

Thwarting online exam cheating without proctor supervision

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Abstract

To demonstrate and maintain academic integrity, some institutions require proctor supervision of online exams. However, proctoring can be very expensive. Costs to students can include fees at testing centers, costs to purchase the Remote Proctor, time to find an approved proctor, and effort required to coordinate a time for the exam. Costs to the institution include salaries of staff to administer a proctoring process, approval of proctors, maintaining testing centers, and potential loss of enrollments and revenue since not all institutions require proctors for online exams. This paper examines the control issues related to online exams and asserts that the total cost of proctors for online exams (time and money of both students and the institution) exceed potential benefits. The authors propose a less costly, non-proctor alternative to promote academic honesty, using eight control procedures that enable faculty to increase the difficulty and thus reduce the likelihood of cheating by students.

Keywords: Online, Cheating, Proctor, Controls, and Testing.

Introduction

The Underground Professor has taken a plunge into the cyberspace of e-learning by teaching online courses. This venture is technologically challenging and requires mastering certain computer tools such as WebCT, Blackboard or a similar learning system, producing and loading videos, using Respondus Lockdown Browser, and securing laptop internet connections while on the go. Online courses provide students a convenient way to complete their college degrees, explore alternative career paths, earn academic credits to advance their careers, and pursue graduate degrees. These cyber students include traditional college students working toward graduation, military personnel all over the world, non-traditional students employed full time, and working professionals seeking advanced degrees. The Internet has redefined distance learning and is a key factor for continued growth in higher education today.

While teaching for Ivory Tower University, the Underground Professor encountered a basic dilemma common to online educators. How do we as professors ensure the integrity of an online student's grade? How do we know that the student registered for the course is the student taking the exam or turning in assignments? How do we know that students are not completing individual exams or assignments in collaborative teams? How do we know that students are not completing exams and assignments by illicitly using test banks or solutions manuals? These "honesty control issues" also apply to traditional classroom courses in which the instructor uses online, out-of-class exams to save classroom time for non-exam purposes.

In their quest to secure or maintain academic accreditation, university administrators often decree that all online courses must have one proctored exam during each semester or quarter. Universities want to provide evidence to accreditation agencies, both regional and programmatic, that their online courses have academic integrity with respect to student grades. However, does proctor supervision of exams really ensure the desired academic honesty? One proctored exam might account for as much as 50% or as little as 10% of a student's total course grade. An accreditation team could justifiably ask, "What about the other 50% to 90% of a course grade that is vulnerable to cheating?" One proctored exam per course is a token effort to ensure academic honesty. More proctor supervision of exams, however, may not be the most cost effective solution or even an improvement (Krsak, 2007).

Typically, an exam proctor is either a person or a machine (the Remote Proctor or ProctorU). Remote Proctor (RP) is supposed to verify the student's ID (thumbprint) and eliminate cheating through a motion detector. Suspicious motion by a student taking an online exam causes a video to record the student's actions. Instructors then review these exam videos for evidence of student cheating. ProctorU is similar to RP in that one electronic proctor in a control room monitors up to six or eight students taking exams. The teaching faculty does not review videos unless the proctor notes something questionable regarding student honesty.

Some universities sell electronic proctoring devices such as Remote Proctor to graduate and undergraduate students asserting that it will be required in their courses. Faculty members are then told that they should use Remote Proctor since their students have purchased it and are expecting to use it. This academic management scenario is rife with conflicts of interest and circular reasoning. Some faculty members probably use Remote Proctor just to avoid being labeled uncollegial or non-team players. Professors who refuse to use electronic proctoring tools may find themselves excluded from online teaching assignments.

Cheating problems with online exams

The authors have engaged in a crusade to thwart online test cheating without using proctors, because we believe that costly proctor supervision provides only minimal assurance of academic integrity. First, we identified the primary methods used to cheat during online exams. Since we cannot totally eliminate this cheating, we next devised internal online exam control procedures to thwart online cheating by making the costs of dishonesty outweigh the benefits. Finally, we devised a comprehensive online testing plan based on eight *online exam control procedures* (OECPs) designed to thwart online exam cheating without using proctor supervision.

