University online cheating - how to mitigate the damage

Mark Norris

ABSTRACT

The delivery of online university courses has continued to grow for more than a decade. New advances in technology have made the efficient delivery of courses possible, as well as increasing the collections of tools for students to cheat. Cheating results in the atrophy of the student's academic integrity, it has the potential to damage a university's reputation, it causes employers to lose faith in the competencies of graduates, and it wastes the large amounts of time and resources that have been devoted to the development of new knowledge and skills that are not subsequently obtained.

As new technological tools are introduced to improve the delivery of courses, there has been a similar increase in the proliferation of methods for students to cheat. This article examines the history and motivations for cheating and the proliferating number of entrepreneurs and products available to assist students in completing their courses in ways that compromise academic integrity. Solutions are examined that offer alternatives for developing and enforcing academic integrity policies and preventing the occurrence of online cheating.

Keywords: cheating, academic integrity, university, solutions
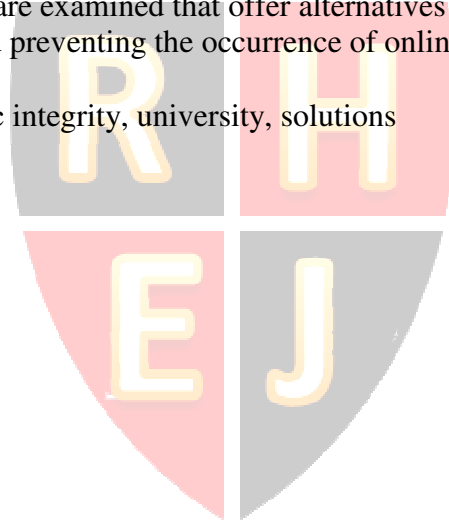
INTRODUCTION

This paper examines the scope and methods of University online cheating and explores options for protecting the integrity of online courses. A review of what encompasses online cheating, whether cheating is immoral and wrong, a survey of current methods used by students to cheat, and how universities can respond to cheating and mitigate its effects on learning effectiveness and university reputation is presented.

REVIEW OF CHEATING IN THE 21ST CENTURY

Definition of cheating

A literature review indicates that a universally-acceptable definition of academic dishonesty does not exist. Definitions vary from institution to institution, and from professor to professor. For example, a faculty member teaching an online course may assert that the use of any outside resources during an exam is cheating, while another faculty member may allow the use of outside resources. Professors may assume that students know the definition of cheating, while students may have derived their own definition, based upon their experience in other courses, upon interaction with their peers, or what they see on television or at a theatre (Marshall, 2017).

Hart (2014) included a definition of cheating in a template for a university online honor code. The student was required to pledge not to engage in plagiarism, unauthorized collusion, deception, or the use of unauthorized resources in online classes, in accordance with the definitions outlined in the student code of conduct. A pledge was required that work will be done independently, unless directed otherwise by the instructor, and that work will be original.

An example of a specific honor code from a southern Christian university described academic dishonesty as:
- unauthorized collaboration on any work for the course;
- using unauthorized aids of any kind;
- allowing another student to copy any portion of one's own work;
- viewing or copying the work of another student during an examination;
- receiving or providing information to another person during an examination, without the specific approval of the professor;
- stealing, buying, receiving, selling or transmitting coursework of any kind;
- submitting without permission of the previous and currently faculty members, any work that was previously submitted as part of an academic requirement for any course at any institution;
- taking the place of another student during an examination or allowing another student to take an examination or complete course work for another;
- sabotaging another student's academic work;
- soliciting another student to complete a course, an individual assignment, or an examination; and
- facilitating or helping other students to commit any act of academic dishonesty (Liberty, 2019).

Cizek (1999) defined cheating as an attempt, by deceptive or fraudulent means, to represent oneself as possessing knowledge. It is a violation of the rules associated with a test,

project or paper submission. When the guidelines for a submission are violated, it is cheating. Cheating occurs when the selfish desire for accomplishment outweighs a moral commitment to truthfulness and equality.

The proliferation of cheating

Technology has significantly changed online education by increasing access to many more potential students, enhancing communication and collaboration, and providing students with new ways to study, learn, and collaborate. Lieneck (2018) found that online and social media tools outside the scope of the online course site are used by 67% of students to help with their studies.

As the academic environments have changed with advances in technology, student's strategies and tactics for cheating have kept pace. Ghost-Students are hired to take a portion of a class or an entire class on behalf of another student. Smartphones, texts, videos, audios, and other Internet sources are used to improve assessment performance without authorization.

There are an increasing number of adjunct professors in higher education than ever before. This trend to hire adjuncts will continue because of the weak economic market that forces university administrators to avoid long-term employment commitments to faculty. Adjunct faculty often teach multiple courses at multiple institutions. They often do not have the time to commit to the detection of cheating and the enforcement of cheating policies. Full-time professors are more likely to detect cheating than adjunct professors. Adjunct professors are also less likely to implement measures to prevent cheating. Of the full-time faculty members surveyed, 68.5% were likely to detect cheating, while only 34.1% of adjunction faculty would do so. The online environment that is staffed by busy professors with multiple courses, allows for the proliferation of ghost-students (Hollis, 2018).

Mills (2010) examined students' attitudes about online cheating behaviors and practices, personality traits, program of study, GPA, year in school, extracurricular activities, personality traits, and attitudes toward cheating. He found that 70.4% of students across all studies admitted to cheating.

