

Strategic Priorities

J.D. EDWARDS HONORS PROGRAM

1 Creating a Corporate Board

The Program is currently in the process of creating a Corporate Board. This Board will ensure that the curriculum remains innovative in a number of ways. The Board is an entrée into the technology business world. A Board could advise on the Program's future direction. It would help define what the corporate world is looking for in new graduates. It would help us stay abreast of evolving and emerging technologies. It may provide insights on opportunities for technology applications.

A Corporate Board brings other opportunities as well. It networks the Program into the technology community. The Board may be able to help with recruiting, placement and fund raising.

2 Further Integration of Management with Computer Science

An imperative short-term priority is to further integrate technology with management practice. This integration will occur across the curriculum. In the first year, for example, computer science projects are further integrated with business topics. In the sophomore year, students spend significant time integrating computer science and business via a business information system development project. While the software products they create in this project take account of management and operations principles, we plan to include more accounting and financial reporting into the project. Software development processes are moving toward a service-oriented architecture. This type of architecture is at the leading edge of current business systems technology.

In the junior year, the Program is working with the College of Business Administration's Marketing department to develop an information technology-based marketing course. Beyond basic marketing principles, this course will address both the marketing of high-technology products and the use of technology to market all types of products. Topics include e-commerce and internet marketing, motivated by leading edge system and tool developers such as Google, Amazon and Yahoo, as well as marketing strategies, and the design and use of technology-based marketing research tools.

The junior year curriculum also includes coursework in advanced finance and numerical methods. These topics naturally complement one another, and their integration will be expanded. Numerical methods can also be applied to other management decision-making applications. Business case analysis will be introduced into the curriculum that would require the application and programming of numerical methods.

Another computer science area that has significant potential for application within a business context is artificial intelligence. This would include, for example, the use of intelligent agents and the development of decision support software. An artificial intelligence course will be added to the senior year. This course will complement a module centered on strategic management for technology-based companies.

Related to the integration of technology with business is the incorporation of more communication and leadership education into the curriculum. We need to refine the teaching of group management and project management processes throughout the set of J.D. Edwards' courses. The Program's teaching of communication topics within context can be expanded as well. For example, we have developed a UNL Teaching Initiatives proposal to partner with the College of Journalism and Mass Communications to teach students how to interact with representatives from a variety of media with the goal of controlling information flows related to various business situations. Leadership education is an important part of the J.D. Edwards Program educational experience. That experience can be expanded in context and concept.

3 Enhancing Design Studio

Design Studio is the Program's capstone experience. Students spend two years participating in and then leading software development projects. Two dimensions for extending Design Studio are to expand the realm of project applications and add students from other departments. Currently many of the Design Studio projects focus on either database or website development. We would like to expand Design Studio projects more toward business decision-support systems, intelligent agent applications, and other projects that push the boundaries of applying technology to business. It may also be desirable to develop certain specialties where the Program can gain a reputation for leadership in those areas. Associated with the expanded scope would be the ability to select projects based on multiple criteria, including educational priorities and project mixes that best suit the diverse interests of our students.

Short-term priorities for Design Studio also include making teams more interdisciplinary. This involves bringing students from other disciplines onto projects on an as-needed basis. For example, a project may have a design or a marketing aspect associated with it. A student from fine arts or marketing may join the team to provide that expertise. The student may be able to use the experience as a senior design project or for independent-study credit.

4 Attracting More Women and Minorities

Data in the field indicate that women and minorities are underrepresented in technology fields. We would like to expand participation by women and minorities in the Program but realize the difficulties involved. However, we are developing strategies to reach this priority. We will work more closely with the University's recruiting apparatus to target schools likely to have qualified candidates. The Program will work with the University to reach out to area high schools and provide female mentors in science and technology areas. In addition, we plan to develop recruiting materials specifically targeted toward these students. As the Program's reputation grows, this may also attract qualified women and minority applicants.

