Competing for Space on the Education Shelf

I n their book, *Competing for the Future*, Gary Hamil and C.K. Prahalad describe situations in which private firms restructured their organizations, reengineered their business processes, and introduced total quality management. While absorbed in making these changes, they were so inwardly focused that they failed to realize that someone else was redesigning the entire industry such that the rules of the game were changed. Those who competed effectively under the old rules found themselves poorly positioned to compete under the new rules.

Recognizing that we compete in the "business" of higher education and wishing not to be blindsided by an unexpected change in the rules of the game, we posed a question. Is higher education being redesigned in ways that will make it difficult for traditional institutions to compete for students and resources? We think the answer to that question is yes.

The information technology approaches currently referred to as asynchronous learning, distance education, or distributed education have the potential to alter radically the higher education paradigm. The world-wide infrastructure of wires, satellites, microwave stations, switches, and other hardware and software that make up the World Wide Web is expanding rapidly. This is opening the door to a new world of education.

Regardless of their location, students with a computer and good connections to the Web will be able to view, read, and/or hear multimedia lectures, demonstrations, and other presentations, and interact with instructors and fellow students in real time (synchronous) or at their convenience (asynchronous). Asynchronous mode will be by far the most common means of learning and will provide great flexibility to those seeking educational opportunities.

Increasingly, students will not have to take up residence at a college or university in order to study, complete curricula, and obtain widely respected certificates and degrees. This represents a considerable potential cost savings. As the technology improves, allowing more effective and convenient electronic interaction among individuals, the advantages of spending time in the physical presence of teachers and fellow students will decrease. Fewer students will elect to do so.

Instead, students will attend "virtual" universities, the programs of which will be composites of offerings from many institutions and firms. Those programs will be delivered in electronic form on the Web. Of course, we do not know that this scenario will come to pass, but we think it could. For that reason alone, it is worthwhile to speculate on a new and different higher education paradigm and its potential consequences.

A new paradigm

To get in the distributed-education game fast, teachers will divide their course offerings, extension/outreach programs, in-service training programs, executive development workshops, and other educational offerings into several smaller sections or subtopics. As these offerings are developed in electronic format they will be made available on the Web as complete, stand-alone, credit-bearing educational units, which we will refer to as modules.

It is our prediction of extensive modularization of courses and other educational offerings that differentiates our vision of the future from that of most people describing the "virtual university." Modules, not courses, will be the units of education. Teachers won't wait until entire courses and curricula have been converted to electronic form to make modules available on the Web. That would take too much time and up-front investment.

by Don Holt and Cheryl Bielema

A module will be a bite of subject matter that both the developer and the user can chew. It will cover a narrow, clearly definable topic, and have limited, clearly identified objectives. It will be the equivalent of one topic or unit in a course outline or other offering. From the user's (student's) perspective, the module will be something that can be assimilated in from three to fifteen hours of work. This includes time for electronic lectures, demonstrations, directed reading, assignments, problem sets, experiments, Web searching, self-directed study, tests, electronic discussion, and team effort with instructors and/or fellow students.

Many of the modules will serve as components for several kinds of offerings, not just typical courses. In fact, multiple use of modules will make the educational process more efficient and will be a major force driving the higher education paradigm shift. The constantly improving technology of distributed education will enable educators to deliver voice, data, graphics, and video as needed to create and enhance modules. Producing, delivering, and using high-quality modules will become easier and less costly.

Even in the best institutions, some programs and courses are of very high quality and others are of lower quality. Some parts of each course are better than other parts. Under the current paradigm, a student commits to an institution. After that, the student can only select offerings from that institution. Ordinarily, the smallest unit a student can select is a course. They have to take the good with the bad. In the future, students will be able to compare and select from among an enormous number of educational modules available on the Web. They will not be constrained to use modules from only one supplier.

