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Is the Cheating Risk Always Higher in Online Instruction Compared to Face-to-Face Instruction?

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Abstract

This article analyzes the exposure to cheating risk of online courses relative to face-to-face courses at a single institution. For our sample of 20 online courses we report that the cheating risk is higher than for equivalent face-to-face courses because of reliance on un-proctored multiple choice exams. We conclude that the combination of a proctored final exam, and strategic use cheating deterrents in the administration of un-proctored multiple choice exams, would significantly reduce the cheating risk differential without substantially altering the assessment design of online instruction.

Journal of Economic Literature Classification: A22

Keywords: Academic Dishonesty, Cheating, Online Instruction, Principles of Economics

INTRODUCTION

Enrollments in online courses are soaring. Between Fall 2002 and Fall 2005 the number of students enrolled in at least one online course doubled from 1.6 million to 3.2 million (National Center for Education Statistics 2006). In Fall 2005, 84% (2.5 million) of these students were enrolled in undergraduate courses (Allen and Seaman 2006) representing 17% of the estimated 14.9 million total undergraduate enrollment (National Center for Education Statistics 2006).

The growth of online offerings at undergraduate colleges and universities is fed by both demand and supply factors. On the demand side there is a large and growing market of older, non-degree seeking students with full-time jobs (Coates and Humphreys 2003). Nontraditional students are a high proportion of enrollments in 2 year institutions (Coates and Humphreys 2003) and online enrollments in 2 year institutions are a high proportion (59%)) of total undergraduate enrollments (National Center for Education Statistics 2006). On the supply side the cost of producing online courses is decreasing because of the emergence of course management software (CMS), and textbook publishers are developing digitized supplements, such as PowerPoint lecture notes and test banks compatible with the CMS software (Sosin 1997; Navarro and Shoemaker 1999).

As online enrollments rise so does concern for the integrity of the assessment procedures in online courses. In face-to-face (f2f) instruction it is the convention for a portion of the course grade to be determined by proctored examination (multiple choice, short answer

and essay format). In the proctored format the identity of the test taker is confirmed by personal acquaintance between the proctor and the student or by visual inspection of identification credentials. However, in f2f instruction assessments of the "take-home" format (essays, problem solving exercises, term papers, creative projects, etc.) are un-proctored and widely used, though it is not uncommon for the un-proctored assessments to be a smaller proportion of the course grade relative to the proctored assessments, especially in 100 level courses.

It is the conventional wisdom that assessments in online courses are un-proctored and therefore the integrity of grades in online classes run a higher risk of being compromised by cheating than do grades in f2f classes. In this article we use the case study approach to evaluate this conventional wisdom.

Review of the Literature on Cheating in Undergraduate Courses

Face-to-Face Classes

It would be a mistake to minimize the problem of cheating in f2f classes. Four stylized facts emerge from a survey of the literature on cheating in f2f college courses. First, cheating by college students is considered widespread (McCabe and Drinan 1999) . For example, estimates from five studies of college students reporting having cheated at least once during their college career range from 65% to 100% (Stearns 2001) and Whitley reports an average of 70% from a review of 46 studies. Second, cheating by college students is becoming more of a problem rather than less of a problem (Whitley 1998).

Estimates from 5 studies of the percentage of college students cheating at least once in their college career have been steadily rising over the period 1940 to 2000. (Jensen, Arnett et al. 2002). A study administered in 1964 and replicated in 1994 focused on the incidence of serious cheating behaviors (McCabe, Trevion et al. 2001). The study reported that the incidence of serious cheating on written assignments was unchanged at 65-66%, but the incidence of serious cheating on exams increased from 39% to 64%. Third, the format of assessment is correlated with cheating. Whitley (1998) reviewed 107 studies on college cheating (published since 1970), and reported that from 10 studies a mean estimate of 47% for cheating by plagiarism, from 37 studies a mean estimate of 43% for cheating on exams, and from 13 studies a mean estimate of 41% for cheating on homework. Fourth, student characteristics of age and GPA are negatively correlated with cheating. Whitley (1998) reviewed 107 studies on college cheating (published since 1970), and reported that: from 16 studies that included a correlation of GPA and cheating there was on average a small negative relationship, and from 10 studies that included the correlation of age and cheating there was a negative correlation.