Another study concluded that nearly all students in high school and college are cheating. Accurate methods for estimating the extent of cheating have been successfully developed and tested. Nearly every research report on cheating finds that cheating is rampant and has remained consistently high across several decades (Cizek, 1999).

Motivations for cheating

Students, parents, employers, customers, patients, the government and others have a stake in students achieving new knowledge, skills and competencies. So what would motivate students to compromise those achievements because of cheating? Anderman and Murdock (2007) identified five basic motivations associated with a student's focus on obtaining acceptable grades:
1. Because they want to maintain a certain image of themselves, or the image they portray to their peers.
2. Because they have not developed the skills necessary to engage in complex academic tasks.

3. The student's definition of cheating and the psychological meaning that students assign to the academic task. If the task is viewed as unimportant, cheating occurs more often.
4. Because they lack confidence that they can master the subject or task.
5. Because they lack sufficient interest in the course material. Interest is influenced by factors such as relevance of information, teacher preparedness, study conditions, and the amount of time available to study.

The authors asserted that decisions to cheat may be psychological, and can be discouraged through the modification of curriculum and classroom task structure.

Better grades are not the only motivation for cheating. Some students cheat for the sole purpose of earning income. Many online sites compensate students for sharing information and for recruiting other students to their sites. A student once asked a professor not to post his PowerPoint slides online, so the student could post his material instead and have it more in-demand and receive greater financial remuneration for the content (Lieneck, 2018).

Consequences for cheating

Cheating can have a devastating effect on the operations, the reputation, and the survivability of a university. The Southern Association of Colleges and Schools (SACS) is one accreditation agency responsible for verifying that schools are not defrauding the public and students when they accept federal funds. The accreditation of a school is vital to the continued receipt of federal funds, to the recruitment of new students, and to the reputation of the university. SACS asserts they have seen enrollments decline when accreditation is compromised. "Parents are saying, 'If you can't be accredited, I don't want to send my child. I don't want to invest my money there.' It can have a devastating effect on the reputation of the institution (Dodd, 2018)."

SACS put the University of North Carolina on probation for alleged "non-compliance with the principle of . . . academic integrity." The probation was a result of an investigation into whether there was academic fraud committed in the University's athletic department. SACS wrote that UNC must provide "a coherent course of study and prove the school has appropriate administrative control over . . . athletics (Dodd, 2018)."

The probation resulted in the potential loss of federal funding for the University. The loss of accreditation would have made the school's degrees almost worthless. Accreditation is important to the government, to employers, to parents, and to students. Gerald Gurney, an Oklahoma assistant professor who specializes in college athletics reform said "students simply would not attend the university if it were not accredited. . . To be placed on probation is a very serious matter (Dodd, 2018)."

Cheating can result in compromises to the reputation of the university. Todd and Mancillas (1987) suggested that when academic institutions do not control cheating, the result is employers who are dissatisfied with the on-the-job performance of graduates. This dissatisfaction leads to a discounting of the perceived abilities of subsequent graduates from the institution.

Cheating violates the culture of universities, most moral codes, and the very fabric of society. Cheaters have compromised their education and skills as well as their integrity. They have the potential to attain important and authoritative positions in the general work force, in government, or in advanced training programs, while lacking the education and skills expected of a graduate (Lipson, 2016).

MODERN ONLINE CHEATING METHODS

The methods used by students to cheat on university online assignments are like snowflakes – there are an infinite number of possibilities. Purchasing completed papers, looking-up information on the Internet to obtain answers, texting/emailing/social media/collaboration with others to get answers, sharing test questions, using a paper for more than one class, submitting another student's paper, and contracting others to take a test or even the entire course are examples (Mills, 2010).

Students have obtained exam questions and answers before taking an exam and obtained publishers' test banks and related solutions manuals. Cheating is limited only by the imagination and collaboration methods employed by the students. New methods are added frequently (Cluskey, 2011).

In the USA Network television series "Suits," the character of Mike Ross has a photographic memory and rarely needs to put any effort into studying. He easily memorizes a university math test and earns money by selling the answers to students. A video illustrates how he earned money taking the LSAT for various students (https://www.youtube.com/watch?v=uq0VeO0ZcPo), having proven his ability by passing the exam himself (Ross, 2109).

In a real-world example of the university cheating phenomenon, students auction their work assignments to various individuals who bid for the right to complete assignments for compensation. The Bid4papers.com site boasts that it has 866 active writers with over 100,000 customer testimonials. The site asserts: "the platform creates a place where all people can exchange money for college papers and other assignments. After selecting the most attractive bidder, based upon their skills and the price, students follow the work and provide feedback to questions as needed."

The owners of the site justify their system as a method for students to obtain a non-prescriptive education; one that allows students to refuse any assignments they deem needless to their education goals. The Bid4papers.com site will. . . "help students evade the assignments they would otherwise simply decline under a non-prescriptive educational system. . . We empower you to choose your assignments but ask you to think about your self-education and lifelong learning more thoroughly in return."

The site tempts the student to "avoid" an assignment by having one of the site writers complete the work on the student's behalf. Essays generally sell for $19 to $25 per page, paid in installments as the writer progresses through the work. The paper is guaranteed to contain original content and is based on the instructions and criteria provided by the student (Fandom, 2019).

