GRADUATE E-BUSINESS PROGRAM DESIGN AND EVALUATION

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ABSTRACT

There has been a surging demand for graduates with e-business skills. Some schools have taken the lead and pioneered the development of e-business programs and curriculum. However, they have not had the benefit of a body of knowledge and history collected from other programs to help in the design. This paper describes the efforts of a state university in the Midwest United States that went through this process. The process included the consideration of major issues such as market identification, degree to be offered, program and course content, and program length. The evolution of the program based on changes recommended by a focus group of e-business executives and student feedback is discussed. The paper also presents the results of a fairly extensive survey of existing e-business programs. The immediate and long-term implications of such programs vis-à-vis content, resources and industry requirements are also discussed.

INTRODUCTION

The Internet and the World Wide Web are revolutionizing the way businesses function around the world. Over the past two to three years, e-commerce and e-business activities in the U.S. have grown at an astonishing rate and are expected to exhibit a similar rate of growth over the next four years. According to Forrester Research, business-to-business and business-to-consumer e-business will account for a combined amount of close to $3.2 trillion in the U.S. alone by 2002 (5).

To support this growth, companies are in need of an increased number of managers and personnel who understand both the technology and management strategy of e-business (3). Many colleges of business have recognized this need and have moved quickly to include e-business concepts in their curriculum and have set about designing innovative e-business programs (7). In fact, many of these programs have been assembled in record time (6), much quicker than some had anticipated. This quick response is unusual considering that past business school program initiatives related to international business, quality management and entrepreneurship took a longer time to come to fruition.

In designing their new programs, business schools found that e-business was different from what academics had historically been accustomed. E-business had neither a history nor a body of knowledge that academicians could rely on to structure their e-business programs (1). Data and analysis could be superficial at best with sources that were limited to personal contact with companies and the trade journals, business magazines, and newspapers that reported on e-business. So program designers used the adaptive approach with the intent of learning from their first designs and modifying them for the next program iteration. The field of e-business was still being defined as the programs were being developed, so this dynamic approach to design was necessary.

As the first programs were implemented, business schools found that they had underestimated demand that their e-business offerings were attracting more students than they could reasonably accommodate in their classes (2). Web-savvy students were motivated by the view that the combination of product, marketing and technology yields wealth, so they filled to capacity those courses that blended management and technology (1). Observing the student reaction, the universities were motivated to increase their offerings of e-business courses and programs as a way of increasing enrollment in their business schools.

Caught up in this early movement to develop e-business programs was a Midwestern United States university college of business administration. This paper describes the development process with emphasis on the issues and solutions. It also describes a review by a focus group of industry executives and entrepreneurs, and provides a comparison to e-business programs at other U.S. universities and colleges.

ISSUES AND SOLUTIONS

As the college approached its program development e-business was still in its infancy and changing daily. The relevant issues for developing a program were not yet identified in academic journal articles. The best sources of current information were the Web sites of the few schools who had started programs.

The authors found themselves as members of an interdisciplinary task force of business school professors attempting to design a new graduate program in e-business during the above-described period in the Fall of 1999. The task force began by attempting to identify the issues that would have to be addressed in designing a program. From their deliberations the issues that emerged were directly related to the market, degree offered, content, and program length.

The target market was an important issue. Four target markets were identified. One market was composed of current students in the undergraduate and graduate programs wishing to add to the value of their degree by obtaining knowledge about e-business. Executives and managers with a number of years of business experience and needing to develop e-business strategies for their companies formed a second potential market. A third possibility was information technology (IT) personnel in various local companies who were looking to add e-business application development skills. A fourth potential market was thought to be entrepreneurs who wanted to get an overview of the e-business

domain. Each of these groups had potentially different program needs.

Two approaches were possible. One was to integrate e-business material into current courses. The other was to create new e-business courses and programs. The first approach was never really considered by the task force. Publications that came out in the year that followed pointed out that separate courses seem to demonstrate commitment to the topic and seemed favored by students (4). However, many schools have favored integrating e-business topics into traditional courses such as information systems, production, marketing, and supply chain management (1, 8).

An important issue that was discussed at length was the emphasis of the program. Should it focus on the technology of e-business or the management and strategy issues? The task force solution was an interdisciplinary program designed to take a strategic and managerial approach that would benefit most of the potential markets with a focus on understanding the issues, methods and ramifications of implementing e-business. They concluded that the amount of technical knowledge should be limited to an awareness of e-business technologies such as e-business infrastructure and web-based application development. They believed that students requiring technical skills could find the courses they needed in the IS and computer science programs available in the university. In the year that followed, information surfaced that most other business schools starting programs had come to the same conclusion (1), although a few settled on a program that balanced management and technology (4).