Cheating in Online Courses

In the developing literature about online instruction there are two opposing views on the integrity of assessments. One view is that cheating is as equally likely to occur in the face-to-face format as in the online format of instruction. In this view the cheating risk differential can be made negligible by appropriate adjustments to the administration of the online exam. Commonly mentioned adjustments are making exams open book (Kushner 1999), password protecting exams (Rovai 2001), limiting time allotted for each

question (Taylor 2002), weighing the exam less and putting more weight on essays and discussion assignments (Liefert 2000; Taylor 2002), restricting times and date of availability (Liefert 2000), using a large pool of test questions, and selecting a smaller set of questions randomly ordered and responses randomly ordered (Shuey 2002). More imaginative are randomly phone calling the student during the exam, or requiring a web cam perched on the student's computer during test taking time (Carnevale 1999). More exotic and expensive are voice and retinal scans (Rovai 2001). Plowman (2000) acknowledges (with stunning examples) how technology has enhanced opportunities to cheat, and exhorts instructors, perhaps quixotically, to use the technology to stimulate student motivation and interest in learning instead of in cheating. This view of the heuristic value of changing the culture of online cheating is an extension from the literature on cheating in face-to-face classes that promotes the view that honor codes and "ethical communities" can be effective in deterring cheating (McCabe, Trevion et al. 2001).

The alternative view is that proctored exams are the only way to protect the integrity of grades by guaranteeing both that a substitute is not taking the exam and that students are not working together on an exam. Because it's too easy to cheat, according to proponents, not proctoring raises many red flags that question the validity of the program. (Deal 2002), and (Edling 2000). Examples of online programs that proctor their exams are Carnegie Mellon University (Gannon 2005), and the University of Texas (Young 2001). There are many commercial testing agencies that will proctor for a fee. Examples are

The National College Testing Association (Young 2001) and Virtual University Enterprises (Shuey 2002).

Our literature searches uncovered only four published empirical studies of cheating in online courses. Two studies (Charlesworth, Charlesworth et al. 2006; Harmon and Lambrinos 2008) examine the correlation of cheating with assessment format (un-proctored online v proctored) and two studies (Kennedy, Nowak et al. 2000; Grijalva, Nowell et al. 2006) examine the correlation of cheating with course format (online v f2f).

Harmon and Lambrinos (2008) compare the incidence of cheating between proctored and un-proctored exams in an online class. Their study posits that absent cheating a model predicting exam score should have the same explanatory power for both exam formats. They report the explanatory power is lower for the un-proctored format and conclude that cheating was likely taking place when the exams were not proctored.[1] Charlesworth et al. (2006) compare students' perceptions of the incidence of cheating between online assessments (un-proctored multiple-choice quizzes) and written assignments (in-class assessments). Their sample consisted of 175 students in a web-enhanced first year chemistry course. The student responses were that 40% believed online assignments would encourage more cheating relative to in-class written assignments, while 40% believed there would be no difference.

1

Kennedy et. al. (2000) compare student and faculty perception about the relative incidence of cheating between f2f and online courses. They conducted a survey of 172 students and 69 faculty members at a mid-sized mid-west university. They reported that 57% of the students and 64% of the faculty believed cheating would be easier in online classes than face-to-face classes. Grijalava, Nowell and Kerkvliet (2006) compare the incidence of self-reported cheating between an online and a f2f course. They surveyed approximately 2,000 students enrolled in undergraduate online courses in spring 2002. They received approximately 800 usable responses. The survey was anonymous, but to further reduce student fear of discovery they used the random response (RR) design.[2] They report the finding that 3% of the sample cheated, which they conclude is comparable to the percentage reported by a study of cheating in face-to-face courses (Karlins, Michaels et al. 1988).

Our review of the literature suggests that the incidence of cheating may be more related to whether the evaluation technique is proctored or not, and less related to whether the course is taught in online or f2f format. For example, an online course that uses only written response proctored exams is likely to have less cheating risk than a f2f course that uses only take-home written response assignments.

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[2] . In the RR design the student is asked to answer either an unrelated question with a known probability to answer “yes” or “no”, or to respond “yes” if they cheated. Thus if the student cheated and responded “yes” the researcher has no way of knowing whether the student is responding “yes” to the unrelated question, or “yes” to the cheating question. However, using the known probability for the unrelated question the proportion cheaters in the sample can be estimated.

