Student Migration to Online Education: An Economic Model

Joseph G. Eisenhauer
Professor of Economics and Dean
College of Business Administration
University of Detroit Mercy
Detroit, Michigan

ABSTRACT

The popularity of distance education has increasingly led universities to consider expanding their online offerings. Remarkably few financial models have been presented for online courses, however, and fewer still have investigated the economic consequences of the migration, or cross-over, of students from traditional classes within the institution. The issue is critically important because small class sizes are widely recommended for online courses, and the available empirical data suggest that sizable and rising fractions of online enrollments are due to internal migration. This paper develops a simple model indicating the minimum proportions of online students who must be new registrants in order for online ventures to break even.

INTRODUCTION

Online education has grown rapidly in recent years. Allen and Seaman (2011) document an average annual growth rate of more than 18 percent per year from 2002 to 2010, with 31 percent of all students who were enrolled in postsecondary institutions taking at least one online course in 2010. Because of this phenomenal expansion, universities are increasingly looking to move additional courses and programs online as a means of raising enrollment and generating higher tuition revenue. Several empirical studies have examined the expenses and revenues of online courses at specific institutions (Bartolic-Zlomislic and Bates, 1999; Whalen and Wright, 1999; Caudill, 2009), yet the financial models of online education generally remain under-developed and the extent to which online programs actually attract new students to an institution has received surprisingly little attention.

There are clearly some populations of students who have been underserved by traditional, face-to-face education, and for whom distance learning provides newfound access to previously unattainable degrees. To that extent, online education expands the potential pool of student applicants. At the same time, however, online courses may also cannibalize traditional classes by diverting students who would otherwise attend classes on campus, but who find it preferable, for one reason or another, to study online. The distinction between new students and those who migrate from traditional to online settings has important implications for the finances of the institution. This is especially true given the substantially lower limits on class sizes that have been widely recommended as being optimal for online courses.

The present paper develops a simple economic model of the breakeven point for online education. In contrast to most prior research, we explicitly incorporate opportunity costs by modeling students who cross-over from traditional to online courses within the institution. This allows us to determine the mix of new students and migrants at which an online course becomes as financially viable as a traditional classroom course. The following section investigates the distinction between new students and those who migrate between formats, and briefly reviews the literature on optimal class size. The third section provides the analytical model, and a short conclusion is given in the final section.

MIGRATION VS. NEW ENROLLMENT

The principal advantage of online education is its flexibility for those whose distance from campus, schedules, or other limitations restrict their ability to attend traditional face-to-face classes. These include graduate students as well as older, non-traditional undergraduates whose jobs and/or familial responsibilities prevent them from being physically present in a classroom on campus at predetermined days and times; those who reside at such a distance from campus that commuting becomes impractical, and for whom living in a dormitory or campus apartment may be unaffordable; and students with disabilities for whom attendance in a traditional classroom may present overwhelming challenges. Although educational institutions are obligated to accommodate students with disabilities under the Americans with Disabilities Act and earlier legislation, issues such as transportation to the institution can still present difficulties; see for example Paul (2000). In some cases, online education also allows students to accelerate or decelerate the pace at which course material is covered; it can therefore accommodate the individual learning capabilities of students who require more or less time than a traditional semester, trimester, or quarter to complete a course (Wang and Reeves, 2007). Such populations clearly constitute an important part of the enrollment growth in online education.

Another portion of the growth, however, is due to the popularity of online courses among students who would otherwise take traditional classes but simply prefer the electronic format. There are several possible reasons why students may elect to migrate to an online course if given the choice. Student-athletes whose travel to out-of-town competitions frequently keeps them off campus, or whose practice schedules conflict with the scheduled times of certain courses, may opt for some online alternatives, especially if they are offered in asynchronous formats (Kreb, 2008). Some students may register for online courses because they perceive—or misperceive, as the case may be—distance education to be less demanding than traditional courses (Li and Akins, 2005; Mortagy and Boghikian-Whitby, 2010). Unfortunately, those who think it will be easier to cheat online may also be attracted to web-based formats. Kennedy, et al. (2000) found that a majority of students (and faculty) believe it is easier to cheat in electronic classes than in traditional classes; Lanier (2006) found that students cheated twice as much online, and the students surveyed by Watson and Sottile (2010) reported themselves to be four times more inclined to cheat online and perceived their classmates as being five times more likely to cheat online than face-to-face. LoShiavo and Shatz (2011) found that more than 70 percent of students cheated online.