The Program is also developing a high school student business and programming competition. The competition would bring high school students throughout the Midwest to campus for two days to compete in business strategy and computer Programming contests. This should help to attract students interested in our Program.

5 Attracting a Greater Number of Qualified Students from the 3rd Congressional District

The Program would like to continue to attract students throughout Nebraska. These students can benefit from the technical education, and we can benefit from their perspective. The state also benefits as these students bring technology-based management skills and technology-based businesses back to their communities.

Experience has shown that all students are more likely to be successful in the J.D. Edwards Program if they have had exposure to higher level programming in high school. Unfortunately, high schools throughout the state, and many smaller schools in the third district, do not offer these classes. To address this problem, the Program is creating a two-course series of AP computer science courses that will be taught through the University's on-line independent study high school. The series will be available in the fall of 2005. These on-line courses will simultaneously expose more students to computer science and give them valuable experience in Programming basics.

Parts of the Program's economic development priorities are related to the 3rd district. As tools to reach these priorities are put into place, they will expose more students in those areas to the J.D. Edwards Program. This exposure and the experiences associated with it should attract more students to the Program.

6 Design Studio as Platform for Technology Dispersion and Economic Growth

Design Studio in its current form brings new technologies to project sponsors. For the private sponsors, this technology makes them more efficient and competitive. For the non-profit sponsors, technology makes them better prepared to serve their constituents. In addition, a number of the non-profit projects will help to create environments that make Nebraska companies more competitive. A cattle tracking project for the Department of Agriculture, for example, protects Nebraska's beef industry from crippling damage associated with a possible case of mad cow disease. As Design Studio continues to attract diverse sponsors, it will disseminate technology to entities within the state.

Design Studio also develops students with technology knowledge. All students in the Program work on a project their junior year and manage a project their senior year. Hence these students have significant real-world project experience. To the extent they stay in Nebraska, this enhances the state's pool of high technology workers. This makes technology available to more companies throughout the state. In addition, as the Program grows over time, the pool of available graduates will grow.

MIT is a university that excels at both computer science and business. As reported in the March 7, 2005 Financial Times, "The best-known characteristic of MIT is its entrepreneurial spirit" a

reputation underscored by an oft-quoted BankBoston report that MIT graduates between them have set up more than 4,000 companies and created 1.1m jobs worldwide. "The whole ethos of the place is that the work should be relevant to industry," says Prof Kelly. "Another point is that work at MIT is based on solving problems" and not on traditional disciplines.

The J.D. Edwards Honors Program seeks the same positioning. Local and regional companies are increasingly seeking new processes for hiring and retaining Program graduates. These processes include developing formal internship programs, using Design Studio projects to build relationships with and evaluate potential employees, and holding recruiting events in the Kauffman Center. Small Lincoln-based IT businesses have been especially active in this respect. As an example, Mutual of Omaha, a three-time Design Studio project sponsor, has a fast-track career path defined for Program graduates and has been active in hiring Program interns.

The economic development plan for Lincoln recently prepared by Angelou Economics emphasized the importance of a thriving entrepreneurial environment for Lincoln. That report includes the J.D. Edwards Program as an important potential contributor to such an environment, stating: "UNL's JD Edwards Honors Program in Computer Science and Management is a powerful tool that both existing and newly recruited businesses should utilize. The JD Edwards Design Studio's pool of consulting talent can be a cost efficient source to building more technology savvy companies. The city should leverage this asset and help individuals find permanent positions or start businesses after graduation."

Many organizations have been able to leverage the capabilities of the high ability, highly motivated, and highly educated students in the Program via Design Studio projects. Organizations that have been supportive and levered Program partnership opportunities include Lincoln Electric, Mutual of Omaha, the City of Lincoln, the USDA, Stanley Senior Technology, Madonna Hospital, and many others. Most of the projects have surprisingly been strategic to the sponsor i.e., significant economic value was created that far exceeded the support funding. (The Program promises best efforts for innovative solution prototypes and does not market projects in such a way that would compete with the private sector.)