Our approach to creating an online testing plan is similar to how CPAs approach a financial statement audit. First, we assess the risk or potential for fraud (here, online exam cheating). Second, we examine existing internal controls (cheating prevention methods). Finally, we design audit procedures to detect fraud. The auditor's goal is to achieve reasonable assurance that the financial statements contain no material misstatements. In a similar fashion, the online exam professor should use control procedures to achieve reasonable assurance that academic integrity has been maintained and that significant cheating has not occurred during online exams.

How students cheat

In the absence of good online exam control procedures, how do online students cheat? In some cases, students can obtain exam questions or even exam answers before they take the exam. Some instructors actually make their exams available online for a week so students can take the exam at their convenience. Students then conspire with their network of classmates. A superior student takes the exam first, records the answers, and/or copies the questions. Then the questions are researched, answered, and distributed to the remaining students. If instructors do not periodically revise exams, then student groups develop files for their current and future classmates to use.

Students can also illicitly obtain publishers' test banks and related solutions manuals from university libraries, faculty, or underground sources. Online exams that remain open (available for access) for extended periods of time permit one student to take the exam while receiving help from other conspiring students who then take the exam at a later time. There are many other methods of cheating during online exams (Eplion & Keefe, Unpublished Working Paper). Cheating, as in fraud, seems limited only by one's imagination.

Online exam control procedures (OECPS)

Honest student conduct is a function of cost (getting caught and punished) vs. benefit (possible better grade) choice for the student, which is at the heart of any fraudulent act. To cheat or not to cheat: That is the question. A good control system for managing online examinations should both discourage and detect cheating by students. If deficiencies in the control system are discovered, then new or revised online exam control procedures must be implemented. The control procedures to be used must be consistent with the written exam instructions related to the duration of the exam, any materials that can be used as references, and any permitted forms of communication among students regarding examination questions (McMurtry, 2001)

The Underground Professor has developed and tested a set of online exam control procedures that will severely reduce (although not totally eliminate) students' ability to cheat and

avoid detection. A review of exam scores and resulting grades indicates face validity of exam integrity and no grade inflation when using these control procedures. Our eight essential Online Exam Control Procedures (OECPs) follow.

OECP-1.

The first control procedure is to offer the online exam only at one set time. A team of conspiring test takers will not be able to collaborate and then sequentially take the exam. The difficulty with this procedure is all college courses will have some students who miss exams for valid reasons. Online courses with students located around the world in different time zones will have many more potential deviations from a single scheduled exam time. One control benefit to having geographically dispersed students (Europe, USA, Asia, and Latin America) is that they may be much less likely to conspire and cheat on online exams. It is difficult, but not impossible, for internationally dispersed students to form collusive groups for cheating purposes.

OECP-2.

The second control procedure is for the online exam to be computer accessible (open) only for a very brief period of time, perhaps a 15 minute window. If students have only 15 minutes to sign into the exam, then students taking the exam will be involved in answering questions instead of cheating. Students will have little overlap time for one student to finish the exam and then coach the other students.

OECP-3.

The third control procedure is that the sequence of exam questions should be randomized (Blackboard, Test Manager, set for Random ordering). Additionally, the answer choices for objective questions should be randomized. If students try to collaborate, then each student's questions #1, 2, 3 . . . and answer choices will have a different sequence. Random ordering of questions and answer choices (the Scramble option) complicates the cheating efforts of collusive group test takers.

OECP-4.

The fourth control procedure is that exam questions are presented only one at a time. Students can only work on one question until it is completed. Exams should be constructed so that students can only go forward from question to question without retracing. Students should not be allowed to return to previous questions. This control procedure prevents pairs of superior students from conspiring to cheat.

OECP-5.