Additionally, personality may play a role. For example, shy or introverted students may believe—again, rightly or wrongly—that electronic communication provides greater anonymity during class discussions (Lee and Lee, 2006). Although many educators have emphasized that small class sizes and electronic records of student contributions to class discussions make participation imperative in online courses, there can be more subtle issues at work. Some students whose physical appearance makes them self-conscious about their ethnicity, poverty, gender-identity, disability, etc. may feel genuinely less intimidated online, and freer to enter into discussions in which their views will not be dismissed by others out of discrimination; there does not yet appear to be much research on this issue. Introverts may especially favor asynchronous discussions, which allow greater time for contemplation of questions prior to submitting responses (Ellis, 2003). And still other students may choose an online course rather than a traditional course because of a preference for a particular instructor. The greater popularity of some instructors is, of course, an age-old problem even within the realm of traditional education, but it may be exacerbated by the choice between online and conventional options. If, for example, more senior professors are teaching exclusively in the traditional mode while younger, more recently-degreed junior faculty who are more attuned to electronic communication are teaching online, students may perceive the latter as providing more up-to-date, relevant academic content. Thus, while online education brings new students into the community of higher education, for a variety of reasons it also induces cross-over, or migration, from traditional courses.

Although the data are rather ambiguous, both the macro and micro evidence suggests that the growth of online enrollment is a combination of new students and migrants. At the macro level, Table 1 gives aggregate enrollment data for the U.S. as compiled by Allen and Seaman (2011). Between the Fall of 2002 and the Fall of 2010, online enrollments grew by more than 4.5 million students, while overall enrollments at post-secondary institutions increased by only 3 million. By themselves, these data do not indicate what would have happened to enrollments in the absence of online education, so any interpretation is somewhat speculative. There are, however, several possible explanations that could potentially account for these figures. At one extreme, it is theoretically possible that the equivalent of 1.5 million students from traditional courses exited higher education altogether during this period, while 4.5 million new students, who would not otherwise have attended college, entered online. In that scenario, colleges and universities collectively enrolled 4.5 million more students than they would have if online programs did not exist. At the other extreme, it is theoretically possible that 3 million new students enrolled in traditional programs during this eight-year period, while 4.5 million existing students who would otherwise have remained in traditional courses migrated to online education. In that scenario, online courses enhanced the academic opportunities for existing students who preferred electronic formats, but contributed nothing to overall enrollments in higher education.

Neither of these extreme cases seems particularly plausible, however, and the reality almost certainly lies somewhere between them. A more likely interpretation is that the excess of online enrollment growth over total enrollment growth represents migration, and the rest—the net expansion in overall enrollment—represents new student registrations attributable to online education. This assumes that enrollments in traditional courses would have remained constant from 2002 to 2010 had online education not been available. If that is the case, then 1.5 million students migrated from traditional to online courses, while 3 million new students, who would not otherwise have attended a college, entered higher education online during the period. Then roughly two-thirds of the increase in online registration from 2002 to 2010 represents overall enrollment growth, and one-third is attributable to migration between course delivery formats. (Note that estimates based on Table 1 refer exclusively to headcounts; information regarding online credit hour generation is not currently available.)

Somewhat different proportions are apparent in the most recent one-year period. From 2009 to 2010, online enrollment increased by roughly 563,000 students while overall enrollment rose by approximately 116,000. If we again attribute the net growth in overall enrollment to distance education and the difference, roughly 447,000 students, to migration, then only about 20 percent of recent online growth represents new students, and 80 percent represents crossover. The difference between the longer term (2002 through 2010) figures and the more recent (2009 to 2010) estimates might be attributed to the increasing saturation of the market with online programs. Indeed, as Allen and Seaman (2011, p. 11) note, "The slower rate of growth in the number of students taking at least one online course as compared to previous years may be the first sign that the upward rise in online enrollments is approaching a plateau."