Another video illustrates an example of a typical "paper mill" operation. Moe's Coursework Completion Services (https://finance.yahoo.com/news/exclusive-paper-mill-owner-details-lucrative-academic-fraud-business-212740344.html) operates on Facebook. Moe's company grosses up to $21,000 per month writing assignments for students in high school through post-graduate institutions. The students provide Moe with assignment instructions, and Moe assigns the writing project to one of his five part-time writers. He asserts that most of his content comes from Google. He said that the papers are universally accepted by professors because: "Professors do not care. They are lazy. At the end of the day, people are always going

to find a way to cheat. No matter what the situation is, no matter what school you go to, students are always finding ways to get through the system" (Yahoo, 2018).

In an example of contract cheating where students use a third party to complete assignments on their behalf, Noneedtostudy.com boasts "We help clients by taking classes, writing essays, taking tests, doing quizzes, writing papers, doing discussion boards, taking My Math Lab classes and more on their behalf." Lee Wann posted a YouTube video (https://www.youtube.com/watch?v=tFwZlJtSicM) where she described her "good experience" with Noneedtostudy.com (YouTube, 2019). She said "the company got me all A's in my History of Civilization classes. They were highly recommended by my friends. Get a great grade at a great price!" The site brags there are teams of highly trained online tutors who are trained to provide services for all classes, even classes just introduced on a campus. The tutors are familiar with the various class-taking platforms like Blackboard, Canvas and others. The service was founded in 2009 and has helped over 11,000 clients by completing their online classes for them. Students have enrolled in courses with colleges such as Michigan State, University of Nevada, Arizona State, Duke University, University of California, Harvard, etc. . . . The service also offers students and professors an opportunity to earn money by marketing the site's services. Students are provided a website and an assistant. The student is tasked with introducing fellow students to the service. Income is earned on a fixed monthly basis or as a percentage-of-income model. Even professors are offered a powerful income stream or a very healthy passive revenue stream by working as a tutor, assisting with management of tutors, or working in the marketing department. The average charge for a research paper is $299.90 (No Need, 2019).

Students seeking to avoid detection while using contract cheating have solicited family members and peers to make arrangements with the services. They have also developed relationships with private tutors rather than using more widely known Internet services. Private tutors have offered their services on free sites like Craigslist.org (Lancaster, 2017).

Another online service, www.coursehero.com, encourages the proliferation of their services by empowering students to earn access to existing course resources by uploading additional study resources to the site. They can earn five "unlocks" for every 10 documents that they upload. The company offers jobs as Student Community Representatives, who host events on campus to promote coursehero.com. The $10 to $15 per hour compensation is based upon the completion of marketing initiatives and events that are completed (Lieneck, 2018).

Takemyonlineclassnow.com provides a broker service to assist students in finding, negotiating, and paying for a service to complete a class on behalf of the student. The service provides a money-back guarantee if a grade of A or B is not achieved. The student is led through a review of online dealers and can obtain pricing within 60 seconds. Providers identified on the website included Onlineclasshelp.com, Takeyourclass.com, Onlineclasshelpers.com, Coursehelp911.com, Professional essay, Boostmygrades.com, Mymathgenius.com, Helponlineclass.com, Noneedtostudy.com and Onlineclasstutors.com (TakeMyClass, 2019).

Lieneck (2018) found that some online sites offer effective student collaboration services that unfortunately, can also be abused as a resource for cheating. At www.quizlet.com and www.studyblue.com, students are able to create flashcards and quiz themselves on vocabulary, concepts, etc. . . . They can share their flashcards among other students, although there is no guarantee that the content is valid or accurate. An example of a student who abused the service by copying and pasting actual test questions to studyblue.com can be viewed at https://www.youtube.com/watch?v=zSCWCHF2GWc. Because an extensive collection of submitted questions has already been collected in the database, a student taking a quiz is able to

type his quiz question into the search function. Several similar questions are returned, along with the correct answers. A student asserted: "This is literally how I am doing every question on this test and I am getting 100% on every quiz I have taken so far by following this method." He confesses that he has no clue what the answer to the question should be, but that he is able to find the answer within seconds. He explained the process was not cheating because, "I really don't think it is (cheating) but obviously everyone has their own interpretation of that, so if you think it is cheating then I recommend not doing it. I am going to do it because I don't think it is cheating and because this is considered a very resourceful tactic. I actually already work in my field. I am going back to school after working in my field. I already work as a marketing manager at a company and I do interviews almost every day finding new employees and so forth. When I find an employee that is this resourceful, that is able to take something and go out and find a very effective solution like this, I would hire them on the spot. So I actually see it as a benefit. One of the things about life is finding resources and using the tools you have at your disposal that you can find, and finding a better way to do something. That's what will make you successful . . . this is just an extension of the resources that they (professors) expected me to have."

Quizlet.com was at the center of a 2018 cheating incident at Texas Christian University, where twelve students were suspended for allegedly using Quizlet to cheat on their exams. Cheating students misuse Quizlet by accessing multiple browser windows during an online test and accessing test answers or studying questions that they believe are on the test. It is possible to find exam questions by searching for course names, course numbers, and institution name within the application. Frequent Twitter comments could be seen during the 2018 graduation period, of students bragging of their use of Quizlet. "Today I graduated, and I couldn't have done it without God and Quizlet." "Shout-out to Quizlet for making this possible," was posted above a picture of a student in their graduation cap and gown (McKenzie, 2018).

