachers and library resources for rural areas including Native American communities
- Online mentoring capability
- Continued capability to teach or learn when teachers or students are sidelined by travel or illness, and improved capability to catch up on missed classes.

Steele pointed out several specific learning tools available to mobile device users – for example, the interactive whiteboard (for collaboration), instant polling capability (MobiOde), Google Earth, speech-to-text capability (that can accommodate different learning styles such as visual or auditory), and Cha Cha, which will search for answers when asked a question.

Its advantages notwithstanding, there has been resistance to using Web 2.0 in educational institutions, continued Steele, in part due to a lack of vision and understanding of how to use the technology. Additional concerns have included bandwidth limitations, the digital infrastructure (footprint, maintenance, and repair), and legal liability concerns regarding inappropriate content.

Creating Academic Learning Futures in the UK

Gilly Salmon, professor of E-Learning and Learning Technologies, University of Leicester



Sandra Romenska, research associate for the project Creating Academic Learning Futures

In addition to its 12,000 resident students, the University of Leicester has 6,000 distance learners, began Salmon and Romenska. The distance learners participate in diverse curricula including science, medicine, psychology, arts, humanities, and languages. The university's new ways to deliver the curricula include its Media 3D Zoo, which is on site and online and which uses a metaphorical structure – Pets' Corner (existing technology, pedagogy, markets, and missions), Breeding Ground (new technology and pedagogy applied to existing markets and missions), Safari Park (outreach to new markets and missions while using existing technology and pedagogy), and Exotics House (new technology, pedagogy, markets, and missions). This approach has three primary focus areas – extending and defending core businesses, outreach to emerging businesses, and creating viable options.

Quick to note that new students are different than their predecessors, Salmon and Romenska emphasized that the old ways are less effective now and that the goal of creating academic learning futures is unattainable through existing educational institutions and methodologies. In addition to the usual firewalls that must be overcome (separate disciplines, research firewalls, pedagogy itself, and management and administration), the speakers pointed out that dot-com technology has itself become a firewall and that the way forward requires engagement with the “geeks.” Among the new frontiers that they identified are mobile devices, cloud computing, smart objects, linking the real with the virtual, and engaging students to create their own learning material and to explore “beyond the obvious.”

To date, the academic learning futures at the University of Leicester have organized around various themes including “green matters,” that is, increased university involvement in social and environmental responsibility and activities. Other themes have included flexibility and diversity in all aspects of education (e.g., providers, content, student demographics, creativity, and student participation) and learning technologies that themselves learn – indeed, about their users – and that become more valuable with increased user-generated input.

Questions, Answers, and Comments

C: “Tools are not for older groups. However, they should be in high schools and prep schools, as the younger students adapting to new technology quickly.”

Q: “Is this [new approach] for ‘outside-the-box’ students only?”

A: “Not at all. In fact, in not requiring expensive equipment, it lends itself to wide deployment.”

C: “A key issue is institutional resistance. Institutions generally do not want any faculty member to change unless there is immediate value added.”

Fostering 21st Century Skills Through Problem Solving International

Marianne Solomon, executive director, Future Problem Solving Program International, Inc.

Vicki Stein, program director, Future Problem Solving Program International, Inc.

Assisted by a panel of students, Solomon and Stein shared their experiences with Future Problem Solving Program International (FPSPI), a program that was started 35 years ago for gifted students (who were often bored in conventional learning environments) but that has now expanded to include other students. FPSPI prepares students for the challenges of tomorrow by cultivating creative thinking and writing skills, interdisciplinary thinking, and leadership skills – all focused on solving real problems. General focus areas include business and economics, science and technology, and social and political issues.

The FPSPI program requires students to write scenarios 20-30 years into the future and to become mini-experts on non-mainstream topics such as sensory overload, invasive species, or a cashless society. One student produced a documentary about local Vietnam veterans.