This change will allow students and other users to be much more discriminating in their selection of educational offerings. The market for such offerings will become remarkably more efficient; that is, it will more rapidly converge on the quality-cost combinations favored by most consumers of educational offerings.

Emergence of global markets and superuniversities

A global market for educational modules will emerge, as the number, diversity, and quality of available modules increase. Users (conventional students and others) will be able to mix and match modules from more than one institution, drawing on all the institutions of the world that put their offerings on the Web. Driven by demand and competition, institutions will work out ways to give credit for individual modules and for groups of modules constituting curricula.

Selecting educational modules will be like selecting food items in a modern grocery store, where the customer faces a bewildering array of diverse products and values. Like grocery items, modules will compete for space on the education "shelf." This major change will be enabled and fostered by development of commonly agreed upon outlines that list and describe the topics that must be mastered in order to receive credit, certification, or other evidence of having successfully completed curricula, inservice training programs, executive development workshops, or other programs of learning that require exposure to more than one module.

Existing or new organizations will take responsibility for coordinating development of programs of study and curricula, which will consist of lists of topics for which modules are available. They will maintain catalogues of modules, establish quality standards, produce multi-institutional transcripts for users, collect payments from users, distribute revenues to suppliers, and provide other administrative support for distributed education.

One of the first such institutions will be A*DEC (http://www/adec/edu/), a distance education consortium of institutions offering food and agriculture curricula. Powerful alliances of leading universities will emerge. This will, in effect, create superuniversities that are able to marshall the best resources of participating institutions to deliver outstanding distributed education.

Universities will cooperate in writing course and curricula specifications. These same universities and other organizations and firms will compete to provide the required modules. Modules on the same topic produced at different institutions will compete head to head. Students will be able to draw on the best educational resources of the world to put together programs of study tailored to their specific needs and means.

If this scenario comes to pass, the system of higher education will have been substantially redesigned, by default if not intentionally. The rules of the game will be much different then they are now. Institutions and firms will confront each other in unprecedented levels of global competition. State lines and in-state tuition bargains will no longer provide protection from wider competition. No institutional or individual supplier of modules will be able to avoid the competition. The competition will drive the cost of education down, opening the door of the education universe to many more people throughout the world.

