New, multi-faceted hybrid approaches to ensuring academic integrity

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ABSTRACT

Over the past several decades a large body of research has focused on assessing the extent of cheating in academic institutions nationwide, the reasons that drive students to cheat, factors that influence and possibly predict such behavior, and best practices for ensuring the academic integrity of educational programs. These studies suggest that the problem is significant in most educational institutions and may be spreading at alarming rates throughout all levels of education and onto students' later professional lives. Such unethical behavior is difficult to correlate with specific associative variables and may be societal in scope. Much of this research has been conducted on traditional in-class courses and programs; less work has been conducted on those taught in the rapidly-growing, non-traditional online environment. Although some academics suspect that online offerings may be more prone to dishonest practices there is little research to support that suspicion. The paper includes summaries of results from comparative surveys of Troy University instructors, students and select Florida businesses taken in 2007. This research strives to provide insights into nature and magnitude of academic dishonesty, with initial focus on Troy University's multi-faceted, hybrid strategies and approaches found in the literature for mitigating the problem. Its goal is to identify appropriate tools, policies, procedures and best practices for controlling the problem and establishing an effective climate of honesty.

Keywords: Academic Integrity, Ethics, Business Education

INTRODUCTION

The premise of this paper is that violation of academic integrity, i.e. cheating in one form or another, is a large and growing problem in most universities nationwide. This research is intended to examine the nature and extent of the problem and to identify tools, policies and procedures to minimize them. The paper begins with an updated review of the literature on the extent and causes of the problem and presents results from the surveys taken to date on both traditional and non-traditional educational programs, discusses multi-faceted approaches to dealing with key issues, and concludes with a discussion of the major findings and the directions of future research.

The necessity and mechanisms for maintaining integrity in the academic environment have intrigued educators and researchers for many decades. Despite the enormous expenditures of time, energy and money academic institutions have committed to develop effective methods to ensure academic integrity, dishonest practices continue and many believe they are growing at epidemic rates. Startling statistics from the Educational Testing Center (n.d.) show that cheating among high-school and college students has risen dramatically over the past 50 years. For example, the results of the 29th *Who's Who Among American High School Students Poll* of 3,123 high-achieving 16- to 18-year olds (those with A or B averages who plan to attend college after graduation) were released in November, 1998. Among the findings:

- 80% of the country's best students cheated to get to the top of their class.
- More than half the students surveyed said that they do not think cheating is a big deal.
- 40% cheated on a quiz or a test; 67% copied someone else's homework
- 95% of cheaters say they were not caught.

For educators the magnitudes of these numbers are chilly reminders that their responsibility to provide the best environment for learning is becoming increasingly complex and must now include concerted efforts to ensure academic integrity. Experiences at Troy University suggest that, although the magnitudes of the rates of cheating may be different, the trends may be similar (Kitahara and Westfall, 2006, 2008). These trends have prompted the university to refine its multi-faceted approach to maintaining academic integrity with new, state-of-the-art hardware and software technologies and support systems (Kitahara and Westfall, 2007, 2009). The burden of creating the proper culture of honesty must be shared by all stakeholders in the academic process, including the instructors, many of whom retain the conventional view that their responsibility is limited to conveying the course material to the students.

EXTENT OF ACADEMIC DISHONESTY AND ATTITUDES OF STAKEHOLDERS

There seems to be little controversy over the fact that the problem of academic dishonesty is prevalent in most institutions and is significant on a global scale. Furthermore the current literature leads one to believe the problem is growing at alarming rates. In a recent review of the literature Ercegovac (2004) found that:

- 58.3 percent of high school students let someone else copy their work in 1969
- 97.5 percent did so in 1989 and the percentage of students who report ever using a cheat sheet doubled from 34 to 68 percent
- A massive study of high achievers conducted by “Who’s Who among High School Students” in 1993 that found that “nearly 80% admitted to some form of dishonesty