For an individual college or university, the concept of new enrollment refers to those students who would not otherwise have chosen courses at that particular institution if distance learning had not been an option. At the micro level, the published data are rather sparse; one of the few studies to investigate this question was undertaken by Cavanaugh (2005). Examining online enrollments at a single university, he found that 7.4 percent of students taking an online course lived in dormitories or apartments on the campus, and a total of 41 percent lived within 10 miles of the campus. Cavanaugh (2005, p. 7) notes, "It is entirely possible that online students living within ten miles of campus could have taken the courses on campus" in the traditional, face-to-face mode. Another 31 percent of the students were enrolled exclusively in online courses. With respect to these, Cavanaugh (2005, p. 7) remarks, "For the

Table 1
Total and Online Enrollment, 2002-2010*

Year	Total Enrollment	Increase	Online Enrollment	Increase
2002	16,611,710	NA	1,602,970	NA
2003	16,911,481	299,771	1,971,397	368,427
2004	17,272,043	360,562	2,329,783	358,386
2005	17,487,481	215,438	3,180,050	850,267
2006	17,758,872	271,391	3,488,381	308,331
2007	18,248,133	489,261	3,938,111	449,730
2008	19,102,811	854,678	4,606,353	668,242
2009	19,524,750	421,939	5,579,022	972,669
2010	19,641,140	116,390	6,142,280	563,258

*Source: Allen and Seaman (2011) and author's calculations.

31% of the online students who were taking only online courses and therefore avoided significant commutes, the argument against student cannibalization is stronger. It is likely that at least some of these students, who differ in many significant ways from the average student and live a significant distance from campus, would not have taken the courses if they were not available online." Similarly, Klaus and Changchit (2011) found that two-thirds of online students live within a 30 minute commute of their campus, and one-third reside more than 30 minutes away.

Thus, using the available micro and macro data as rough guides, it appears that between 20 and 60 percent of online enrollment represents a combination of new students and retained students who would otherwise have left the university for other institutions, while some 40 to 80 percent of online registrants simply migrated from traditional classrooms within the same university. At present, the existing research does not allow us to narrow these relatively wide ranges.

If class sizes and instructors' time were unlimited, then these percentages might not matter much in the financial model. Assuming sufficient demand, online classes could potentially be expanded until enough new students registered—even if they constituted a minority of those enrolled online—to break even. Indeed, compared to the physical classroom space that constrains the sizes of traditional classes, the virtual classroom may be less restrictive. However, online offerings are inherently more varied and complex, beginning with the decision to adopt the synchronous or asynchronous format. Additionally, instructors must devote vastly greater time and effort to each student in an online forum than in a face-to-face setting (Rothkopf, 2003). Indeed, because distance education may attract a broader population of students from around the world, there is a heightened need to recognize, respect, and accommodate a diversity of cultures, expectations, and learning styles. Differences in languages, religious beliefs, social classes, cultural values, traditions, and levels of economic prosperity may be reflected in different learning styles, communication patterns, needs for privacy, comforts levels with interaction, and even expectations regarding education itself, all of which can affect group dynamics and educational outcomes (Wang and Reeves, 2007; Liu, 2007; Edmundson, 2007). Thus, in the virtual realm there is a distinct need for careful course design and delivery to bridge cultural gaps, reach students of various academic orientations, and overcome spatially separated learners' sense of isolation by building online communities. As Eberle and Childress (2007, p. 242) contend, in distance education, "Striving to accommodate differences in language, social values, and accustomed learning styles can oftentimes mean the difference between access to information and access to learning."

Consequently, numerous experts have strongly recommended that online class sizes be substantially smaller than most traditional classes. More than a decade ago, Boettcher (1998) and Howard (2002) suggested that online class sizes should be 20 or less. More recently, Kingma and Keefe (2006) found that student satisfaction with distance education was maximized in classes of 23 to 25 students, and faculty who responded to Orellana's (2009) survey reported that the optimal size for an online class to achieve the desired level of interaction was 16 to 19 students. Colwell and Jenks (2004) distinguished between undergraduate and graduate classes, finding the optimal size for the former to be up to 20, and the optimal size for the latter to be 12 to 15. Similarly, Qui's (2010) doctoral dissertation addressing online graduate courses determined the optimal size to be 13 to 15 students, while the graduate students and faculty surveyed by Reonieri (2006) generally considered 10 to 15 students to be a medium size for an online class, and believed that more than 15 students constitutes a large class. An excellent review of this literature was recently presented by Irby and Lara-Alecio (2012). Overall, the general consensus appears to be that the optimal size for an online class is around 20 students, with that number being slightly higher at the undergraduate level and somewhat lower at the graduate level. Given these small class sizes, it becomes imperative from the financial perspective to determine what proportion of the online enrollment represents new students, and what proportion represents migration.