The shakeout

Rapid expansion of the world education market and the residual desire of parents and students for the socialization provided by resident education will prevent a precipitous shakeout. Nevertheless, many
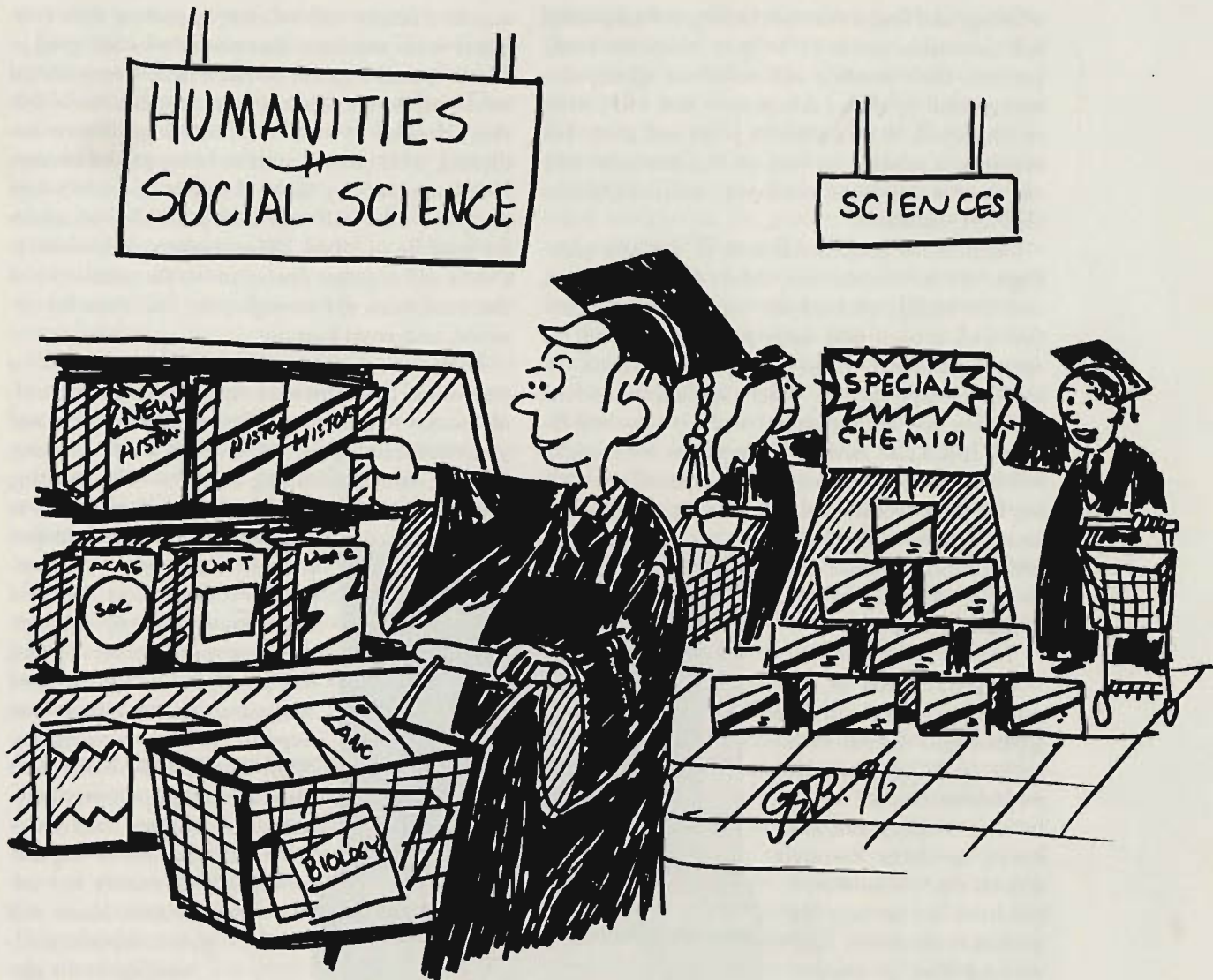
conventional educational institutions will not be able to generate enough revenue to continue to exist. Depending on their individual circumstances, institutions may employ various mechanisms of price competition, including credit arrangements and volume discounts, to maintain a customer base and/or spread fixed costs, among other possible benefits. Advertising of educational institutions and offerings in major media will be much more common.

We will see the proliferation of public and private educational institutions that do not have resident faculty, but instead contract with nonresident individuals or teams, some organized as private firms, to create and maintain one or a few modules in narrowly defined subject matter areas. These "virtual" institutions will provide facilities for those situations in which it will be essential to get students and teachers together for face-to-face and hands-on experiences. As the technology of distributed education improves, such facilities and programs will become less and less necessary.

It will be impractical to impose entrance requirements or mandatory course prerequisites under the new paradigm. The adequacy of a student's background will be manifested in the amount of time required for the student to demonstrate mastery of a module through oral, written, or practical tests. It will probably become common practice to impose additional charges or shut off service to people who exceed certain maximum time limits in completing modules.

The competition for students will be very stiff and the cost of providing modules to an occasional deadbeat will be quite low. Thus, few suppliers of modules will disqualify potential customers who are less than fully prepared or motivated but nevertheless want to use modules and can afford to pay for them. Good modules will challenge students, however, and will be in demand by students for the same reasons that students seek admission to outstanding institutions now.

People who undertake courses, curricula, or other

offerings and find themselves lacking in background will use other modules to gain necessary background. Each module will reference appropriate background modules, documents, and such, most of which will be accessible by point and click. For example, a module on beef animal nutrition may reference more general ruminant nutrition and biochemistry modules.