- Surveys of 422 college students at a mid-sized four-year public university, 91.7 percent reported they had engaged in at least one type of academic misconduct during the surveyed year
- Virginia Polytechnic Institute reported that various forms of academic cheating have more than tripled, from 80 in 1995/96 to 280 in 1997/98
- ETS studies (n.d.) further revealed several compelling indicators. The general perception is that cheating is widespread. Students believe that cheating is more prevalent and accepted today. They see it in every facet of life: politics, business, home, and school
- The perception is also that cheating is changing
- Collaborative academic (team) environments like the Internet are making the definition of cheating even murkier
- Many who have engaged in cheating cite the following as rationales:
    - It's a victimless crime
    - It's o.k. if you don't get caught
    - It has it's own language (using shortcuts, whatever it takes, everybody does it, part of life)
    - It makes up for unfair tests or lack of opportunity
- 73% of all test takers, including prospective graduate students and teachers agree that most students do cheat at some point; 86% of high school students agreed

As data storage, access, distribution and communication technologies have advanced, so too has the sophistication of the methods by which offending students practice their deceptions (Conradson & Hernandez-Ramos 2004, Argetsinger, 2003). Kitahara and Westfall (2008) surveyed University students and faculty as well as target business in Florida to assess the attitudes of these populations towards various elements related to academic integrity. The surveys revealed most of the students surveyed agreed that practices such as; copying other students' work or exams, using Internet resources without acknowledging sources, using unapproved materials (such as publisher test banks) on exams, and collusion with other students constituted cheating with few exceptions. Somewhat surprisingly, perhaps, the number who felt these practices were not cheating was non-zero. These practices included:

- Materials (e.g. from internet) without acknowledging sources (11%)
- Files on previous exams not approved for release by the instructors (8%)
- Using publisher test banks on exams irrespective of how they were obtained (15%)

Overall 15-25% admitted cheating in one form or another, 20% were aware of other students cheating and 12-15% had not read University's Standards of Conduct and were unaware of the Student Honor Code

With regard to faculty, Ercegovac's (2004) literature review indicated that faculty members; generally do not perceive academic dishonesty to be a serious problem, believed themselves to be familiar with current policy and procedure, were unconcerned with policy implementation, and of the faculty surveyed, 86% have suspected and 65% have been certain of academic dishonesty in their classrooms. Most of the surveyed members did not regularly follow institutional policy but instead handled incidents of cheating and plagiarism on an individual basis. On the other hand the surveys by Kitahara and Westfall (2008) indicated that:

- The majority of Troy instructors (67%) believe there is a cheating "problem" on campus. A slightly smaller number (59%) believe they have a problem in their own classes.
- The experiences appear to be similar for both in-class and online delivery.
- 19% believe, without direct evidence, that the problem is "worse" for online courses.
- 16% reported that they ignored observed instances of cheating. 10% ignored the cases because of lack of definitive proof, 5% felt they had insufficient support from administration and less than 1% rationalized the student was failing anyway.
- In dealing with cases of cheating, 25% experienced "harassment" by students and 10% received threats of personal lawsuits.
- 51% rated the personal cost expressed as man hours committed to the effort to them of resolving these instances of cheating as low (1-2) on a scale of 1-5; 22% regarded the personal cost to them as high (4-5 rating).
- In the end 18% reported that based upon their experiences they would not prosecute cases of cheating in the future, citing the high costs (time and effort) of such efforts.

With respect to employer attitudes Kitahara and Westfall (2008) found that not all employers regarded the specified practices as cheating. The practices not considered to be dishonest included; materials (e.g. from the internet) without citing sources (7%), files of past exams (7%), and publishers' test banks on exams (14%). However the vast majority (86%) would not hire any applicant known to have cheated. 79% believe academic cheating was likely a good predictor of similar behavior on job. All of those polled observed dishonest behavior in their workplace. The polled employers unanimously believed that the consequences for cheating should be severe, up to and including dismissal.

Observations common to all three populations included; the problem was significant both in-class & on-line, cannot be stopped but must be addressed, was societal in scope, stiff penalties were critical for deterrence, and in the long term a culture of honesty must be established. The current literature suggests that academia is facing difficult battles on new and challenging technological and ethical fronts. Dishonest students possess new high-tech tools and resources to obtain an unethical edge, making the job of university, instructors, system designers, publisher much more difficult. Is the new ethic reflective of an overly permissive society? It certainly is indicative of a lost sense of accountability whereby students who are caught cheating; blame everything and everyone other than themselves, are more apt to threaten lawsuits with the belief that the university will ultimately back down. Clearly these factors imply that it will require more thought, time and energy to maintain academic integrity in today's academic environment.