DATA

Since 2000, the University of Connecticut (Uconn) has been developing online courses with the goal of offering students the opportunity to complete most of their course work for a 4 year degree online[3] The first five online versions of existing general education courses were offered during summer 2003 in five different disciplines, and by summer 2006 twenty online versions of existing courses were offered in twelve disciplines[4]: fourteen courses at the 100 level, and six courses 6 at the 200 level. For quality concerns, the classes are capped at 25 students. Currently the courses are primarily offered during the summer session and the enrollment comes from both traditional and non-traditional student populations.

Our data on the grading scheme of the online courses comes from two sources. One source of data is the syllabi that were posted at the website of the Division of Online Studies in the summer of 2006. The other source of data is responses to a questionnaire survey of the instructors of these courses at the end of the summer session 2006, hereafter

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[3] . At Uconn, The Center for Continuing Studies began developing online courses in 2000. Historically the Center for Continuing Studies has administered undergraduate, professional and graduate courses servicing the non-traditional student (i.e. not the 18-21 year old students living on campus attending college for the first time.) In 2000 the Distance Education Office was established in the Center for Continuing Studies with the goal of developing online courses for programs offered through Continuing Studies, such as the Bachelor of General Studies (BGS) degree program. The short run target was to foster development of undergraduate courses that met the University's general education requirements.

[4] Agricultural and Natural Resources, Allied Health, Anthropology, Biology, Communication Science, Economics, English, Fine Arts, Geography, Human Development and Family Studies, Political Science, and Math.

referred to as the Faculty Survey. Because there were only 9 respondents to the survey, the data from the written comments are used anecdotally.

RESULTS

To design a scheme for evaluation of student learning an instructor makes at least three choices: the relative grade weight for exam assessments and non-exam assessments, whether the exams are proctored, and whether the exam format is multiple choice only (fixed response) written (constructive) response only, or a combination. Chart 1[5] lists the courses in our sample by four categories left to right: 1) un-proctored exam – multiple choice only; 2) un-proctored exam – combination of multiple choice and written response; 3 un-proctored exam – written response only; and 4) proctored exams or no exams.

In our sample of twenty courses, fifteen (75%), course numbers 1 to 15[6], have un-proctored exams; the remaining five courses (25%), course numbers 16 to 20, have either proctored exams or no exams. Within the group of 15, six use only multiple choice response questions, eight use a combination of multiple choice and written response, and one uses only written response questions.

[5] The same data are reported in tabular format in the Appendix.
[6] To preserve confidentiality we arbitrarily number the courses 1 to 20.