MODEL

We next examine a specific question: if an online section of a course is to be offered, how many new students must it attract to break even? Alternatively, we may ask the equivalent question: what is the maximum number of traditional students that can be diverted to the online section, if the course is to break even? Because some degree programs require more courses or credit hours than other programs, for convenience we model all costs and revenues on a per course basis.

At the simplest level, we may think of the net revenue to the university from a traditional classroom course (C) in the absence of an online alternative as

$$C = GT - S, \tag{1}$$

where G represents the number of students "on the ground", T is the tuition per student, and S denotes the faculty salary, benefits, and other instructional and overhead expenses of the course. The nominal or stated tuition rates are often discounted through the financial aid process (especially at private nonprofit universities), so we define T as the average tuition rate net of discounts. In practice, the marginal cost of instruction from registering an additional student (such as the additional time devoted to grading) is customarily borne by the instructor until the class limit is reached, after which another section may be opened; we therefore treat S as fixed. For courses taught by adjunct faculty, calculating S may be relatively easy; in the case of full-time faculty members with research and service obligations, S may be more difficult to estimate. Nevertheless, apportioning faculty costs to a course is a necessary financial exercise; indeed, most institutions use some heuristic rule to establish minimum enrollment standards for traditional courses. Using the present notation, a non-negative net revenue for a traditional course in the absence of online alternatives requires $G \geq S/T$. Then, for example, if S = \$11,000 and T = \$2,000, a traditional course may be cancelled if fewer than 6 students register.

Now suppose that competing institutions offer similar courses online, providing greater convenience to students. Some of the home institution's students may exit to attend elsewhere—either temporarily, with the intention of transferring the credits back to the home institution, or permanently. Revenue from the traditional course then becomes

$$C' = (G - X)T - S, \tag{2}$$

where C' denotes a revision to C and $X \geq 0$ denotes attrition. In an effort to retain its own students and attract new ones, the home institution may plan to offer its own online options.

There are, however, additional costs involved with distance education. These include the costs of hardware and course management software, expenses associated with the development of digital course materials and faculty development of online teaching skills, and the costs associated with regulatory compliance, technical assistance during the academic term (the semester, trimester, or quarter), enrollment management, and so forth. Publicity is also of special importance: if no funds are devoted to advertising and student recruitment, then only existing students will know that courses or programs are being placed online, ensuring that all online enrollment represents the cannibalization of students from traditional classes.

Accurately estimating the diverse expenses associated with moving to online formats can be a daunting challenge, to say nothing of actually managing the process. Several budgeting tools have been presented in the literature to assist with cost measurement (Jewett and Henderson, 2003; Gordon, et al., 2009; Caudill, 2009), and in recent years, a number of firms—both for-profit and non-profit—have emerged in the marketplace to sell online management services as a package to colleges and universities (Blumenstyk, 1999; Bleak, 2002; Paolucci and Gambescia, 2007). Contracting with an external vendor creates a wide array of new questions that must be resolved before a program is launched online, including the ownership of intellectual property and the privacy of student records, among others. Investigating a contract with an external vendor is, however, a convenient method for determining the additional expenses associated with placing a program online, and in a competitive market, different vendors should charge comparable fees for a particular package of services. Thus, whether the recruitment, enrollment management, technology support, compliance and other work is handled in-house or outsourced to a vendor, there will be additional costs to consider. Both fixed and variable costs of this sort may exist (Jewett and Henderson, 2003). The fixed cost, F, is independent of enrollment, and the variable cost increases with the number of students online; we let v denote the percentage of tuition revenue per student absorbed by variable costs. Thus, in addition to F per online section, the university incurs a variable cost of vT per student enrolled online.

We shall assume for simplicity that the tuition rate charged for an online course is the same as it is for a traditional course. As Paulson (2008) notes, this pricing practice is often followed by private universities, and is advocated by the Southern Regional Education Board.

From the evidence cited earlier, we assume that launching an online course entices N new students to enroll and induces M students from traditional sections to migrate to the online format within the university. Importantly, the students denoted by M would not have left the university in any event but elect to take the university's online course once it is offered. Student-athletes, for example, who wish to continue attending the university and playing for its sports teams may find an asynchronous online section more convenient than a face-to-face section.