The panel discussion portion of the presentation enabled students to share their own perspectives on FPSPI:

1. "Why did you choose this program?" (One student indicated that he was enrolled involuntarily.)
 - a. "I chose it out of boredom. I needed more excitement added to the learning experience." (This student had been involved in sports and other activities.)
 - b. "I liked the research process and wanted to be a part of it."
2. "Where in your school curriculum were you introduced to aspects of the future?"
 - a. "A biology teacher introduced me."
 - b. "I was attracted to the class because of the teamwork opportunities."
3. "What benefits did your involvement in FPSPI give you?"
 - a. "A writing intensive – that is, an opportunity to practice getting my ideas down and conveying them; also the opportunity to develop oral communication skills."
 - b. "Critical thinking skills – the ability to break down and analyze complex problems, in contrast with memorization."
 - c. "Higher level thinking skills including analysis and synthesis, in contrast to being told what to think."
 - d. "The experience of working under a time constraint."
 - e. "Spontaneity skills."
 - f. "Overcoming self-imposed limitations, that is, learning that one can do more than one thinks he/she can."
4. "What was your favorite topic?"
 - a. "Nanotech."
 - b. "Space junk."
 - c. "Artificial intelligence."
 - d. "Neurotechnology."
5. "How does FPSPI encourage students to be aware of the future?"
 - a. "Before FPSPI, awareness of the future was nonexistent in my school."
 - b. "It enables students to see real problems of today."
 - c. "It develops skills that employers are seeking – ability to think creatively to solve real problems, teamwork and collaboration skills, oral and written communications skills, and critical thinking and analytical skills."
6. "Why would you advise other students to participate?"
 - a. "They need the skills."
 - b. "Students can have fun as they learn."

Solomon and Stein emphasized that participating educators like the program and that FPSPI students develop skills that are useful not only on the job but also during job interviews.

Questions, Answers, and Comments

- C: "Some good candidates don't test well and aren't chosen for gifted student programs. Others don't do well in class since class is not designed for them and they become bored."
- C: "Usually there is a boy-girl mix on teams."
- C: "This approach shows students that they can do things, or shows others; it transcends stereotypes."

CoRT: Futurist Thinking Tools for Students

Lynda Curtain, president, deBono for Schools



Following the Solomon and Stein presentation, Lynda Curtain shared her experiences with using Edward deBono's Cognitive Research Trust (CoRT) methodology, a set of thinking tools, as futurist learning tools. Noting that few students have had more than two classes in thinking skills, Curtain pointed out that the CoRT approach facilitates focused parallel thinking by all students.

The CoRT tools emphasize thinking as a deliberate act as opposed to a reactive one, emphasized Curtain, as she discussed several of the CoRT tools including "plus-minus-interesting" (PMI), "rules," and "consequences and sequel" (C&S). The PMI approach is to examine the positive, negative, and interesting aspects before reacting. For its part, "rules" asks what the rules should be to make something work, and it asks whether existing rules are no longer relevant. Among its other capabilities, C&S addresses consequences that may be insignificant in the short term but substantial later on, as well as consequences that shift with time after being negative at the outset.

Additional CoRT tools discussed by Curtain included "consider all factors" (CAF), "first important priorities" (FIP), "aims, goals, and objectives" (AGO), "other people's views" (OPV), and "alternatives, possibilities, and choices" (APC). She emphasized that one should use only those thinking tools that make sense for the thinking challenge at hand and then only one at a time, noting that there is no one proper order. As an added guideline, she stated that the tools should be used with an open mind and to broaden perception, not to defend a particular viewpoint.

A practical exercise used by Curtain illustrated the results of using the CoRT tools. In the exercise, Curtain had posed the question, "What ideas do you have for a new retirement system, considering that people are now living and working longer? What alternatives and possibilities come to mind?" Among the answers that emerged were no retirement at all, fixed-term contractual work, cyclic work patterns similar to sabbaticals, reduced working hours, and even the prospect of "retirement" first, followed by work. Emerging from the exercise was a new perspective – defining retirement as a shift in focus as opposed to an end in itself.