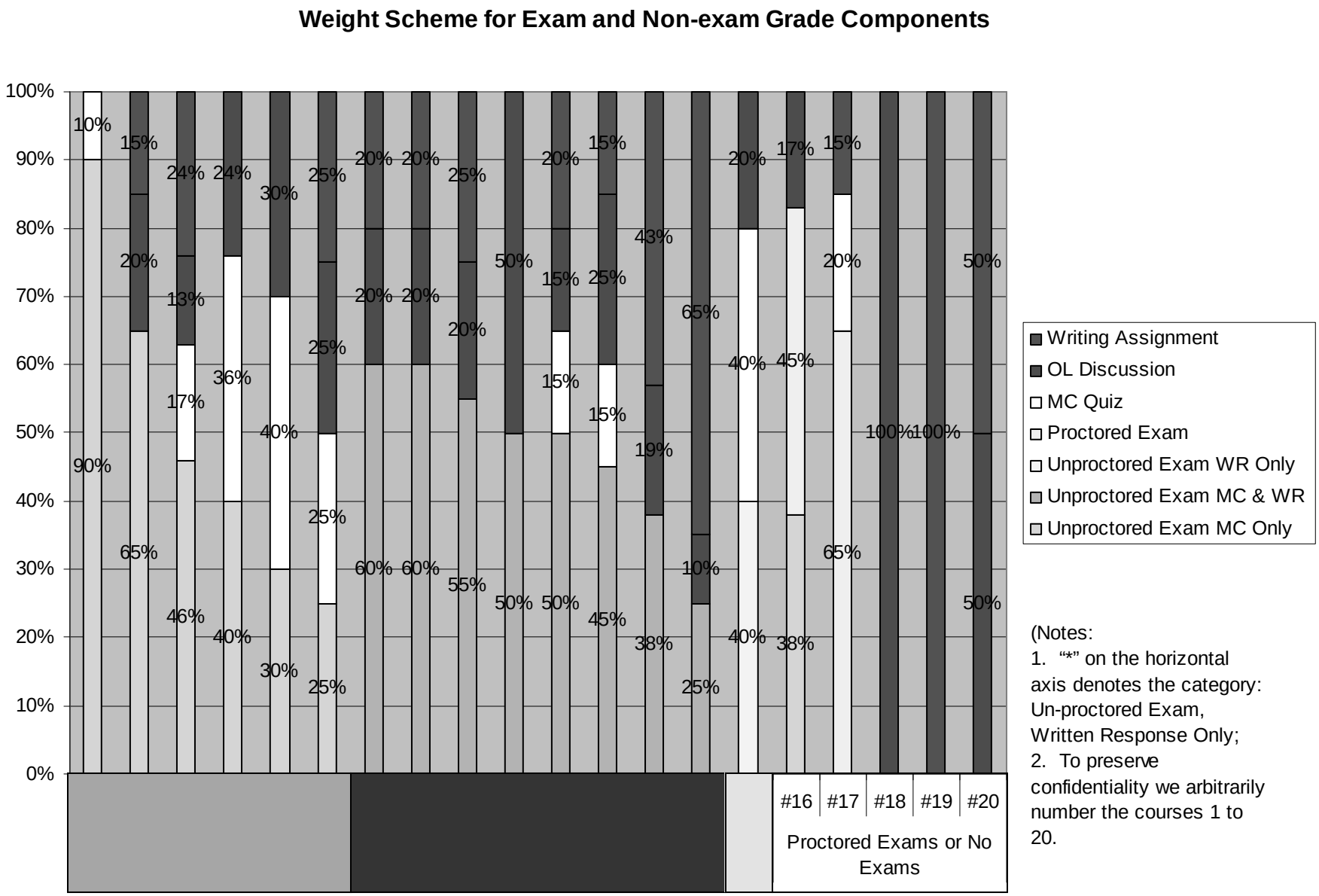
For the 15 un-proctored exam courses there is rough similarity in the grade-weight distribution. For the six courses that use multiple choice only exams the exam component (light purple bar in the chart), as a percent of the total course grade, ranges from 90% to 25%, with an average of 49% and a median of 43%. For the eight courses using a combination of multiple choice and written response the exam component (dark purple bar in the chart) ranges from 60% to 25%, with an average of 40% and a median of 50%. One course (#15) has an un-proctored essay exam with a course grade-weight of 40%.

The types of non-exam assessments used by the courses in our sample are: periodic chapter quizzes, online discussion, and writing assignments of homework, take-home essays, and term papers. Fourteen of the fifteen courses use online discussion (red bar in the chart) and the average grade-weight is 22% (median 20%). Ten of the fifteen courses use writing assignments (blue bar in the chart) and the average grade-weight is 22% (median 20%). Eight of the fifteen courses use multiple choice quizzes chapter quizzes (white bar in the chart) and the average grade-weight is 20% (median 17%).

Overall, fifteen of the 20 courses (75%) have un-proctored exams and on average their course grade-weight is roughly evenly split between un-proctored exams, and un-proctored non-exam assessment. Because of the relatively large un-proctored exam component, these 15 courses likely have a positive cheating risk differential as compared to f2f courses. The remaining 5 courses (#16 to #20) are distinctly different from the others. Two of the five use proctored exams: #16 for 38% of the course grade, and #17

for 65% of the grade. Three of the five use only non-exam assessments: #18 uses only online discussion, #19 uses only written assignments, and #20 splits the grade weight evenly between online discussion and written assignments. Because these remaining 5 courses use assessments similar to f2f courses, these 5 courses likely have the same cheating risk as compared to f2f courses.

Chart 1


Weight Scheme for Exam and Non-exam Grade Components
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
#16
#17
#18
#19
#20
Proctored Exams or No Exams
Writing Assignment
OL Discussion
MC Quiz
Proctored Exam
Unproctored Exam WR Only
Unproctored Exam MC & WR
Unproctored Exam MC Only
(Notes:
1. "*" on the horizontal axis denotes the category: Un-proctored Exam, Written Response Only;
2. To preserve confidentiality we arbitrarily number the courses 1 to 20.

Proctored Exams

For instructors of online courses the decision of whether to proctor an exam means weighing cheating risk v. student inconvenience to travel to a testing center. The target market for online courses is the non-traditional student who is juggling work, family, and academic commitments. Release from the inflexible time/location parameters of proctored exams can be a valuable benefit for the non-traditional student.