The online section may also prevent some attrition and perhaps return a fraction of the students who previously exited the university; we denote these by ρX. Prospectively, ρX may be considered students who would otherwise exit but who have been retained by virtue of launching an online offering. However, students who remain on the ground (G) and those who migrate within the institution (M) also represent retention in the more general sense. To distinguish the retention that is specifically attributable to the online offering, we refer to ρX as students who have already exited and returned.

The net revenue from the distance education section, D, is then

$$D = (N + M + \rho X)(1 - v)T - F - S. \quad (3)$$

The cost function implied by equation (3) is linear in the number of students per section. Although nonlinear functions could be modeled to generate parabolic average cost curves, the variable costs paid to external vendors are, in practice, more commonly linear. For consistency with the literature on optimal class size, we further assume that the online section has a lower maximum enrollment, or seat count, than the traditional section. Writing L as the limit of online enrollment, we have $N + M + \rho X \leq L$. If this constraint is binding—that is, if the online section fills—then $N + M + \rho X = L$. Generally, this limit will be sufficiently low that not all of the students from the traditional class can migrate ($L < G$), so the traditional section will operate simultaneously with the online section, implying the use of two instructors. Alternatively, if a course is offered exclusively online, then students from traditional programs who wish or need to take the course have no choice but to migrate; $L < G$ would still imply the use of multiple instructors. Then, modifying C once more, the net revenue from the traditional classroom section becomes

$$C'' = (G - X - M)T - S. \quad (4)$$

In monetary terms, the net revenue from operating both the traditional and online sections is now

$$B = C'' + D. \quad (5)$$

However, the relevant economic question is not whether $B \geq 0$, but whether $B \geq C'$. That is, the net revenue from a traditional, on-ground operation alone (when competitors offer online options) represents the opportunity cost of moving to a mix of traditional and online offerings. Thus, in economic terms the relevant calculation is

$$E = B - C' = [(N + \rho X)(1 - v) - vM]T - (F + S). \quad (6)$$

If $E > 0$, the establishment of the online section enhances the institution's net revenue. To simplify equation (5) without the loss of generality, we may measure $F + S$ as a multiple of the tuition rate; that is, we let $F + S = \theta T$. Then if $N + M + \rho X = L$, we get

$$E = [(N + \rho X) - vL]T - \theta T. \quad (7)$$

Breaking even requires $E = 0$, which implies

$$N + \rho X = \theta + vL. \quad (8)$$

Equation (8) identifies the minimum number of new and returning students who must be enrolled in the online section in order to make it economically viable. If we let n denote the fraction of online students who represent new and returning enrollment, so that $n = (N + \rho X)/L$, then the breakeven point can be defined in terms of this proportion; dividing equation (8) by L yields

$$n = v + (\theta/L). \quad (9)$$

Equivalently, we can obtain the breakeven point in terms of the allowable proportion of online students who have migrated from traditional classes within the institution. Writing $m = M/L$, we get the breakeven point as

$$m = (1 - v) - (\theta/L). \quad (10)$$

According to equation (10), if the cross-over from traditional courses or sections represent a greater proportion of online students than m, then the online section has actually reduced net revenue.

As an example, consider again a university whose tuition for a course is $2,000, and let the faculty member's salary and benefits and related overhead amount to $11,000 per course. Suppose the university currently offers this course with an enrollment of 35 students, so the gross tuition revenue is $70,000 and net revenue after payroll and other expenses is $59,000. Now consider what happens if the university decides to put a section of this course online (presumably as part of a larger program going digital) with a course enrollment cap of $L = 20$. Let the variable cost be twenty percent of tuition revenue, and let the fixed cost be $F = \$1{,}000$. Then $v = 0.20$ and $\vartheta = 12{,}000/2{,}000 = 6$. Assuming 20 students actually take the course online, the breakeven point in equation (9) occurs at $n = 1/2$; that is, at least half of the online students must be new or returning to the university in order for the course to break even. To see this explicitly, note that with 20 students online (10 of whom are new or returning and 10 of whom migrated across formats) and 25 still taking the course in the traditional mode, net revenue from the two sections of the course will be as follows.

Traditional:	(25 x 2,000) – 11,000 =	39,000
Online:	(20 x 2,000)(.80) – 11,000 – 1,000 =	20,000
Total:		59,000

Financially, this is exactly the same as if the online section was not offered; hence, the project breaks even. Alternatively, if more than half of the online students are migrants from the traditional course section, then the net revenue will be lower than if the university only ran the traditional course.