Because the educational unit in the new paradigm will be the module rather than the course, essential background subject matter can be identified with a great deal more precision than in the current paradigm. Cross-references will create demand for high-quality, widely applicable modules providing basic background for many narrowly focused, specialized modules. The market for modules will be especially competitive and especially rewarding for those whose modules are most widely referenced. Module developers will compete to have their modules referenced by other module developers.

There will be a shift toward privatization of education, but federal and state governments will still invest taxpayer money in public institutions that are successful in producing and marketing modules. Research universities will have comparative advantage in graduate education and perhaps also in undergraduate education. Up-to-date modules and strong module support will be a valuable byproduct of research programs.

With good management, public investment in module development will pay off in increased institutional revenues, stronger and more relevant institutions, and a better-educated citizenry. To the extent that states and nations can manage publicly supported module producers to capture proprietary benefits for their taxpayers, the system will be more adequately funded. Royalties will provide strong incentive for individuals to design, deliver, and develop modules that users like and can afford.

Survival tactics for institutions

There are measures that both institutions and individual teachers can take to compete successfully for space on the education shelf. The strategy of deploying institutional funds to attract and retain out-standing faculty will be more important than ever. There is no assurance that people who are good at research, teaching, and outreach in the conventional mode will be good in the asynchronous mode, but that's the way to bet. To capture large, diverse audiences, modules will need to be supported twenty-four hours per day, seven days per week, 365 days per year. This will engender punishing schedules for module suppliers. Wise teachers and administrators will organize operations so that teachers and their assistants get enough rest, find time for renewal, and avoid burnout.
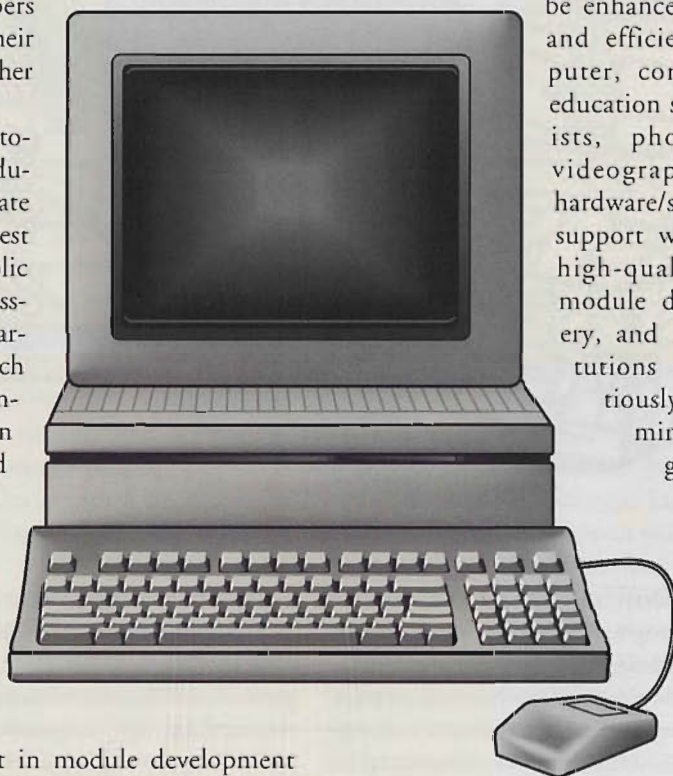
Even with good teachers, it will be essential for institutions that want to compete in the global module market to provide excellent support services and in-service training to teachers who are developing, refining, and maintaining modules. The teaching talents of successful module developers will need to be enhanced by well-managed and efficient teams of computer, communication, and education specialists, plus artists, photographers, and videographers. Specialized hardware/software systems and support will be required for high-quality, cost-effective module development, delivery, and maintenance. Institutions that move expeditiously to resolve key administrative issues will gain competitive advantage in the global market for educational modules. Most users will want or need certification at some level, ranging from certificates for completing single modules, short workshops, and/or executive development programs to full professional certification/registration, which may require mastery of many modules organized in clearly identified curricula.