Course Hero is another service where students can enter a college name and course number to discover previous exams, quizzes, and research papers from prior semesters. Some students have found blocks of code that could be used to complete their computer science projects, which could be easily cut and pasted. Professors who neglect to change their questions from semester to semester, provide students an easily accessed source for passing exams without the requisite work, understanding, and mastery expected of a graduate (Foderaro, 2009).

James Bond had a repertoire of cool spy toys produced by the British government. Similar gadgets are currently available for motivated students willing to spend the funds to purchase them. The smartwatch for example, allows students to collaborate or access stored resources. A Croatian company (24Kupi) advertises their smartwatch as:
 ". . . a cheating watch for cheating in exams. Nothing appears to be on the screen, but content can be seen when the included eye glasses are worn." 24Kupi also advertises magic calculators, UV Pens that write in invisible ink, and mini-wireless air pieces that ". . . allow for the playing of pre-recorded notes from a separate hidden GSM loop and SIM card" (YouTube, 2019).

Massive open online courses (MOOCs) have been widely used for asynchronous education programs. A strategy was recently discovered, where solutions to MOOC course examination solutions were harvested using "Copying Answers Using Multiple Existences Online" (CAMEO). The harvested answers are submitted using a "master" account, allowing cheaters to obtain completion certificates within seconds. Researchers found 657 unique students who had earned 20 or more certificates at Harvard University and MIT using the CAMEO strategy (Northcutt, 2016).

The proliferation of cheating has not been limited to students. Discoveries of cheating among university staff have been documented. In 2009, several employees at Touro College in New York changed grades and sold degrees after receiving bribes of hundreds or thousands of dollars. Similar occurrences were reported at Diablo Valley Community College, where grades were changed from "F" to "A" for a bribe of $600. At the United States Naval Academy, over 100 midshipmen purchased for $50 each, answers to an unreleased electrical engineering examination (Lipson, 2016).

MITIGATING THE DAMAGE OF CHEATING

Introduction

Universities have a legal obligation to enforce academic integrity. A 2008 modification of the Higher Education Act of 1965 mandates that accrediting agencies enforce the existence of "processes through which the institution establishes that the student who registers in a distance education or correspondence education course or program is the same student who participates in and completes the program and receives the academic credit." SACS and several other regional accrediting agencies have added requirements for schools to provide evidence of student verification instruments for online learning (Hart, 2014). The SACS Resource Manual for the Principles of Accreditation requires: "at the time of review by the Commission, the institution demonstrates that the student who registers in a distance or correspondence education course or program is the same student who participates in and completes the course or program and receives the credit by verifying the identity of a student who participates in class or coursework by using, at the option of the institution, methods such as (1) a secure login and pass code, (2) proctored examinations, and (3) new or other technologies and practices that are effective in verifying student identification" (SACS, 2012).

The Higher Education Opportunity Act (2008) stipulates that the requirements of the Act are met if the institution:

(1) Verifies the identity of a student who participates in class or coursework by using such methods as:
   a. A secure login and pass code, randomly generated personal questions, or proctored examinations; and
   b. New identification technologies as they become widely accepted; and
(2) Makes clear that institutions should not use or rely on technologies that interfere with student privacy (Higher Education Opportunity Act, 2008).

The two broad approaches to university online integrity are prevention and enforcement. Prevention strategies are designed to inhibit misconduct from occurring. The use of honor codes and authenticity statements can require that students confirm understanding and commitment to the institutional values on academic integrity and morality. Reminders can be included in individual courses and assignments.

The enforcement of academic integrity starts with a first line of defense known as authentication. Authentication typically includes user id's and passwords but is ineffective in addressing the proliferation of collusion and impersonation rampant in online courses. More complex alternatives will be discussed such as biometric (fingerprints, face, iris, voice, signature, and keystroke) authentication methods. Proctoring is growing in popularity as an alternative enforcement method, but is generally considered too invasive, too inflexible, and too expensive

for the online universities and their students who have a wide variety of time constraints, such as military students, work-at-home parents, shift workers, and others (Lee-Post, 2017).

Authentication

The never-ending struggle between students searching for methods of cheating and administrators searching to develop preventative solutions, will likely require steadfastness and demand the continuous expenditure of capital. Human-proctored examination for example, is a time-intensive, tedious, inflexible, inconvenient, expensive, and yet effective solution for preventing academic dishonesty.   It has been widely implemented by governments and certifying organizations because of its reliability and effectiveness.

Automated video proctoring has been implemented at the University of Amsterdam. The university has developed a system that records the student's video screen and surrounding environment while taking an exam. A human proctor later views the recording, flagging and reporting any unauthorized actions. University staff have described the process as tedious and time consuming. The next step in the maturation of the process will be to examine the videos with automated video analysis methods. They hope to develop an automated system that can detect instances of academic dishonesty and significantly reduce or eliminate the need for a human proctor. The automated system will detect changes in screen content caused by switching applications. Training a machine learning algorithm to detect additional undesirable actions would be the final and continuing step of the process. The goal is to implement an automated system that does widespread reviews of the exam environments, provides reports, and alerts for human interaction based upon the occurrence of a defined probability of dishonest behavior (Migut, 2018).