In our sample 75% of the instructors chose un-proctored exams for approximately half the course grade. Cheating behaviors on un-proctored online exams include: printing and distributing the exam, taking the exam collaboratively with other students in the class, and engaging the services of a substitute. The strategies instructors can use to discourage these cheating behaviors include: randomize the question order and the response order, allow only one question at a time to be displayed onscreen, select each question from a pool of similar but slightly different questions, rotate questions from semester to semester, increase the ratio of questions to minutes allowed to impose a substantial opportunity cost for time engaged in cheating behaviors, and make the exam available online for a period not exceeding the time allowed to take the exam ,i.e. force all students to take the exam at exactly the same time (Vachris 1999; Shuey 2002; Serwatka 2003).[7] Also, site usage statistics provided by the course management software can be information to identify exam scores that are above expectations. In the Faculty Survey several express the opinion that aggressive use of the strategies outlined above can substantially reduce the cheating risk differential between un-proctored and proctored exams.

Proctoring reduces, but does not eliminate, cheating risk. Aggressive strategies to make each exam unique will substantially discourage copying off another student's exam. But other

[7] Some of these were mentioned in comments on the Faculty Survey.

cheating behaviors during a proctored exam, which include un-permitted crib sheets, and one student assisting another during the exam, are not as easily curbed. Other factors such as, whether the exam is high stakes (Leming 2001), proctor diligence (Leming 2001), and whether ID's, in the case of large sections, also exert a confounding influence. The empirical estimates of cheating on exams in f2f instruction, which are reported in the literature review section, suggest that the deterrence of cheating by a proctor is easily overstated.

Non-exam Assessments

A striking feature of the online syllabi in our sample is the extensive use of non-exam assessments. On average, in the sample of 20 courses roughly half the course grade is determined by non-exam assessments. Non-exam assessments include weekly quizzes and online discussion posts, and homework, term papers and other written assignments. These non-exam assessments can be time consuming to grade and provide opportunities for online interactions as substitutes for the interactions of f2f instruction[8].

A reason many instructors use written response non-exam assessments is that they can measure Bloom's (1964) two highest levels of understanding in ways that not measured by timed exams

[8] In the online course periodic assignments can be a substitute (albeit it imperfect) for the feedback and stimulation of f2f instruction. Two types of periodic assessments are used: quizzes and instructor moderated discussion. Quizzes are a way of encouraging the learner to step through the material at a measured pace rather than crash study for the exam. From periodic quizzes the instructor can monitor progress and provide feedback and encouragement as needed. And the student can self-evaluate progress, adjust study effort as needed, and seek additional help as needed. Online discussion can simulate the learning experience that occurs during class discussion in the f2f class. Discussions can be moderated by the instructor, organized around a lecture, and asynchronous with posting during a specified time interval (i.e. one week). The interactions of instructor-student and student-student on the instructor moderator discussion board can provide opportunities for mentoring, social interaction, and creating a sense of community. (Source: Faculty Survey)

(especially multiple choice exams)[9]. Indeed, reflecting the concern that examination assessments are not the best metric of measuring learning outcomes, and there is a perceptible move in f2f instruction to greater experimentation with non-exam assessments. For example, some undergraduate programs at Uconn are introducing student learning outcomes assessment, cooperative learning, e-portfolios, and capstone projects into the curriculum. An additional motivation for use of non-exam assessments in online instruction is scheduling flexibility for the non-traditional student.

Arguably the take-home format of the non-exam assessment suffers from relatively higher cheating risk than exam assessment[10], because of plagiarism and the web term paper mill, and because many of these assignments are the same for every student (Walstad 2001) Comments from to the Faculty Survey touch upon the ways students can cheat in online discussion, which include: making posts collaboratively with other students in the class, paraphrasing previous posts by discussion participants, and engaging the services of a substitute.

However, for instructors in our sample non-exam assessments can be viewed as a way of balancing the cheating risk of un-proctored exams. For non-exam written assessments, the deterrence of cheating by plagiarism rests on whether the instructor can detect similarities in themes, phrasing and sentence structure and whether the un-proctored submission differs

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[9] The multiple choice format is appropriate for measuring the first four levels (knowledge, comprehension, application, and analysis) of learning outcomes in the widely used Bloom, B. S., ed. (1964). Taxonomy of Educational Objectives. New York, David McKay. taxonomy, where as the written response format is more appropriate for the remaining higher levels of learning (synthesis and evaluation). Multiple choice questions can be graded quickly and objectively, and they can cover a wide range of course material, whereas, where aswritten response questions require more time to grade and they cover a more narrow range of material Buckles, S. and J. J. Siegfried (2006). "Using Multiple-Choice Questions to Evaluate In-Depth Learning of Economics." Journal of Economic Education **37**(1): 48-57.

