Consortium: Higher ed curricula not keeping pace with societal, tech changes

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The structure of the university in the 21st century is changing rapidly after its evolution into a multiversity in the 20th century. But as universities are being restructured to best serve the society of tomorrow, are their curricula reflecting these changes and the development of new and possibly even unformulated new disciplines and areas of inquiry?

"No," says a consortium of educators that range from Arizona State University to University of New Delhi, India, and Wissenschaftskolleg zu Berlin , Germany, who have launched a website (www.curriculumreform.org), hoping to spur a radical transformation in international educational reform.

Their call for "reform-minded educators to unite" is featured in a correspondence piece in the Oct.14 issue of the journal *Nature*. The "Call to Reshape University Curricula," was authored by consortium members Manfred Laubichler, Arizona State University; Yehuda Elkana, Wissenschaftskolleg zu Berlin, Germany; and Adam Wilkins, Centre de Recherches Interdisciplinaires, France.

The website hopes to bring educators together, as part of a larger, global movement to abolish the archaic disciplinary isolation and static teaching practices of the 19th and 20th century, and replace them with pedagogy that addresses the complexity and diversity of perspective of a global community in the 21st century.

"We've shifted from a liberal education to a research and practice-

focused education," says Laubichler, a professor in ASU's School of Life Sciences, director of the Center for Social Dynamics and Complexity and member of the Center for Biology and Society. "While the structure of the university is changing, effort to reform the curriculum is trailing behind. It doesn't reflect the complexity of issues that the society faces, nor does it give students the tools to deal with rapid changes in technology, social and intellectual change."

"This discussion runs deep in higher education in Europe but rarely does it focus on the need for new curricula as one, but essential, means for grappling with the above outlined problems," says Elkana, who is president and rector emeritus of the Central European University in Budapest, Hungary.

The consortium's website lays out 11 principles, guides for rethinking curriculum that its developers hope will create a basis for international dialogue. Among the challenges to reformation of undergraduate education has been lack of continuity, collaboration and shared vision.

The groups' vision was developed in meetings at the Wissenschaftskolleg zu Berlin (Institute of Advanced Studies) during 2009-2010, which culminated in an international forum in June. These gatherings brought together forward-thinking researchers and educators in science, psychology, and social ecology; literature, political science, and philosophy; education and institutional management, including the president of the German Science Council, President of the European Research Council, president of the University of Lüneburg, representatives of the Mercator and Volkswagen foundations, and Secretary-Generals of two Institutes for advanced studies (Berlin and Stockholm) and representatives from Italy, India, France and the United States.

Attendees from Arizona State University included Laubichler and

Robert Page, dean of the School of Life Sciences in ASU's College of Liberal Arts and Sciences, both in Germany on fellowships at the Wissenschaftskolleg, and ASU School of Life Sciences faculty members James Collins, Virginia M. Ullman Professor of Natural History and the Environment and former associate director of the biological directorate for National Science Foundation; Daniel Sarewitz, director of the Consortium for Science, Policy and Outcomes; Jane Maienschein, director of the Center for Biology and Society; and Richard Creath, a professor of life sciences and philosophy.

"Higher education is like a three-legged stool: structure, function, and curriculum, which is central to the purpose of the university. ASU is a changemaker for the 21st century. We are at the center of this reform movement, in partnership with the global community," Page says. This vision has been fostered at ASU under the guidance of President Michael M. Crow. Crow recently appointed Kathryn Mohrman, formerly director of the Nanjing-Hopkins Center at John Hopkins University, to head the international University Design Consortium, founded by ASU and Sichuan University, China. Mohrman also participated in the curriculum reform forum in Germany.

Such a movement is long overdue, according to testimony presented by Collins before the United States House of Representatives Subcommittee on Research and Science Education. He reported: "Innovation is not just an idea, but it is a process that links a few to many individuals. In a rapidly changing world the process of discovery itself is also changing rapidly, and our students must learn how to keep up. Modern biology curricula should expose students to this sort of thinking and more. Learning is the creative process by which new knowledge is discovered; learning is not memorization of facts as an end in itself. Too often students imagine biology as the latter, perhaps because it is commonly taught that way, but no characterization of the biological sciences could be further from the truth."

There are interesting curricular experiments, usually conceived for one institution and almost always for one discipline, or alternatively, interdisciplinary studies on a small scale, according to Page: "The hope is to embrace social context, consider how policy structures function, and the complexity underlying challenges ahead."

One such governmental program in place in the United States, according to Collins, reflects the call for curricular reformation in biology. "Vision and Change in Undergraduate Biology," is a joint effort of the National Science Foundation and the American Association for the Advancement of Science (AAAS) (http://visionandchange.org/).

Page and Laubichler now hope to bring consortium ideals into action, as they begin to review and develop new undergraduate curricula for the School of Life Sciences at ASU. School of Life Sciences has already been a "test case" at ASU, for structural reform, with emphasis on interdisciplinarity. The natural next step is already underway, Page says. This spring saw the launch of ASU's first global virtual classroom, developed in partnership with The Smithsonian Institution in Washington, D.C., and Smithsonian Tropical Research Institute in Panama, using advanced Vidyo video technology. Page hopes to soon expand use of this technology to link with classrooms in Germany and Israel, as well as Panama.

"Students in a global community, whether they are from Central America, Europe, Africa, Asia, or the United States, will face similar challenges; however the historical and social context surrounding solutions to such challenges necessarily differ," Laubichler says. "Our students will increasingly have the means to talk directly with each other in real time, and through such interactive forums, develop the intellectual tools to understand and address the complexity before them, in every human endeavor"

"Our hope is that this call to reform will better prepare our institutions and our students to address critical questions before us, ones that require global solutions," Laubichler adds.

Provided by Arizona State University