Matthew (2018) recorded a pending patent in August 2018 for the ProctorU online automated online exam proctoring system. The owner asserts that his system will check a test-taker's computing device for content that provides unauthorized aid to the student during an exam. The system records the student and the surrounding environment for unauthorized devices. It validates the identity of the student through challenge questions, voice biometrics and keystroke biometrics. It also records the student's audio or video and desktop-feed and detects when the student exhibits questionable behavior. ProctorU describes their system as a fully-automated proctoring platform with AI-based machine learning behavior analysis used to flag suspicious events. Exam sessions can be watched by test administrators in real-time if desired. All sessions are recorded end-to-end for review by a ProctorU or a test administrator.

Verificient Technology's "Proctortrack" has had a patient since 2015 as a "completely automated online exam proctoring" product. The product is offered to the online education market as a solution that prevents the student from compromising online examinations by substituting another test taker during the examination. The technology incorporates facial recognition, body movements, audio monitoring, and monitoring of the computer activity (Lipson, 2016).

BioSig-ID offers a biometric password that must be manually drawn. Their system authenticates users by capturing unique movements or gestures. The software measures the unique way every user moves their mouse, finger or stylus when they log in. It is claimed that the system is 99.97% successful in protecting against imposters. In 10,000 test attempts, no users were successful in getting past the BioSig-ID, even when provided with the password (BioMetric, 2018).

There has been growing interest in the area of continuous authentication. Strategies used by students have included the sharing of credentials with others users, who then take tests on their behalf. To detect fraud, continuous authentication employs the nonstop verification of student identity during an online session, using a multi-modal biometric framework. The framework includes facial recognition, mouse movement dynamics, and keystroke dynamics. Plurilock Security Solutions Inc.'s ExamShield provides a web portal that can be deployed at the university or in the Cloud at a cost of $9 per student. The ExamShield architecture includes three major services:

1. Exam Management – Question randomization, management of navigation within exam sections, and exam policy enforcement.
2. Environment Monitoring – Video and audio monitoring of the exam environment using an ordinary digital camera and microphone.
3. Continuous Authentication – Uses mouse movements, keystroke dynamics and facial scans to continuously validate the user. The system is reported to be between 91.32% and 94.71% accurate (Treore', 2017).

Predictive analytics

Predictive analytics have been offered as a response to the academic integrity stipulations of the Higher Education Opportunity Act of 2008. Authentication solutions such as user IDs, passwords, security questions, fingerprint identification, voice recognition, and iris scanning likely violate students' required right to privacy and cause excessive interruptions to students serving in the military, working multiple jobs, and/or managing a household. Predictive analytics systems mine data as students interact with the virtual learning environment. Data is collected on the student's location, access patterns, learning progress, device characteristics, and performance. The systems can produce information about a student's unusual or suspicious activities, including those who did not do their coursework yet have a passing score on an exam. The extraction of the information from the data helps to predict trends and patterns of student behavior (Lee-Post, 2017).

Search and remove

University faculty should know their university's policy for student use of online shared resources. Ongoing efforts to combat external postings by students would likely be too time consuming and costly to be effectively administered by university administrative staff. The faculty should be expected to enforce the policies through periodic investigation of online resources known for use in cheating. The Professor for each course should conduct periodic investigations of online resources known for use in cheating. A recommended review process includes:

- Initial Search – Conduct an initial search of various web sites (coursehero.com, quizlet.com, studyblue.com, etc.…)
    a. Search for the institution name, program of student, course identifier, and/or professor's last name.
    b. Submit content-takedown requests to the web service provider for any discovered content that compromises the exams of current courses.

- Maintenance – Setup an Alert in Google/Alerts to detect any new entries during the semester, using the same keywords identified above. Repeat the content takedown step (Lieneck, 2018).

Anti-plagiarism tools

The use of anti-plagiarism software by university faculty has increased year by year. Documents submitted to the software are electronically compared with billions of resources and the work of other students that have been previously submitted. The software generates a similarity report where the higher the percentage, the higher the probability of the student's work matching the work of others. Turnitin and SafeAssign are examples of anti-plagiarism software widely used around the world. Kotelawala (2018) found a positive impact on academic integrity and honesty among university students whose work is submitted to the software. The instances of student writing similarities decreased after the introduction of the software (Ranawella, 2018).

A minority of students are likely to always attempt shortcuts no matter what the professor or university does. Because discussion boards do not always receive as much scrutiny as papers and examinations, they are often targeted by the intentional plagiarist. One popular method is to visit a discussion board, cherry-pick ideas from other students, then throw together a summary and submit it as original content.

The Professor's actions to discourage discussion board plagiarism should include:

- LMS Controls – Protect students from plagiarism by checking the setting that requires students to write an initial post before they can see what other students have written.

- Deletion of Posts - Change the course settings to keep students from deleting their posts. This will prevent students from posting nonsense posts or posts with content as little as a "period," in order to see what other students and the professor had posted, delete their original posts, and then submit the plagiarized post. If a student attempts this action, everyone sees the blank post or nonsense post, and the professor sends them a message of their violation. This will help to improve intra-class academic honesty on the discussion board.

- Plagiarism Checker – Enable the functionality for Turnitin and/or SafeAssign for Discussion Posts.