WHY DO STUDEDNTS CHEAT?

Research on identifying causal factors (personal, social, demographic, and institutional) continues but thus far has produced mixed and sometimes conflicting results. Donald L. McCabe and Linda Klebe Trevino (1997) found that "peer-related contextual factors" had the most influence on whether a student would commit an act of academic dishonesty. The research on gender as a discriminator for cheating has yielded mixed results and may necessitate secondary gender-related factors (McCabe, et. al., 2006; Ruegger & King, 1992). Dowd (1992)

concluded from his review of the literature and from surveys taken at the Lincoln Land Community College (LLC) in Springfield Illinois that:

- Attention to environmental factors, i.e. establishing a "prevention of behavior atmosphere" rather than strict policing of the classroom, is important
- Irrespective of the atmosphere instructors must monitor the students. Students feel stress in the educational environment and may cause them to act improperly.
- Peer pressure and friendly proximity in the exam room may entice students to be dishonest
- Students reporting poor study conditions are more likely to cheat
- Cheating is more prevalent with larger class size
- Cheating behavior was observed by 67% of LLC instructors, a rate very consistent with other studies

Ercegovac (2004) found that being male and/or younger than 24 years of age were characteristics associated with greater involvement in academic misconduct. Pino and Smith (2003) found that students who possessed an "academic ethic" were less likely to commit acts of academic dishonesty and earned higher grade point averages. Those further along in their education process were more likely to engage in academic dishonesty. Interestingly, those that watched television and engaged in student clubs or groups were more likely to cheat. Males, fraternity or sorority members/pledges, and those with lower GPA's are more likely to engage in academic dishonesty, but when controlling for other theoretically important variables they lose their significance. One's biological age, social class, and work status had no effect on the dependent variable in their sample. These results are inconsistent with similar studies by other research attempting to identify generalized causal and predictive variables. The literature is largely consistent on one aspect as reiterated in investigations by Hardy-Cox (2003) that cheating is not simply a student issue but is shared by the institution and community/society.

Whatever the influencing variables, most research suggests that cheaters are generally less mature, less reactive to observed cheating, less deterred by social stigma and guilt, less personally invested in their education; and more likely to be receiving scholarships but performing more poorly (Diekhoff, 1996). Not surprisingly cheaters tend to shun accountability for their actions and blame their parents and teachers for widespread cheating, citing increased pressure on them to perform well (Greene & Saxe, 1992). Worse yet, society as a whole has become increasingly more tolerant and even accepting of the practice of cheating, often citing the need to survive in today's competitive environment as justification for that shift in attitude (Slobogin, 2002; Vos Savant, 2006).

STRATEGIES AND TOOLS FOR MITIGATION

Institutions are still searching for the best policies, procedures and tools to gain control of academic integrity (Academy of Management Panel, 2009). Most tend to be reactionary and employ rather standard and straightforward policing, detection and punishment strategies. Dowd (1992) concluded that among the measures needed to encourage academic integrity were:

- The academic institution must establish itself as a role model for proper behavior
- Faculty and institutions must educate students on why not to cheat and demand no less

- Policies empower both instructors and students and consequently must be a collaborative effort and include administration
- Environmental reasons for dishonest behavior must be minimized
- Integrity must be stressed
- Administration's support is essential

Several studies indicate universities that have implemented a student honor code have experienced lower rates of cheating among their students (McCabe, 2005; McCabe, et. al., 1993; Gray, 1998). Some institutions, like Troy University, are adopting hybrid approaches and strategies with significant technology-based tools as key policing and detection elements. In a more proactive and integrity-building manner, many have adopted honor code based systems with participation and commitment by students, instructors and administration in the development and implementation of strong, formally-derived academic standards of conduct and honor codes with the full realization that these efforts to build a culture of honesty will likely require a good deal of time.