[10] In the review of literature section it is noted that studies report plagiarism a greater cheating problem than exam cheating.

significantly from expectations based on prior work-product. Also, periodic non-exam written assessments are relative more difficult to cheat on because cheating requires more frequent collaboration with other individuals and in small classes instructors can form more accurate expectations of work product.[11] Because the online class size at Uconn is capped at 25, cheating risk on non-exam assessments is likely lower relative to the norm experienced in larger f2f classes. The value of frequent online discussion in development of instructor expectation is reflected in the following quote of an anonymous respondent to the Faculty Survey: "I rely more on discussion boards to assess students' engagement with the issues in the course and their critical thinking. They are much less likely to think about being academically dishonest on a discussion board."

Costs of Proctored Exam

The administrative costs of proctored exams include development of guidelines, communicating date and locations, and approval of alternative sites. The cost to students depend on whether they have access to conveniently located testing centers, and whether their schedule has sufficient flexibility for one in-class appearance.

At Uconn, only two departments require the assessments in their online courses mimic the environment of the in-classroom exam as much as possible.[12] These departments have requested that students take the exam (1) at exactly the same date and time and (2) in an approved proctored setting at an institution of higher education. To adhere by these two criteria, students in or near Connecticut must take the proctored exams at one of the University's regional campuses.

[11] In the review of literature section it is noted that studies report homework has less of a cheating problem than exams.

[12] The arrangements for proctoring are made by the Distance Education Office within Continuing Studies.

Students who are not located near Connecticut must locate a proctor at an accredited institution of higher education. The exam site and proctor must be approved prior to the exam to ensure that students are utilizing a legitimate institution and proctor. The approval process includes verifying that the institution is in fact an accredited institution and verifying the position of the proctor. All students, wherever their location, must take the exam at a pre-determined date and time set by the instructor.

To meet these criteria program administration has become the highest single cost of proctoring exams. On-going program administration costs include setting dates and locations of the exams with the instructors, reserving computer labs at each location, communicating with students regarding proctored exam requirements, approving out-of-state locations, collecting preferred sites from students, hiring and training additional proctors, and verifying that all students are accounted for.[13] Collecting preferred sites from students is necessary to ensure that the computer labs are large enough to accommodate the number of students taking the exam at that particular campus since the majority of the students taking these courses are from Connecticut. Preferred locations are also collected in advance from the students to ensure that a proctor is available at each Connecticut site. Per semester, it is estimated that the administration costs to proctor four exams totals ten to fourteen work days. This total includes the director's time as well as time for her assistant and technical support.[14]

We expected that once policies and procedures were established, the greatest cost would be the actual proctoring of the exams. Cost of the actual proctors varies but generally is minimal

[13] Not included in on-going administration costs are costs related to the initial set-up of the program (establishing policies and procedures).

[14] There is no direct charge to utilize the computer labs at the various campuses of the University of Connecticut. However some students who take the exam out-of-state are required to pay a fee to the testing center. The typical fee is $25 - $50 and is paid for by the student.

because most of the proctors are faculty and staff members who proctor as part of their responsibilities. Hence they do not receive additional payment to proctor.[15]

We also expected that once students were informed of the proctored exam procedures, communication with students would become fairly routine and minimal. However, this has not been the case, and student communication continues to be the most time consuming task. The most frequent problems for students are scheduling conflicts, being unable to locate a proctor/institution, having to changing exam locations, or misunderstanding the policies in place.[16] To minimize problems for the students, the proctored exam dates, times, and policies are posted as early as possible prior to the start of the semester and appear in several locations within each course. Unexpected behaviors such as failure to comply with the policy in place increase administration costs. For example, on one occasion a student signed up to take both exams at a particular UConn campus. After taking the first exam at the site he took the second exam at his work location without authorization. This prompted a change in the procedures whereby students are now denied access to the exam until they arrive at the approved proctored site. Such actions by the student only serve to justify the tight procedures in place.[17]

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[15] Actual proctoring times vary with the length of each exam, but the average proctoring time is two hours per exam per Connecticut site. There are usually three in-state sites for each of the four exams per semester resulting in 24 hours spent on actual proctoring. Proctors include instructors and professional staff members

[16] Childcare, athletic competitions, business meetings, vacations, and court dates are examples of the scheduling conflicts experienced by students in the online courses.