- Student Feedback – Inform the student of a plagiarism allegation on the feedback provided for the assignment. Send an Email that specifies the nature of and evidence for the allegation of academic dishonesty.

  i. If the plagiarism was unintentional, the Professor may dialogue with the student about the circumstances and contributing factors. Upon clarifying the situation, use good judgment in assigning a grade.
  ii. If the dishonesty was blatant and/or intentional, discuss the situation with the Instructional Mentor (IM) immediately and outline the situation in an Email. Possible sanctions include assignment of a "0" for the assignment and "F" in the course in which the academic dishonesty occurred.

      iii. Report any academic honor code violations. Every incidence of plagiarism needs to be reported and shared with University administrators and faculty. This helps to prevent would-be "repeat offenders" from asserting ignorance of plagiarism in different classes or with different faculty.

Development of Comprehensive Test Question Banks

While a typical course examination may contain from 25 to 50 questions, the database from which those questions are derived, should contain hundreds or thousands of questions. The Question Database should be a comprehensive collection of questions that comes as close as possible to testing every significant element of the topic being tested. The examination presented to each student should contain a randomized collection of questions from the database, making it highly unlikely any students will receive the same version of the examination. A student who posts a small subset of questions on an Internet "cheating" site would provide very little benefit to other students.

As each student in a course accesses an assigned examination, the LMS would construct a unique examination from the question database and should also randomize the order of any multiple-choice answers. No two students will receive an identical examination, including any students who are granted permission to take late exams because of health or other issues. "When creating a test, you can use Random Blocks, to ensure that each student receives a different version of the test.   The "Random Block" feature in Blackboard, is a set of questions retrieved at random from one or more question pools, to be presented each time the test is taken.   Each student receives a different version of the test. Since Random Blocks draws questions from pools only, the SME must create at least one question pool. The SME or Professor chooses the number of questions to show from the random block. For example, 50 questions out of 1,000 can be presented. The questions are then randomly distributed, so each student sees a different set of 50 questions" (Blackboard, 2014).

Supervision and Enforcement

Instructor Mentors (IM's) should be assigned a team of adjunct faculty and assist them in ensuring that academic standards are met. They would also serve as a resource guide for all administrative requirements. They would work as a liaison between the Department Chair and a cohort of up to 20 faculty members, providing support, direction, evaluation, and supervision. The IM's would confirm with their cohorts, compliance with the process of monitoring of online cheating resources, discussion board plagiarism prevention, and development of test question banks for each course.

Information Services

The University's information services department, in partnership with Blackboard, Canvas, Moodle and other LMS manufacturers, should support the current technology, and continue to develop and improve new technologies to effectively prevent academic dishonesty.

Arriving at a conclusion that a student has cheated is almost always probabilistic and subject to error. Human observers making inferences that cheating has occurred from the behavior of the test taker or physical evidence has been found to be unreliable. The use of statistical models to evaluate whether a student has cheated are woefully inadequate. The more

reliable method for enhancing academic integrity is to work toward the prevention of cheating (Cizek, 1999).

The following solutions are designed to help institutions comply with the stipulations of the Higher Education Opportunity Act of 2008 and are selected for their ability to keep the online delivery of courses convenient and flexible for the students and affordable for the institutions who employ them.

PREVENTION

James E. Faust (1996), a clergyman from Utah wrote "However, the tremendous push to excel in secular learning sometimes tempts people to compromise that which is more important – their honesty and integrity. Cheating in school is a form of self-deception. We go to school to learn. We cheat ourselves when we coast on the efforts and scholarship of someone else."

A strategy of technological enforcement against academic dishonesty in online education is invasive and expensive. It generally places high demands of opportunity cost in time and resources on institutions, and on students who are already sacrificing much in their time to obtain an education. Each technological solution, as it is developed and implemented by IT professionals and university staff, will continue to exert a perpetual drain of university resources and will continue to be defeated by students and the growing number of the entrepreneurs-of-cheating. The loss of flexibility of a homemaker/student to work on a course at any hour of the day or night, or the ability of a deployed soldier to take a test between assignments, interfere with the essential elements of an online university's business plan for success. Instead of relying upon detection and enforcement, a strategy of prevention that emphasizes moral behavior, effective communication with professors, and the establishment of an online community and peer pressure, have the potential to be more effective and produce superior results. Reminding the student of their moral and academic responsibility to learn and accept accountability for the results, holds the potential for being more cost efficient and more effective in engendering competent and skilled graduates.

A literature search for the past decade supports the assertion that most students have cheated. Mills (2010) examined the reasons that students reported for NOT cheating. Students reported reasons such as:
1. Learn: There is no reason to cheat. I am here to learn.
2. Finances: I am paying to obtain knowledge and skills.
3. Morality: Religion/personal/moral beliefs
4. Legalism: It is against the rules.
5. Fear: The consequences are severe.

Mills (2010) recommended a strategy to achieve academic integrity that emphasizes working with students to eliminate any confusion about what constitutes cheating, and helping to eradicate the drive to cheat. He found that honor codes, honesty statements, and other policies to curb students' urges to engage in academic honesty were effective. Policies against cheating deterred students from dishonest behavior. An educational statement about plagiarism, honor codes, and professor endorsement can help to deter cheating behaviors. The perception of peers' behavior made the most significant contribution toward the frequency of cheating behaviors. Being aware that others were cheating in a class, increased the likelihood of a student cheating in the same class.