Foresight Issues in Business and Society: Required Course at Notre Dame, Mendoza College of Business

Tom Frecka, professor of accounting, University of Notre Dame

Jay McIntosh, adjunct professor, University of Notre Dame

Business education is often narrowly focused on accounting, marketing, and finance, began Frecka. To eliminate this major shortcoming of business education, the Mendoza College of Business at Notre Dame University requires its students to complete a course on foresight in business and society. A key objective of this course is to identify second order effects that are often overlooked in business education.

Creating this new course has not been without its challenges, not the least of which concerns the course content. As the speakers noted, it is not the availability and accessibility of information that limits foresight educators; rather, the challenge is in identifying and incorporating substantive information and then ordering it in a way that makes sense. Additional challenges include expectations management and student grading. The course requirements include a paper, preparation for which includes creative thinking and scenario planning.

In one exercise that Frecka has used, 95% of all goods sold through US retailers are rated for sustainability beginning ten years from now. In addition to the challenge of developing and implementing the rating system, several possible implications were identified: (1) higher prices, (2) more innovation, (3) little change in consumer buying behavior, (4) government takeover of the rating system, and (5) a variable sales tax, leading to more bureaucracy. Additional considerations were the capability to meet present needs without compromising the future and the need to establish relative priorities of economic vs. environmental sustainability, Frecka continued, adding that simultaneous action on both fronts might require a strong central government to pay the upfront costs.

Frecka's student exercise led to four future scenarios for the year 2030:

1. a broad US tax on pollutants, and increased green and clean energy research
2. a cap-and-trade scheme
3. a cap-and-trade scheme in which the credit allocating systems are mishandled, resulting in few credits and few who can obtain them – culminating in loss of jobs and adverse community impact as manufacturing is offshored
4. a technology breakthrough.

From exercises such as these, participating students obtained useful take-aways, continued Frecka:

1. the value of good research – where to look, and what to seek
2. the value of clear and constant communication
3. the importance of thinking critically, not rushing to conclusions or being quick to accept; a recognition that suspending judgment is itself sometimes a good decision
4. the importance of questioning and critical thinking as opposed to blind acceptance
5. the holistic approach that one can cultivate by learning about another culture.

Ten Trends Affecting the Future of Higher Education

Ralph Wolff, president and executive director, Western Association of Schools and Colleges



Concluding Education Summit 2010 was Ralph Wolff's presentation, "Ten Trends Affecting the Future of Higher Education," in which he first noted some salient characteristics of education in the US – its independent character, the "massification" of education beginning in the early 1950s, and the fact that US has the greatest diversity of educational institutions including research institutions, liberal arts colleges, special education institutions, religion-based colleges and universities, four-year colleges, and community colleges. Demographically, full-time students account for 61.7% of college and university enrollment in the US, and women account for 57.3% of the enrollment, continued Wolff. A total of 31.8% of college and university students in the US represent minority groups, while 3.4% are from nations other than the US.

Wolff discussed the following ten trends in depth:

1. Financial meltdown

Public funding constraints, cuts in endowments, tightening credit, and downturns in stock market and real estate portfolios are making a profound impact on colleges and universities, observed Wolff. Every state in the US is facing a structural deficit, he continued, and recent increases in Pell grants will not make up the difference – nor will the one-time \$50 billion stimulus.

The immediate response to this confluence of trends has been to freeze and cut positions and salaries, not to restructure, continued Wolff. Tuitions have been raised, student debt loads are higher, adjunct faculty and support staff positions have been eliminated, and the faculty and staff who have survived the cutbacks are seeing increased workloads. Wolff emphasized the need for new funding models and new sources of revenue – for example, more partnerships and joint ventures with business.