The task force members concurrently concluded that the program would be at the graduate level because of its focus, but they grappled with the type of degree to be offered. They considered a MS in E-Business, a MS in management with E-Business option, a MBA with E-Business concentration, and a graduate Certificate in E-Business. The MS in E-Business was dropped as a possibility since it would be a new degree and subject to statewide review and State Board of Regents approval. The extensive time for review and probability of failure to obtain approval weighed heavily against its choice. Designing it as an option in a current MS program restricted the number of courses in the program to less than deemed appropriate. The solution was to develop a certificate program. In addition, an e-business concentration would be added to the MBA program using some of the same new courses. Later it was learned that almost all other early movers settled on graduate programs (1).

The content of the program was the next issue. The task force had a strong mandate from the college administration to make the program interdisciplinary with courses from each of the functional areas in the college. Rather than form a program by gathering together existing courses and add a course called Fundamentals of E-business, the task force decided that each department design a course specifically focused on e-business. Subsequent information indicated that either approach could be found in other schools (1).

A three level model for the certificate program as created, as shown in Figure 1. The lowest level consisted of two foundation courses focusing on concepts and technologies. The second level contained applied courses in marketing, finance, accounting and law. The top level brought together in a capstone project course all that had been learned in the levels below.

FIGURE 1
A Framework for the E-Business Certificate Program
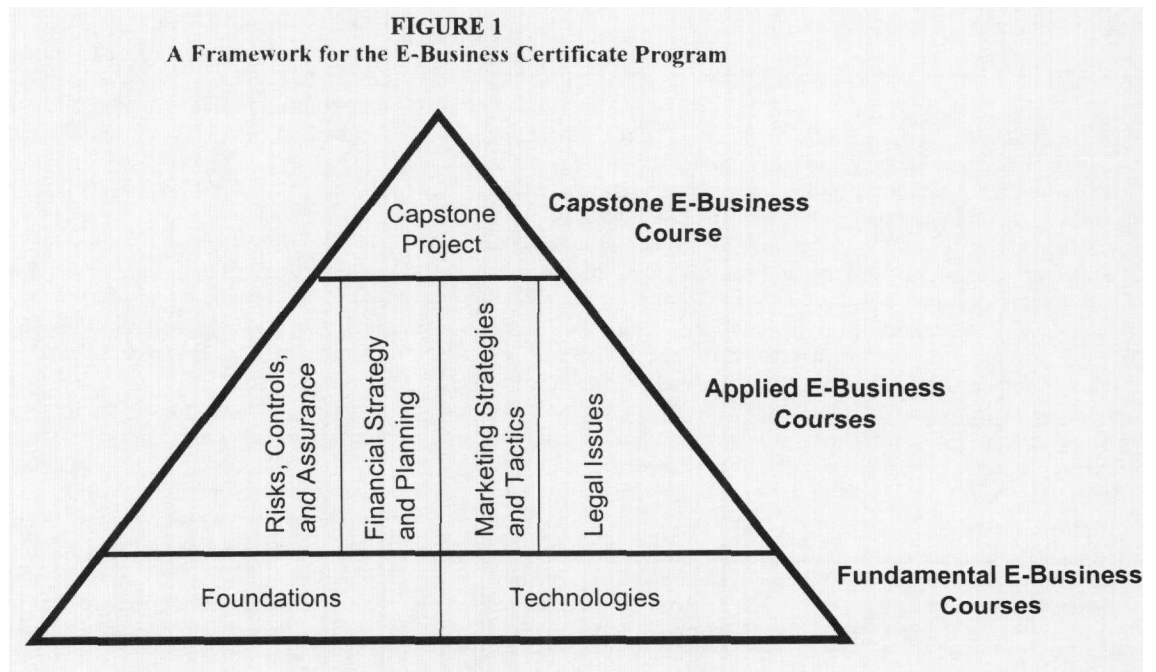
The program consisted of 20 credit hours, a maximum allowed before State Board of Regents approvals were required. The capstone project course was two credit hours. All others were three credit hours. Table 1 lists the courses that were included in the proposed e-business certificate program along with a brief description of each. The task force restricted the program to 20 credit hours to facilitate program approval. The task force decided unanimously that the courses must have a

very applied and, where possible, hands-on orientation. This might translate into, for example, developing a promotional and advertising plan in the Marketing course, or a business plan for venture capital funding in the Finance course.