Lieneck and Esparza (2018) offered an interim solution for preventing cheating. They suggested that all course sites have an open-access folder for students to utilize and post resources to share with each other. The folder is copied between semesters by the professor, so the resources can continue to grow from prior contributions. This strategy was implemented to discourage the use of external Web sites that have commercialized notetaking and resource sharing at students' expense. The comprehensive question banks provide a resource for studying/memorizing, and reducing any incentive to search various outside Internet sites. While the shared site offers resources for studying, the method for conducting evaluations from semester to semester are changed frequently. The same multiple-choice questions/short-answer/essay questions are never repeated.

Course and assessment design can be modified to prevent academic dishonesty.   The online students' sense of isolation can be reduced by creating a more personal experience and feelings of "social presence." Student/professor interaction can be facilitated by:

1. Well-designed discussion assignments
2. Assignment designs that require students to work together and coordinate among themselves
3. The design of open-book assignments that effectively evaluate the student's master of a subject
4. Assignment of assessments or projects that require creativity or rely upon personal life experiences
5. The regular modification of assignments to discourage shared papers and work
6. Creation of structured timelines for assessments, including drafts of papers and required submission of photocopies of sources, so the professor can follow the work in progress
7. Short and frequent exams embedded in class exercises, making it more difficult for students to solicit assistance at all times
8. Engineering different questions to different students from a large set of questions that are randomly selected from a database
9. Limiting the time available for completing the examination (Hart, 2014)

McCabe (2009) asserted that the effective communication of the importance of academic integrity within the online classroom environment is a proven strategy for reducing student misconduct. He said that schools have achieved success by concentrating on the learning environment and culture, rather than the phenomenon of cheating itself. The steps to creating a culture of academic integrity are:

1. Develop and communicate standards to the entire academic community.
2. Create a process for handling violations of the standards.
3. Obtaining commitment from the school administration and professors to enforce the standards.
4. Emphasize the promotion of a culture of academic integrity rather than emphasizing the enforcement of rules.
5. Encourage positive peer communication related to cheating. Students are more concerned with what they hear from their peers, than what their parents or professors have to say.

Many universities have formal reporting procedures for violations of the cheating policy. Instructors and staff members are responsible for confronting students within a reasonable period of becoming aware of acts of academic misconduct. A report is submitted, and academic

sanctions are imposed based upon a standardized rubric. The process should include a database of all reported acts for all students, so patterns of misconduct can be easily determined by current and future professors (Division of Student Affairs, 2019).

An Academic Integrity Policy can be used to define an institution's cheating policy. The policy should be clearly written, provide opportunities for open discussion and dialogue, include a reporting process for violations, include equitable adjudication procedures, result in consistently applied judgements and actions, and be reinforced by the ethical behavior demonstrated by staff and professors (Cizek, 1999).

A prominent university in Virginia with a large online student population has published an honor code that is binding on all online students. The code includes a section on academic dishonesty that the University defines as a student's use of dishonest means to improve one's academic standing. The code provides examples of dishonesty including:

- unauthorized collaboration on any work for a course
- using unauthorized aids
- allowing the copying of one's own work
- copying or viewing another student's work during an examination
- collaborating during an examination/assignment
- stealing, buying, receiving, selling or transmitting coursework of any kind
- submitting work previously used to fulfill academic requirements for any course at any institution at any level
- taking another student's place during an examination or completion of course work
- sabotaging another student's work
- soliciting another student to complete another's assignment or examination
- plagiarism
- falsification
- facilitating or aiding another student in any act of academic dishonesty (Fox8, 2018).

Publications that are highly accessed by students, especially course syllabi, instructor video introductions, and introductory statements on the testing material have been found to be somewhat effective in promoting a culture of academic integrity. Syllabi however, have not been successful in increasing awareness of student awareness or comprehension of those academic integrity policies. Ellis (2016) introduced an Academic Integrity Tutorial for students. The tutorial engages the students in collaborative activities at the beginning of a course, helping them to acquire understanding of the institution and course culture related to academic dishonesty, and promoting the rejection of academically dishonest behavior. The tutorial emphasizes the importance of academic honesty and the consequences of committing dishonest actions. After completing the tutorial, the students' comprehension of the definition of academic integrity increased from 19% to 94%.

CONCLUSION

The enormous drive to complete courses and obtain a degree, and the wide availability of opportunities to cheat, provide a persistent temptation for students to compromise their academic integrity and accept another's work as their own. The result is the deceiving of themselves, their professors, their family and their employers, when the students accept another's efforts and scholarship as their own.   The opportunities and empowering technologies for cheating are numerous. This article has reviewed a diverse selection of tools that have been developed to

discourage cheating, encourage academic integrity, and enforce the processes that result in new competencies, knowledge, and skills.

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APPENDIX A: SAMPLE STANDARD OPERATING PROCEDURE (SOP)

This Standard Operating Procedure is designed to be a quick reference for faculty, staff, and Information Services. It contains information on processes for reducing the risk of cheating on course quizzes, tests, and discussion boards.

VISION

New advances in technology have made the efficient delivery of courses possible. That same technology has also increased the available resources used by students to cheat. Cheating results in the atrophy of the students' academic integrity, it has the potential to harm the University's reputation, it causes employers to lose faith in the competencies of graduates, and it wastes the large expenditure of time and resources that have been devoted to empowering the successful accomplishment of academic goals. This SOP outlines action items for encouraging academic integrity and minimizing the occurrence of online cheating.