2. President Obama's education priorities (for the US)

A primary education goal of President Obama is for the US to have the highest proportion of college graduates in the world by 2020, observed Wolff. In support of this, the plans include \$15 billion for community colleges (in recognition that they are today what high schools were 30 years ago) and another \$50 billion to develop free online courses, with participating educational institutions developing and sharing the best practices, in some cases partnering with various foundations. The anticipated near-term impact is increased access through open admissions, greater emphasis on vocational and technical education, and higher participation among underrepresented groups.

3. Expanding influence of for-profit entities and market capital

This is the fastest growing sector, continued Wolff, who anticipates more industry grants to universities as well as joint ventures between for-profit entities and mainline educational institutions. This will be enabled by growth, scalability, and increasing profitability of proprietary systems.

4. Technical and Distance Education

More than two million students are participating in high-tech enabled education, and this number is growing rapidly, Wolff indicated. Presently, most of these students are within traditional settings, and to date, hybrid programs have proven most effective, said Wolff, adding that although high-tech programs can be centers of high profit, not all of them have seen high enrollment. Furthermore, he was quick to point out that in the absence of a personal connection, sustaining student motivation can sometimes be difficult.

A continuing US Congressional concern is verifying the identities of students participating in online education, added Wolff.

5. Internationalization

Both in the US and in other nations, competition for the best international students is increasing, said Wolff, noting the increasing numbers of international students in the US and of US students

studying abroad. In the US, an increasing percentage of degrees are being awarded to non-US students, he continued.

6. Globalization

With increased international recognition of the importance of higher education, US universities are establishing campuses in other nations, cross-border course offerings are increasing, and study programs that award dual degrees from universities in different nations have been launched, observed Wolff. An additional development has been cross-border harmonization of educational standards – for example, the EU’s Bologna Process – that conceivably may extend to the US and elsewhere.

7. Quality Control and Accountability

Noting the decrease in US high school graduation rates and the drop from 1st place to 7th place in college participation rates among students between 18 and 24 years of age, Wolff discussed the increased interest in quality control and accountability in education. Areas of concern include college completion rates, job placement rates, learning results (development of skills necessary for the workplace), financial issues (costs, student debt loads, and executive compensation), and accountability of boards and other governing bodies.

8. Sustainability Issues

Sustainability issues, which are already having pervasive impact elsewhere, can be expected to impact education as well in ways beyond academic study, observed Wolff, a point underscored by the American College and University Presidents’ Climate Commitment (ACUPCC).

9. Learning Skills Relevant to the 21st Century

Echoing comments of earlier Education Summit 2009 speakers, Wolff suggested that a major trend is the increasing need for new learning skills. Education for tomorrow will need to prepare people for problems not foreseen, knowledge not yet developed, and technology not yet invented. Needed key skills will include an ability to originate new ideas and to anticipate problems (for example, identifying new patterns of behavior and the consequences of new combinations of actions).

Concurrently, the character of knowledge is itself changing, continued Wolff. Education will become more deinstitutionalized, less compartmental, and more holistic, with increased integration of knowledge across disciplines. Students will need a willingness to unlearn and a comfort with the notion of no one right answer, and fundamental curiosity will need to be nurtured. At the same time, external authority will give way to personal experience and context relevance.

10. New Forms of Educational Institutions

Wolff concluded with some observations on where present trends in education may lead. One possibility, which mirrors the corporate world, is an increase in institutional consolidations and closures. Also anticipated are privatized public universities and increased partnering between universities and other entities – for example, businesses, community colleges, and non-government organizations (NGOs).

With trans-national universities already a reality, Wolff foresees additional innovations in education that extend beyond organizational modus – for example, IT-enabled “cloud” degree programs and course completion “credit banks” that extend across individual colleges and universities.

Questions, Answers, and Comments

C: “Additional areas of interest to education professionals are cognitive science, neuroscience, and possible differences in ways that ‘young brains’ vs. ‘old brains’ learn. Presently there are few courses in learning theory.”

Next Steps

A general consensus at the conclusion of Education Summit 2009 was that while “education” may be in deep trouble, learning is not. A key challenge – identifying ways to learn and lead from the future of education, not just its past – points the way forward.