Table 2 generalizes this example for various values of v and θ, holding the online enrollment limit at $L = 20$. As a visual marker, the bold entries running diagonally identify instances in which breaking even requires, as in the example above, 50 percent of the online students to be new or returning registrants to the institution. Naturally, as fixed costs, faculty salaries, and benefits increase relative to tuition, and/or variable costs rise (that is, the institution moves eastward or southward on the table), even higher proportions of online registrants must be new or returning students in order for the venture to break even.

Table 2
New Students, as a Proportion of Online Enrollment, Needed to Break Even*

	θ						
v	3	4	5	6	7	8	9
.05	.20	.25	.30	.35	.40	.45	**.50**
.10	.25	.30	.35	.40	.45	**.50**	.55
.15	.30	.35	.40	.45	**.50**	.55	.60
.20	.35	.40	.45	**.50**	.55	.60	.65
.25	.40	.45	**.50**	.55	.60	.65	.70
.30	.45	**.50**	.55	.60	.65	.70	.75
.35	**.50**	.55	.60	.65	.70	.75	.80

* The notation θ denotes faculty salary, benefits, and other fixed costs of the online course as a multiple of the tuition for a single student; v denotes variable costs. The table assumes an online enrollment cap of 20.

It is also important to observe what happens if the online enrollment limit (L) is increased. Assuming the online section fills, the variable cost of the online section increases with L. Thus, from equations (8) and (9), N rises and n falls: the requisite number of new and returning students required to break even increases, though the requisite proportion declines, and from (10), the allowable proportion of migrants increases. If, for example, the online class limit is set at 30 students, then all else being constant in the example above, at least 12 students (or 40 percent) must be new or returning to the institution in order to break even; up to 18 students (or 60 percent of the online enrollment) may represent migration from traditional courses.

CONCLUSION

Providing courses with alternative delivery modes to enhance the educational opportunities and experiences of students is in itself a worthwhile objective, and some universities may elect to do so even at a financial loss. Indeed, equipping students to utilize educational technology and reaching underserved populations may be important components of the university's overall mission. If, however, the objective of going virtual is to strengthen the financial position of the institution, then the revenues and costs must be carefully scrutinized. Relatively small class sizes are widely recommended for online courses, and the available evidence suggests that at little as 20 percent and probably not more than 60 percent of online registration represents real enrollment growth. Online programs may therefore operate on very slim margins.

The present paper offers a simple economic model for determining the break-even point. To utilize the model, a university needs to establish the enrollment limit that ensures pedagogical quality for an online course; identify the payroll expenses per course; determine the additional fixed and variable costs of an online offering (which may be ascertained by consultation with an external vendor); and forecast the percentage of online students who will represent new or returning registrants as opposed to those migrating from traditional courses within the university. Equipped with such data, the economic feasibility of going online can be determined. Clearly, online offerings are more economically viable when the costs are low relative to tuition and cross-over from traditional courses is limited.

Naturally, the model itself could be elaborated in various ways. For example, the model has implicitly assumed equal course completion rates (or equivalently, equal withdrawal rates) between online and traditional courses. Several studies have suggested, however, that there are substantially higher withdrawal and dropout rates—up to 80 percent—for online education (Gleason, 2004; Tyler-Smith, 2006); this problem may be especially severe among low-income and underprepared students (Jaggars, 2011). Thus, the present model may somewhat underestimate the proportion of new students required for online courses to break even; future extensions of the model may benefit from explicitly recognizing this difference. In addition, differential faculty pay scales, or differential tuition rates for online and traditional courses could be incorporated in future work. Indeed, public universities have historically charged lower tuition rates to in-state residents than to out-of-state students. Applying this practice to distance education might mean charging a premium comparable to out-of-state tuition for the convenience of learning online; such a practice would certainly discourage internal migration but may also conflict with the goals of recruitment, retention, and expanding educational options for students.

This analysis also highlights the need for more detailed empirical research on the extent to which online courses attract new students, prevent attrition by retaining existing students who might otherwise leave the university, and induce cross-over by students who would otherwise remain in traditional courses at the institution. Ideally, such data should not be limited to headcounts, but would also measure credit-hour generation. Here, as in other contexts, better information is an essential element of improved decision-making.

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