TABLE 1
Courses in the E-Business Certificate Program

E-Business Foundations   3 hours
  This course provides an understanding of the foundations of e-business and e-commerce by focusing on business and application issues.

E-Business Technologies   3 hours
  This course introduces technology-related options, opportunities, and constraints for successfully managing e-businesses. This course provides an overview of the various software environment options to incorporate the functionality and components typically required for e-business.

E-Business Legal issues   3 hours
  This course provides an understanding of current governmental policy affecting the creation and operation of e-commerce and e-business both on domestic and international issues.

E-Business Risks, Controls and Assurance Services   3 hours
  This course provides an understanding of the assessment of risks, controls, and assurance services in an e-commerce and e-business environment and challenges management challenges.

E-Business Financial Strategy and Planning   3 hours
  This course deals with accounting and financial management issues relating to analysis, evaluation, planning, funding, and management of e-business projects.

E-Business Marketing Strategies and Tactics   3 hours
  This course provides an understanding of how promotion in an interactive medium differs from traditional models and the critical issues that will determine the viability of e-commerce.

E-Business Project   2 hours
  Students in this capstone course will develop a business plan and see the plan through to the development of a fully functional turnkey operation.

A big challenge for the E-Business Technologies course was finding the proper mix of e-business technology concepts and applied exercises. While the emphasis of the course was not on web programming, it was felt that it would be important to provide skills in site development especially for entrepreneurs. Further, it was felt that the certificate program could be a way by which students could develop and nurture various aspects of an e-commerce site as they took courses. Given this, it was necessary to survey the tools that were available in the market and determine their functionality in terms of quick and easy development of web based applications. Eventually, *Coldfusion* from Allaire Corporation was the web development software chosen because it satisfied the above constraints.

There were also some issues to be considered while designing the capstone projects course. These included decisions related to whether the selected project would be the ongoing project done in the initial courses or would be a separate independent project. Another issue was whether these course projects would be for a simulated business or for a real business. Ideally it was felt that it would be nice if students could develop and implement ideas, gleaned from their courses, on an e-business initiative. However, this required having an infrastructure to host the site and also preparing for potential upstream and downstream traffic.

Another major issue was the time period required to complete the certificate. Two years to complete the program was considered too long for the target market and three months did not allow enough time to work on significant projects for each class. Therefore, the program was restricted to nine months or two semesters. The task force decided that each course was to be offered in eight-week modules and the program would be implemented in a lock step sequence. Hence, the level one courses (E-Business Foundations and E-Business Technologies) would be offered in the first eight weeks of the Fall semester. This would be followed by two application courses in the second eight weeks of the semester. Students would then take two more application courses in the first eight weeks of the Spring term followed by the project course in the last eight weeks. To accommodate the working student, all courses would be offered in the evening. Each class would meet twice a week for about five hours of total face-to-face time each week.

FOCUS GROUP REVIEW AND
STUDENT FEEDBACK

Following the development of the program, a focus group of IS and e-business executives from area companies and also entrepreneurs was formed. They met for an hour and a half to discuss the merits of what had been proposed. A number of issues on which various members disagreed surfaced.

The issue generating the most disagreement and enlightenment came with the question as to whether the program should focus more on business-to-business or business-to-consumer e-business. The reactions had more to do with the types of business rather than the size of the business that the group members represented. While it seemed that most favored

business-to-business, one group member observed that they held this preference if they served a limited number of customers. Some serving many customers or looking for market share put a heavier emphasis on business-to-consumer. Others viewed the real complexities to be in business-to-consumer and that business-to-business was just glorified electronic data interchange. Many found it necessary to blend both since the businesses to which they sold behaved like consumers. It appeared from the reactions that both areas would need good coverage. A few hoped that each could be covered in a separate course since they were so different.

On the issue of the balance between managerial and strategic education versus technical education, the group agreed that the balance should be in favor of managerial issues. They recognized the need to cover technical issues but not in the same depth.

They were not completely in agreement on the need for certificate programs versus degree programs or the length of the programs. The larger number seemed to favor certificate programs over a three-month period. A few, mostly from large companies, were more inclined toward seven month to one-year degree programs. They mostly agreed that weekends were a good time to schedule courses.