Design Studio projects have also supported new or small Nebraska business and will continue to do so in the future. An example is Nanonation for which Program students developed a system that won a national award for innovativeness done in support of a contract for Burger King. Nanonation also won the Walter Scott Award for Entrepreneurship based on its partnerships with the university and especially with the Program. The Senior Technology division of Stanley Works has sponsored a project to explore radio signal strength location devices for a next generation product. Program projects have also benefited non-profits such as Madonna Hospital and the Nebraska University Foundation. It is certainly hoped that a current project sponsored by the NU President's office will be a big success and may be commercialized for licensing to other universities by a spin-off company.

7 3rd Congressional District Development

There are several ways that the J.D. Edwards Program can help with economic development in the 3rd congressional district. One is a focused internship program. A number of students have

already been involved in the Rural Initiative. They have helped to bring technology to smaller Nebraska communities over the summer. This has included creating computer networks, web pages and databases. The Rural Initiative concept can be expanded so that J.D. Edwards students go to communities and train residents in multiple uses of technology. For example, rather than build a web page or set up a network, a J.D. Edwards Program intern could teach a group of high school students how to do these projects. Then the learning can stay in the community for its further enhancement.

AP computer science courses will introduce more students to technology at younger ages. This may capture their imaginations and stimulate them to think about how technology can help their communities. These students may want to join the J.D. Edwards Program to learn more and perhaps start their own technology companies. This can only help bring technology to all parts of the state, enhancing competitiveness and keeping businesses and human resources in the state.

Projects are prioritized to maximize their economic impact. For instance, The J.D. Edwards Program is exploring working more closely with the Kearney Area Agricultural Producers Association (KAAPA) to help promote tourism in the central Nebraska area. Other projects are under consideration as well.

8 Design Studio as a New Venture Incubator

Currently Design Studio is geared toward developing software prototypes to meet the contracting client's needs. The short-term Design Studio priority is to expand the types of projects and bring more disciplines into projects. In the long run, we would like Design Studio to become an incubator for new technology companies as well. Using Design Studio as a new business incubator has several advantages. It creates opportunities for students that want to start and run their own companies. It creates new technology businesses in the state. This enhances the state's technology base as a whole. The expanded technology base may make it easier for other companies to adopt new technologies as well.

Developing Design Studio into a new venture incubator will require efforts in several dimensions. The nature of some projects will have to be oriented toward new product development rather than the current company-specific solutions to IT challenges. It may mean recruiting venture capital clients as Studio sponsors. Reaching this priority will require bringing students from other disciplines more fully into the Studio experience. A new venture offering would necessitate adding advertising students, marketing students, finance students, and other students with project specific knowledge to each team. It would also require using legal resources to answer contracting and potential copyright or patent issues. Consequently, with these interdisciplinary project teams and new venture projects, each May, rather than just delivering a software prototype, an entire business could be launched to market, distribute, implement, support and update a functional software product.

9 Attracting Academically Diverse Students

This priority complements our priority of more academic diversity within the Program. As joint Programs of study are created with other colleges, we will work with those entities to recruit students for those majors. Proper recruiting will require some selectivity to make sure applicants

understand the breadth and depth of topics involved. The right students, however, should find this unique combination meets their educational and career needs. If this proves successful, the Program may "reserve" admission slots for students with diverse majors.

An advantage in recruiting students for a joint Program is that parts of a complete scholarship package can be provided by the participating entities. J.D Edwards may provide room and board, for example, while the University Honors Program provides books and the associated department or college provides tuition support.

10 Creating an Entrepreneurial MBA

A long-term priority of the Program is to enable students to start their own technology companies. To provide students with the background necessary to do this, we would like to create a unique entrepreneurial MBA Program.

