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E-learning Technologies and the Educational Value Chain: Transforming Business Education

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A convenient way to think about how technology affects—and can improve—educational processes involves the concept of the educational value chain. Similar to the business value chain concept, the educational value chain is the set of interrelated activities that institutions use to deliver services to their stakeholders (students, faculty, and others). Our research applies the value chain concept to analyze the potential uses of e-learning in educational institutions.

- The first stage of the educational value chain, market analysis, involves the discovery of student learning needs and preferences. Through e-learning technologies, schools can create market analysis surveys and use the results to help tailor and improve curricula.
- The next step in the value chain is product development and design. During this phase, educators create specific courses to meet student needs and achieve educational objectives.
- The sales and marketing phase of the chain includes promoting college and department activities. E-learning platforms include announcement functions, which can efficiently promote student activities such as career planning events and speaker visits.
- Perhaps the greatest contribution of an e-learning platform to the educational value chain resides in the procurement, production, and distribution phase—the actual delivery of educational content. E-learning platforms offer a variety of electronic tools useful in class administration—including syllabi, announcements, and course readings—that allow instructors to better manage classroom time, deliver more content, motivate student-centered learning, and provide timely feedback on assignments and exams.
- The last stage of the educational value chain is after-sale customer service. The survey tools found in e-learning platforms provide educators with valuable course-specific feedback not generally captured in traditional teaching evaluations. More importantly, administrators can access both current and past courses to determine whether educational objectives are being met.

The use of e-learning platforms yields several additional benefits to faculty and students.

- Reduced cheating on exams: E-learning can produce randomized exams (in which instructors randomize question order), individualized exams (in which instructors create individual exams for each student by drawing from question pools organized by question type, learning objective, and/or rigor), and unique calculation problems (in which e-learning platforms generate random numbers for computational problems with common fact patterns).
- Location flexibility: E-learning exams eliminate the need for classroom space. Students can take exams in any location with high-speed Internet access.
- Efficient and accurate grading: Assignments and exams can be automatically graded and transferred to individual student records, thus freeing instructor time and eliminating errors.
- Timely student feedback: Students can receive immediate feedback after quizzes and exams including scores, answer explanations, and reference to specific course reading materials.

- Learning reinforcement: E-learning platforms allow students to take different self-grading quizzes over the same topics multiple times.
- Special needs accommodations: Students with special learning needs can be more effectively accommodated with extended time and/or support.
- Permanent exam records: Institutions can store exams as required for possible subsequent review by students, university administrators, or accreditation bodies.

To determine student perception of e-learning platforms, we are studying second-year students in introductory managerial accounting courses at the Villanova School of Business, where technology generally plays a major role in the classroom. Our preliminary results for these students reveal the following:

- 45% agree or strongly agree that web-based testing in the management accounting course reduces the likelihood of cheating;
- 87% agree or strongly agree that e-learning tools improve the overall quality of the learning experience;
- 76% agree or strongly agree that they would prefer to take a version of a class that utilizes e-learning tools; and
- 54% agree or strongly agree that they are more engaged in courses that require technology use.

In addition to the costs of procuring, implementing, and maintaining e-learning platforms and on-campus technical support, the most frequently cited objection to these tools is the time investment. However, faculty will recoup any initial investment many times over through future grading and course management efficiencies. Additionally, if e-learning platforms are adopted on a department- or college-wide basis, the "learning curves" and related costs can be dramatically reduced.

In conclusion, e-learning platforms provide administrators and educators with countless opportunities to re-engineer the educational value chain. Preliminary student feedback suggests that these technologies more actively and regularly engage them with course content and may mitigate academic integrity issues. Technology is permeating all aspects of the business world, and business educators must carefully consider how they will meaningfully integrate it into core educational processes and curricula.