In reacting to the proposed courses, they politely indicated that having an entire course on legal issues and one on control issues was excessive. They felt the time was better spent on the complexities of developing good strategies, managing the organizational change and providing good management skills.

The group also did not have a strong affinity for a capstone course at the end of the program. They felt that lecture with applied cases included was a better use of time than doing a final project. A few suggested that the course be used to bring the class up to speed on the technologies that had changed during the year.

One non-issue turned out to be the need for an entrepreneurial approach of starting a new e-commerce venture versus a corporate effort to add e-business to their ongoing operations. Even the entrepreneurs in the group did not support the need for a new venture approach.

SURVEY OF OTHER E-COMMERCE/ E-BUSINESS PROGRAMS

After developing the e-business program, the authors wanted to find what other universities were doing in developing e-commerce/e-business (EC/EB) programs and how they compared to our program. The AACSB (http://www.aacsb.edu/e-business) has compiled a list of universities and colleges that have EC/EB programs. Although this list is not complete and current, the authors decided to use this list to gather information on EC/EB programs offered by other universities. From this list, only those schools that had an MBA with a concentration in EC/EB, an MS in EC/EB, or a Certificate in EC/EB were selected. Some universities were eliminated in the process because either they did not have an official program in EC/EB (but only offered one or more courses) or complete program information was not available on their web site. It was also decided to use only universities in the United States. The final sample was composed of 26 schools (Appendix A). Since a number of universities had more than one type of program (MBA, MS, Certificate), 38 programs were included in this study.

The following information was collected for each EC/EB program: (1) where the program is housed, (2) the degree offered, (3) public or private, (4) AACSB accredited or not, (5) program orientation - business, technical, or evenly balanced,

(6) total number of EC/EB credit hours required for completion of the program, (7) total number of EC/EB courses (credit hours) offered in the program, (8) total number of credit hours required for completion of the program, and (9) a list of functional area courses and credit hours for each course. Course hours for schools on the quarter system or other systems were converted to semester hours for reasons of comparability. Data for some categories were not available from all schools.

Table 2 provides a data summary for some of the categories of interest. Of the 26 universities surveyed, 54% of the universities were private. The schools are also predominately AACSB accredited (92%).

TABLE 2
Summary of Selected Categories

Public or Private School		AACSB Accredited	
Public	12	Yes	24
Private	14	No	2

Programs		Orientation	
MBA/EC/EB	20	Business	25
MS	12	Technical	10
Certificate	6	Both Even	3

Where Housed		Project Course	
Business	36	Yes	14
Engineering	1	No	24
Joint	1		

The MBA program with EC/EB concentration seems to be the most popular (53%) program of choice for many schools. This may be due to the fact that it is much faster for business schools to introduce a new concentration within an existing degree program than to create a totally new program. Since many business schools want to capture the market by offering the EC/EB program as quickly as possible, schools are adding EC/EB concentration to their existing MBA program. The MS degree in EC/EB (32%) was more prevalent than expected. It may be due to the fact that the MS allows for more EC/EB courses than an MBA with EC/EB concentration and students could be looking for a more specialized degree. It is interesting to note that the largest number of degrees (66%) had a business orientation, 26% were technically oriented, and only 8% of the programs were evenly balanced between the two. Five out of six certificate programs, 16 out of 20 MBA programs, and seven out of 12 MS programs were business oriented. The programs were mostly housed in business schools (92%) and were mostly designed to touch on all the functional areas of business.

While the data showed that schools with semester programs predominated, some schools in this group actually divided the semester into smaller portions and divided the material into smaller units. This was often an attempt to complete the program in a shorter period of time. From the data it appears that only 50% of the schools surveyed included a major project at the end of the program to give the student an opportunity to demonstrate and integrate their skills, knowledge, and abilities.

Table 3 provides the average EC/EB credit hours required, EC/EB credits offered, and total credit hours required for different types of EC/EB programs. Included for each category are the range of credit hours and the number of schools represented. The typical MIS program has more EC/EB courses available than the MBA or certificate program, and had the

largest requirement of EC/EB courses (45%) compared to MBA and certificate programs. The certificate programs tend to be 17.8 hours long on an average and showed less variation in length. Some programs take longer to complete because of extra requirements. For example, the certificate program offered by Georgia State University requires those without a non-business background to complete 24 hours of prerequisites. The average number of hours of EC/EB courses in the MBA program concentrations does not appear to differ significantly from certificate programs. Both had an average of about 11 hours of required EC/EB courses. Each program in our survey offered at least two EC/EB courses (6 credits) with a majority of schools offering more than six EC/EB courses (18 credits).