The J.D. Edwards Program provides a unique undergraduate education in business and computer science. Students have learned financial and managerial accounting, economics, finance, basic operations, statistics and organizational behavior. To enhance our graduates' success in entrepreneurial efforts, they need more experience in specific areas such as writing business plans, obtaining financing, negotiations, writing contracting and other topics. An entrepreneur-oriented MBA Program would provide that education. All courses within this Program would be oriented toward young technology entrepreneurs.

This priority complements our desire to use Design Studio as a new venture incubator. The MBA will provide additional education necessary to maximize the likelihood that these new ventures are successful. Support, however, will be needed from other sources as well. The entrepreneurial MBA Program will in all likelihood work with the Center for Entrepreneurship in the College of Business Administration. This may also be an area where the Corporate Board can provide resources, insight and opportunity. There may be roles for area business leaders as well

11 Support for Agriculture

There are numerous ways that technology can support agriculture. Technology is being used in weather prediction, ground water modeling, technology development and other areas. In addition, as agriculture-based operations expand in size and scope, technology is becoming increasingly important to successfully managing those operations.

Technology improves crop and livestock monitoring and tracking. It makes herbicide and pesticide application more efficient. Technology can help operators to better use futures and financial markets. The J.D. Edwards Program can help with these technology issues. One way is to expand Program majors to include agriculture areas such as agribusiness and agricultural engineering. This would allow for the training of future technology leaders within those fields. We could create, for example, a group of students that could become technology consultants to agriculture in general. They could work with operators throughout the state to improve their bottom lines by incorporating a variety of new technologies.

Another way the Program can support agriculture is to attract agriculture-oriented Design Studio projects. These could be projects supported by private companies, coops, marketing organizations or the state. Again, Design Studio projects are a way to create a specific technology product while training future technology developers and leaders. The Program has completed several very successful projects in this area including the animal ID and pest tracking systems mentioned above.

12 Developing More Academic Diversity

Currently, most students in the Program major in computer science, computer engineering, or a business area. However, computing and information technology are core to many disciplines. We would like to develop joint curricula with other departments and colleges to bring the strengths of the J.D. Edwards Program to those majors. Agricultural business is one particular area where students may benefit from collaboration between Programs.

Another significant area where we can expand is agriculture more generally and the life sciences. Students in other majors may benefit from a joint Program as well. Fine arts fields are becoming more technology intensive. Some students may appreciate a blend of business, computer science and graphic arts or computer-generated animation. Students interested in intellectual property law as it applies to technology may benefit from an undergraduate degree supported by the J.D. Edwards Program. There may be a place in the Program for students in the natural sciences who are keenly interested in using technology to model natural phenomena such as genetics or hydrologic processes.

Creating joint curricula will require flexibility from the Program and the interested departments. Fortunately, we have already developed relationships that show flexibility from all sides. Our business majors, for example, can take upper-level computer science courses pass/no pass and still receive a computer science minor. Industrial engineering majors may substitute Program business courses for some IE core courses. In exchange, we allow IE majors to waive selected J.D. Edwards upper-level computer science courses. Similar exchanges have been developed with electrical engineering.

Academic diversity melds well into the expanded Design Studio priorities. It allows for creating more interdisciplinary teams and undertaking projects with a variety of applications.

13 Distance Education

Currently the Program is working with the University's extended education and outreach group to develop a high school advanced placement computer science course. We could develop other technology-related courses as well. The goal is to bring technology topics to schools that can not afford to provide on-site classes. In addition, these classes would introduce the J.D. Edwards Program to more high school students as an attractive college opportunity.

14 New Venture Creation

Design Studio has the potential to become a driver for economic development within the state. As projects become increasingly suitable for new venture creation, there is a strong possibility those ventures may locate in Nebraska. In addition, as these start-ups flourish, they may attract

other companies into a "technology-rich" region where synergies can develop between businesses. The University community currently provides support for such ventures through the Tech Park, the Center for Entrepreneurship and Invest Nebraska. This also ties in nicely with our planned entrepreneurial MBA Program.