UNIVERSITY FACULTY RESPONSIBILITIES

Monitoring of Online Resources

University faculty should know their university's policy for student use of online shared resources. Ongoing efforts to combat external postings by students for individual courses is the responsibility of the Professor assigned to each course. The Professor should conduct periodic investigations of online resources known for use in cheating. A recommended review process includes:

- Initial Search – Conduct an initial search of various web sites (coursehero.com, quizlet.com, studyblue.com, etc.…)
    a. Search for the institution name, program of student, course identifier, and/or professor's last name.
    b. Submit content-takedown requests to the web service provider for any discovered content that compromises the exams of current courses.
- Maintenance – Setup an Alert in Google/Alerts to detect any new entries during the semester, using the same keywords identified above. Repeat the content takedown step.
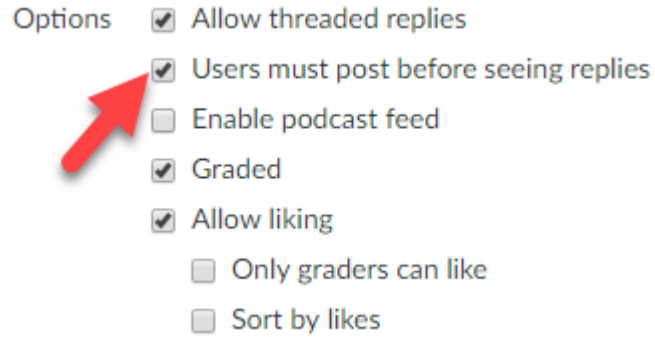
Discussion Board Plagiarism

A minority of students are likely to always attempt shortcuts no matter what the professor or university does. Because discussion boards do not always receive as much scrutiny as papers and examinations, they are often targeted by the intentional plagiarist. One popular method is to visit a discussion board, cherry-pick ideas from other students, then throw together a summary and submit it as original content.

The Professor's actions to discourage discussion board plagiarism includes:

- LMS Controls – Protect students from plagiarism by checking the setting that requires students to write an initial post before they can see what other students have written.

- Deletion of Posts - Change the course settings to keep students from deleting their posts. This will prevent students from posting nonsense posts or posts with content as little as a "period," in order to see what other students and the professor had posted, delete their original posts, and then submit the plagiarized post. If a student attempts this action, everyone sees the blank post or nonsense post, and the professor sends them a message of their violation. This will help to improve intra-class academic honesty on the discussion board.

- Plagiarism Checker – Enable the functionality for Turnitin and/or SafeAssign for Discussion Posts.

- Student Feedback – Inform the student of a plagiarism allegation on the feedback provided for the assignment. Send an Email that specifies the nature off and evidence for the allegation of academic dishonesty.

    i. If the plagiarism was unintentional, the Professor may dialogue with the student about the circumstances and contributing factors. Upon clarifying the situation, use good judgment in assigning a grade.
    ii. If the dishonesty was blatant and/or intentional, discuss the situation with the Instructional Mentor (IM) immediately and outline the situation in an Email. Possible sanctions include assignment of a "0" for the assignment and "F" in the course in which the academic dishonesty occurred.
    iii. Report any academic honor code violations on the Course Tools/LU Incident Report dropdown tab/link in Blackboard. Every incidence of plagiarism needs to be submitted via the online form found in the LU Incident Report link as described above. This helps to prevent would-be "repeat offenders" from asserting ignorance of plagiarism in different classes or with different faculty.

UNIVERSITY SUBJECT MATTER EXPERT (SME) RESPONSIBILITIES
Development of Comprehensive Test Question Banks

While a typical course examination may contain from 25 to 50 questions, the database from which those questions are derived, should contain hundreds or thousands of questions. The Question Database will be a comprehensive collection of questions that comes as close as possible to testing every significant element of the topic being tested. The examination presented to each student will contain a randomized collection of questions from the database, making it highly unlikely any students will receive the same version of the examination. A student who posts a small subset of questions on an Internet "cheating" site would provide very little benefit to other students.

As each student in a course accesses an assigned examination, Blackboard will construct a unique examination from the question database and will also randomize the order of any multiple-choice answers. No two students will receive an identical examination, including any students who are granted permission to take late exams because of health or other issues. "When creating a test, you can use Random Blocks, to ensure that each student receives a different version of the test.   The "Random Block" feature in Blackboard, is a set of questions retrieved at random from one or more question pools, to be presented each time the test is taken. Each student receives a different version of the test. Since Random Blocks draws questions from pools only, the SME must create at least one question pool. The SME or Professor chooses the number of questions to show from the random block. For example, 50 questions out of 1,000 might be selected for visibility. The questions are then randomly distributed, so each student sees a different set of 50 questions" (Blackboard, 2014).

INSTRUCTOR MENTOR RESPONSIBILITIES
Supervision and enforcement

Instructor Mentors (IM's) are assigned a team of adjunct faculty and assists them in ensuring that academic standards are met. They also serve as a resource guide for all administrative requirements. They work as a liaison between the Department Chair and a cohort of up to 20 LU faculty members, providing support, direction, evaluation, and supervision. The IM's will confirm with their cohorts, compliance with the process of monitoring of online cheating resources, discussion board plagiarism prevention, and development of test question banks for each course.

INFORMATION SERVICES

Information Services, in partnership with Blackboard, Canvas, Moodle and other manufacturers, will support the current technology, and continue to develop and improve new technologies to effectively prevent academic dishonesty.