[17] The system at used at Uconn may be more expensive that the norm. At some institutions, a proctored online exam means that a student makes arrangements with their employer, a local library, or a local school (whatever the level) to take the exam on their premises. Under these less rigid circumstances, the student takes the exam at a date and time that is convenient to the student and the proctor and/or testing center. Following these procedures, if there are twenty students in a course, there may be twenty different exam times. On occasion, faculty and staff members in Continuing Studies have served as proctors for students from these different institutions (which we shall not name) and the required procedures vary from institution to institution. For example, one institution required an information sheet to be completed by the proctor that included position, degree held, and home phone number, where as others only requested cursory information.

SUMMARY AND CONCLUSIONS

Seventy-five percent of the online courses (15 courses) in our case study, on average, base roughly half the course grade on un-proctored multiple choice (some supplemented with a written response component) exam. The remaining five courses use either proctored exams or non-exam written assignments. There are differing views among online instructors over whether online courses face greater cheating risk that f2f, but the small number of empirical studies suggest that the un-proctored exams result in relatively greater cheating risk for online courses.

Two of the online courses in this case study use proctored exams. It is reported that a proctoring program is expensive to develop from scratch and it is expensive to administer as a stand-alone department. The direct staff costs rise steeply with permitted flexibility in choice of location and the geographic disbursement of the enrolled students. A proctoring requirement limits the spatial and the asynchronous dimensions of online instruction, thereby reducing student convenience and increasing administrative costs.

Two changes in the administration of the multiple choice exams would in principle substantially reduce opportunities for cheating. First, administer the un-proctored multiple choice exam with aggressive use of deterrents to exam cheating, which include: randomizing question response order, display of only one question at a time, question selection from a pool of similar questions, rotate questions from semester to semester, using a high ratio of questions to minutes allowed, making all students to take the exam at the same time, and using some questions that are unique to the instructor's lectures, then the difficulty of cheating would be substantially more difficult. Second, administer the final multiple choice exam with a proctor. These changes would not alter

the existing grading scheme of the online courses, and they would significantly reduce the cheating risk differential between online and f2f courses. The changes would increase administration costs, and reduce the scheduling flexibility that attracts many online learners. However, the bulk of administration costs are communication with students and this can be mitigated if the proctoring of online courses is integrated with the system that administers proctoring for f2f classes.

Technological advances are inevitable and they work both for and against those administering proctored exams. The testing features of the learning management systems include limiting access to an exam, limiting the start time, and if needed, tracking the IP addresses of the test-takers that hack into an exam, as in the case of the student who took the exam from an un-proctored location exam at work. Similarly, technological innovation in communication devices are making it more difficult for exam proctors to detect communication between student test-takers. An unknowing proctor may not easily distinguish between a calculator and other electronic communication devices. If exams are taken online, how easily can instant messaging be prevented? A recent innovation, challenging exam proctors, is sneakers with stripes on the side (call K-Swiss Stripe Shifters) that can convey messages.

As preferences shift toward non-exam assessment strategies and away from exams, the issue of whether the exams are proctored or un-proctored will recede, and the relative cheating risk between online and f2f instruction may shrink. Technological advances and changes in preference for assessment design will influence the difficulty and expense of the policing function, however, a constant in the equation will be academic dishonesty. A sentiment expressed by one Faculty Survey respondent, and shared by other respondents, is: “Cheats, a small number of students, will go to almost any end to try and beat the system and it is very hard to stop the really good ones. Their efforts will be the same regardless of on- line or class room

courses". The solution rests in resolve of administrators, faculty and students for ethical behavior. "Each campus must send a consistent message to its students that academic integrity is expected and that cheating will result in negative consequences…. To do this, campuses must support faculty who raise allegations of student dishonesty…. To do this the institution must be prepared to hold students accountable for any cheating in which they engage" (McCabe, Trevion et al. 2001).

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Appendix Table 1

Source: Compiled by authors from: University of Connecticut, College of Continuing Studies, Online Education, http://continuingstudies.uconn.edu/onlinecourses/sched/schedule.php (May 13, 2006).