The fifth control procedure is to design the online exam to occupy only the limited time allowed for the exam. The authors select test bank multiple-choice questions consisting of a mix of theory and problem type questions. After gaining Internet access to the exam, students have 90 minutes to complete 25 to 40 questions. The goal is for the "A" and "B" students to complete

the exam with only a few minutes to spare. The “C” and “D” students may or may not complete the exam. Students taking an open book exam have a trade-off dilemma to resolve. The students can verify a tough definition or find a difficult formula by referring to permitted reference materials (open book exam). However, they do not have time to learn the theory or to learn how to solve numerical problems.

OECP-6.

The sixth control procedure is a limitation that most online learning systems automatically incorporate, which is that a student can only access the exam one time. Instructors must deal with students’ excuses for being unable to submit their answers and requests to have the instructor reset the exam to retake mode so that authorized students can access the exam a second time. Some online professors have established a general rule of “No Exam Resets.” Students are advised (1) not to use a wireless Internet connection, (2) to take the exam in a library, computer lab, or testing center, and (3) not to save each answer individually before submitting the completed exam. If a thunderstorm, Blackboard outage, or some act of God occurs, then students are advised to contact Blackboard IT immediately for an analysis. If Blackboard IT confirms that the problem was not the student’s fault, then the exam can be reset.

OECP-7.

The seventh control procedure is to require students to use Blackboard’s Respondus Lockdown Browser (RLB) to access the online exam. RLB is a special Internet browser in which students are “locked” into the exam. They are unable to exit/return, cut/paste, or electronically manipulate the system. An advantage to the student is that RLB creates a more stable Blackboard platform, which is not likely to lock up or freeze students out when they submit their exam answers. Comparable lockdown browser features also are available in other computer learning systems, such as Sakai.

OECP-8.

The final online exam control procedure is that instructors should change at least one-third of multiple choice/objective questions on each exam every term. This rotation or modification of exam questions helps to reduce the value of “fraternity/sorority/library test files.” Using files of old exams gives some students an advantage not available to all students. Studying old exam files is usually not regarded as a dishonest activity. With OECP-8, instructors have the equivalent of a completely new exam every three terms.

Developing an online testing plan

By implementing the online exam control procedures discussed in this article, professors using online exams can construct a testing plan that does not require expending resources on proctor supervision. Such plans will not entirely eliminate exam cheating, but a good plan will provide reasonable assurance that academic integrity has been achieved at a satisfactory level. An online testing plan should consider using the following Online Exam Control Procedures (OECPs) as consistent with the online characteristics of the course to which they are applied.

I. Limiting exam time

OECP-1. An exam should be scheduled for a specific date and time.

OECP-5. The exam should close when the allotted time period for work expires.

II. Limiting student access

OECP-2. An exam should be open to Internet access for only a 15 minute time period.

OECP-4. Students can work only one question at a time and cannot access completed questions.

OECP-6. Students can access the online exam only one time.

OECP-7. Online exam access should use *Repondus Lockdown Browser* or its equivalent.

III. Changing test characteristics

OECP-3. An exam should randomize (scramble) question sequence and answer choices.

OECP-8. About one-third of objective type questions should be rotated/modified on each exam every term.

Verifying Student ID

The OECPs described above serve to thwart student cheating on online exams without the presence of a physical or electronic proctor. However, a proctor has two functions to thwart cheating, and to verify the identity of the student completing the exam.

Without using proctor supervision, the professor must devise some control procedure to assure the validity of the purported identity of a student who completes and submits online exams and other assignments. Student ID numbers and passwords are frequently used to satisfy this control objective. More elaborate identity tests are available using thumb print technology and cornea scans (Wisher, et. al., 2005). Control costs tend to be proportional to the sophistication of the technology used. How many controls are enough and what costs are warranted to achieve the control objectives for online testing depends on the individual circumstances.

Summary

We have enumerated eight *Online Exam Control Procedures* to prevent and detect cheating when professors use online exams without proctor supervision. These online control procedures can be applied in either traditional residency courses using online exams or in courses conducted entirely online. The recommended control procedures help thwart student fraud by increasing the difficulties of online exam cheating. This paper suggests that the benefits of proctor supervision for online exams are less than the total direct and indirect explicit costs of proctoring. Thus, sufficient academic integrity can normally be achieved for online college courses without using proctor supervision.

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