Of course, many module users will work toward associate degrees, baccalaureate degrees, graduate degrees, and other levels of certification. Important questions include, Who maintains the transcripts of a student utilizing modules from several institutions? What organization or institution certifies that a student has completed a program consisting of modules offered by more than one institution? Who generates the certificates and diplomas? In-

stitutions need to answer these questions now.

Successful institutions will establish "brand" recognition and loyalty. To accomplish this they will implement effective quality-control measures. They will establish guidelines and protocols for developing, delivering, and updating modules that give the institution's products a similar, attractive, convenient, and distinguishing "look and feel" without restricting the creativity and flexibility of teachers. Maintaining continuity and consistency among modules will be very important to sustaining customer loyalty.

Competitive institutions will maintain modules in well-organized, high-capacity data bases overseen by professional data base managers or will contract for this service. They will provide demo versions so potential users can evaluate and compare modules. Intelligent interfaces on these repositories will enable users to access modules on-line or download them, selecting the approach that is most cost-effective, given each user's unique situation. Customer service, including the capacity to answer phones, faxes, and e-mail from users twenty-four hours per day every day, will be essential, at least in some situations.

Survival tactics for teachers

Teachers in conventional institutions should make purposeful moves now to establish leadership in the global market for educational modules. They need to choose their subject matter niche and begin to develop and perfect the related modules. They should start with the ones they can do best, not necessarily the first items in their course outline. They need to make those modules available to potential students and to other educators as soon as possible, even in their prototype form, in order to beat others to the market and gain experience. They need to form alliances. Focus will be important. It will not be possible for one teacher to develop, maintain, and adequately support very many modules. Rather, teachers should set a goal of doing a few well and let somebody else do the others.

Module developers will use common business strategies to capture market share. Widely used modules for beginners in basic subject matter will become commodities and will compete on the basis of cost of production and delivery. To escape this dog-eat-dog competition, teachers will try to differentiate their products, tailoring them as much as possible to each individual user. They will seek defendable niches. Competition will drive the system toward quality and innovation.

Interinstitutional alliances will be the most effective strategy in the global education market. An alliance of outstanding teachers in a given field can gain cooperative advantage by producing an out-standing curriculum with wide appeal. Diversification may not be an effective strategy, especially if it requires hiring new teachers, because offerings will already be very diverse. VA Council on Economic EducationSuccessful teachers will take their students (module users) in as partners in the educational enterprise. They will find innovative ways to involve students in the process of refining modules and curricula. They will use students to help improve all aspects of their offerings and reward them for important contributions to that improvement.

We believe that research faculty have a distinct advantage in the global competition if they use modules to bring students close to—in fact, to integrate students into—their research programs. This approach will be especially useful and beneficial as the line between formal education and in-service training becomes less distinct. Research universities will survive the paradigm shift better than nonresearch institutions, because they will enjoy economies of scale and scope. Also, they will still be able to justify a considerable on-site physical plant for laboratory and field research.

The brave new world

In the new educational paradigm, the lines dividing work and study and those separating in-service training and general education will blur. When location is not a factor in education, people will move into their jobs earlier, often just out of high school (or before), and will get their education on the job.

One of the less desirable aspects of the brave new world is that teachers, if they wish to provide an asynchronous but responsive interactive educational environment, may have to spend a lot of time at their computers on nights and weekends responding to questions and comments by students. That is when many of their students will be working on educational modules.

Education will be a life-long endeavor, increasingly integrated with work. Enlightened employers will pay employees for time spent being educated. Those employers will work closely with universities and other institutions. Collectively, they will provide a mix of job-specific and general education modules designed to produce creative workers who know their specialty and where it fits in the technological, business, economic, social, and political environment. **C**

■ For more information

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