TABLE 3
EC/EB Credits by Programs

	EC/EB Credits Required	EC/EB Credits Offered	Total Credit Required
MBA	Mean 10.9 Range 0-20 N 20	Mean 18.8 Range 6-36 N 20	Mean 48.79 Range 20-69 N 19
MS	Mean 16.58 Range 3-33 N 12	Mean 20.46 Range 6-42 N 12	Mean 36.63 Range 30-57 N 11
Certificate	Mean 11.33 Range 6-15 N 6	Mean 18.83 Range 6-27 N 6	Mean 17.83 Range 12-39 N 6

Table 4 provides a breakup of credit hours by functional area for all three programs. It is clear from Table 4 that most programs are made up of information systems, management and marketing courses. Occasionally a course in accounting, law, finance, entrepreneurship, economics and insurance is found, but these are few in number. A majority of MBA and certificate programs are either IS, management, or marketing oriented whereas MS programs are more technical in nature. On average, MS programs offered 12.5 credit hours of EC/EB courses related to information systems.

TABLE 4
Functional Area Courses by Program

	Acctg	Legal	Fin	IS	Mgt	Mktg	Entre	Econ	Ins
MBA	M 5 R 3-9 N 3	M 2.5 R 1.5-3 N 5	M 3 R 3-3 N 1	M 7.73 R 2-20 N 20	M 4.29 R 2-10 N 14	M 5.78 R 2-15 N 18	M 3 R 3-3 N 3	M 3 R 3-3 N 3	M 3 R 3-3 N 1
MS	M 3 R 3-3 N 2	M 2.44 R 1.5-3 N 8	M 2.25 R 1.5-3 N 2	M 12.5 R 3-39 N 11	M 4.13 R 3-6 N 8	M 3.15 R 1.5-6 N 10	M 3 R 3-3 N 2	M 3 R 3-3 N 2	M 3 R 3-3 N 1
Certificate	M 9 R 9-9 N 1	M 3 R 3-3 N 2		M 7.8 R 3-15 N 5	M 5.6 R 3-12 N 5	M 3.33 R 2-6 N 6	M 3 R 3-3 N 1	M 2.5 R 2-3 N 2	

Some universities created their EC/EB programs that integrated several functional areas. The integration in the program by some schools was probably achieved by including a course from each functional area, but other schools achieved the integration by including other functional areas within the information systems and management courses. The marketing courses are strong in most programs since e-commerce is largely a marketing activity. The other courses emphasize strategy and the information systems infrastructure.

In summary, we can conclude the following: (1) there are more MBA programs with e-business options than MS and certificate programs, (2) a majority of these programs are offered by private schools, (3) a majority of these programs are offered by business schools that are accredited by AACSB, (4) the programs are more business oriented and use an integrated approach, (5) length of certificate programs average 17.8 credit hours, and (6) MS programs have heavier emphasis on technology, MBA programs have heavier emphasis on functional courses, and certificate programs have equal emphasis on technical and functional areas.

DISCUSSION AND CONCLUSIONS

Many business schools are considering the introduction of e-business programs and courses into their offerings. It is the goal of this paper that they can learn from the experience of those who pioneered e-business curriculum development.

The case study portion of this paper raised the important issues of market, degree, content and length. The focus group and student feedback provided reaction to these issues and the

survey of other schools provided data on the choices made by other schools. It is clear that the thinking for most schools was fairly traditional with an emphasis on the MBA program and the taking of a business rather than technical focus. The results shown in the survey were only for schools that have implemented separate e-business programs. Perhaps just as many or more schools have chosen to integrate e-business topics into regular courses.

For schools that choose to develop e-business programs, there are serious immediate and long-term issues that have to be addressed. These issues are related to content, resources, and curriculum standardization.

The issue of what knowledge components constitute an e-business program is critical. The tendency of most schools is to create programs that are interdisciplinary in nature partly in an effort to appease all constituencies. In a rush to judgment, while everybody wants to hitch a ride on the e-bandwagon, it is important to note that there are some domains that are not *e-intensive*. While the case can be made for a specific skill set in IS (and this includes several components ranging from web application development to site infrastructure management issues) or Marketing, the same may not necessarily be true of other areas such as Finance. Ideally, e-business or any curriculum efforts ought to be geared toward industry requirements. Identifying whether a given curriculum prescribes to the needs of industry is usually done by talking to corporate advisory board members. This may provide some input in terms of what companies are really expecting from an e-business program graduate. There is, however, considerable ambiguity in how business schools can address the e-business related human resource requirements of organizations. Given the novelty of the e-business function, organizations themselves are unsure in terms of specific skill sets. Except for technical requirements related to information systems, businesses are unable to articulate how exactly e-business skills in functional areas will translate into actual job functions.

Hence a fundamental question to be addressed is how e-business is different from traditional business. A lot of organizations are grappling with newer business processes and paradigms. This covers issues such as the impact of business-to-business integration on traditional information flows both within and external to the organization. However, several organizations are also struggling to make the transition from old economy, the so-called "brick and mortar," to new economy thinking and culture called "click and mortar." It is not clear whether organizations are simply looking for students with general e-business awareness or with e-business technical and implementation skills. If the prior is the case, then there is really no need for a separate e-business course in each and every functional area.

Regardless of whether a school has just one e-business course or a full program, it is important to consider the goals and objectives of e-business initiatives in the curriculum. In other words, the fundamental need for such programs has to be questioned. Is the rush for e-business programs primarily driven by the need for enrollment increases? If so, will these programs actually result in net enrollment increases or will they cannibalize enrollment from existing business programs? Assuming that there is an initial net enrollment increase, business schools need to consider their options in trying to sustain this growth. Successful schools will be able to harness new and existing resources creatively and have a top-notch curriculum that provides specific e-business skills.

Our study fulfills one need by identifying the latest trends in e-business curriculum development. The intent is to provide guidelines and a framework for schools that are considering jumping onto the e-business bandwagon. It is crucial to note that the value of such a survey is time bound. Given the dynamic nature of the e-business environment, moving more to B2B and away from B2C for example, surveying current programs on a periodic basis for content changes is an absolute necessity. It is equally important to survey practitioners to get an idea of e-business related human resource requirements. Administrators need to recognize that such programs can only be successful if their faculty is up to speed with latest developments in the e-business arena. This can be implemented with better research support, released time for course development, development of relationships with e-business companies, team teaching with industry experts, and even through faculty internships. While it is clear that many schools are looking to develop an e-business curriculum, it will be interesting to see what effects the recent declines and failures of dotcom companies will have on the proliferation of such programs.

This study is not without its fair share of limitations. The focus has been only on graduate programs. The number of programs at the time of publishing will be different from what it was at the time of writing. However, the paper is one of the first of its kind to provide a discussion of the myriad of issues in e-business program design. Future studies will also include undergraduate programs as well as a larger sample. For schools that have already embarked on such programs, the initial success of course development efforts will partly depend on the existence of content resources such as books, cases and research reports. There have been attempts to share e-commerce course material on an informal basis in ISWORLD and ecommcourse list digests. Until such time that professional and standards organizations such as AIS take the lead to develop curriculum related standards and guidelines, studies like this one are required to gauge the trends in this area.

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APPENDIX A
List of Universities with E-commerce/E-business Programs

	Name of the University	Programs Offered		
		Certificate	MBA	MS
1	Bentley College	Yes	Yes	Yes
2	Carnegie Mellon University			Yes
3	Creighton University			Yes
4	De Paul University		Yes	Yes
5	Emory University		Yes	
6	Georgia State University	Yes	Yes	Yes
7	Johns Hopkins		Yes	
8	Loyola University	Yes	Yes	
9	Massachusetts Institute of Technology		Yes	
10	New Jersey Institute of Technology		Yes	
11	North Carolina State University	Yes		Yes
12	Northwestern University		Yes	
13	Rutgers-The State University of New Jersey		Yes	
14	Temple University		Yes	Yes
15	University of San Diego			Yes
16	University of Pennsylvania (Wharton)		Yes	
17	University of Rochester		Yes	
18	University of Wyoming			Yes
19	University of Wisconsin, Milwaukee			Yes
20	University of Dallas	Yes	Yes	Yes
21	University of Denver		Yes	Yes
22	University of Florida	Yes		
23	University of Georgia		Yes	
24	University of Maryland		Yes	
25	Vanderbilt University		Yes	
26	West Chester University		Yes	