Troy University's Technology Based RemoteProctor™ System:

Troy University's multi-faceted, hybrid approach features unique technology-laden tools and systems and practices to build a culture of honesty to develop and maintain academic integrity in its courses and programs. This approach includes policing aids such; as Turnitin to detect occurrences of plagiarism, the SecureExam Remote Proctor™ to monitor the examination room, well-published Standards of Conduct to inform students of University attitudes toward cheating and their consequences, and a strong Academic Code/Honor Code to promote the proper institutional culture and engage all University stakeholders (students, instructors and administration) in the process. Table 1 summarizes the University's practices for maintaining academic integrity as they evolved prior and subsequent to 2007. The Remote Proctor™ incorporates state-of-the-art hardware and software technologies including the following elements:

- Fingerprint scanner and student verification system
- 360 degree field-of-view camera
- Omni directional microphone
- Remote recording of real-time audio and video
- Integrated motion detection software to detect and flag "suspicious activity"
- Specialized exam software to lock down the students computer and disable unwanted computer functions
- Onsite hardware does not contain student information

Figure 1 illustrates the evolution of the RemoteProctor™ System from prototype to production and a sample image from the production system. Although the system is relatively new (deployment began late in 2007 and is full deployment throughout all eCampus courses is expected to be completed in 2010) students are already exploring means to defeat the system. Table 2 lists some of those strategies. Statistical data on its effectiveness in deterring aberrant behavior has yet to be collected. Anecdotal evidence suggests that students are gaining familiarity with the system and are developing enough confidence to test its limitations.

Troy University's Deployment of a ProctorU Alternative

In the fall of 2009, a new technology-assisted, proctoring method (ProctorU) using real-time human observation was successfully piloted at Troy University. The system adds another effective dimension to maintaining the academic integrity of all TROY Sorrell College of Business (SCOB) programs subsequent to the SACS reaffirmation and the AACSB accreditation of all TROY business programs. This system will likely emerge as a primary option for proctoring the newly-defined "formative assessments" within TROY's undergraduate business programs. The formative assessments are designed to be a more comprehensive methodology for evaluating student achievement throughout their program rather than just a single final assessment, such as the Major Field Test (MFT), typically administered when students completed all their studies. The new, common formative assessments were developed by senior faculty for each discipline with a close correspondence to the student learning objectives identified for each course. As such they were designed to provide critical program evaluation information, as well as individual student assessment data, in support of ongoing and future accreditation reviews in flexible and easily accessible formats.

Six core courses from the disciplines of accounting, economics, information systems, law and quantitative methods were selected for implementation of the formative assessment methodology. To ensure academic integrity throughout it was decided that all formative assessment exams should be "live" proctored, supplementing or perhaps replacing the existing proctoring methods required for eCampus proctored examinations (Remote Proctor, Sylvan learning centers, Prometric testing services, or Troy sites using Remote Proctor). Furthermore, to ensure consistency of the assessments independent of the delivery method (in-class, online, or hybrid) it was decided that all formative assessments would be implemented through the University's Blackboard online learning system using only a live proctoring option.

Requiring a live proctor presented a significant problem, especially for TROY's large and extremely diverse, online student population that is generally widely, geographically-dispersed and often remotely located from a Troy site or other approved live proctor facility. ProctorU provided a reasonable solution to these problems. The commercially-available, fully-developed and widely-used ProctorU service permits students to be observed by a live proctor via the internet, irrespective of the student's location. A ProctorU staff member proctors the student by viewing their actions via the student's PC web cam. The ProctorU staff member is available to provide real-time assistance for the students in configuring, calibrating, scanning and properly positioning their webcams and for addressing procedural issues concerning the live proctoring sessions. A single ProctorU staff member can monitor up to seven students at a time. All ProctorU staff are trained and certified as proctors according to rules and procedures accepted by all accreditation boards. The service is provided to students for a fee of approximately $25 per exam. To use ProctorU students must purchase a webcam if they do not already have one. Students may visit the ProctorU website and schedule a time to take the examination within the parameters set by the instructor. Once a student has scheduled an exam, he/she may access the exam by returning to the ProctorU site where system cues provide notification that the examination is ready to take. Instructors must provide students an early opportunity to take a sample Blackboard exam before the formative assessment to ensure that students have proper access to Blackboard and are familiar with the user experience.

One of the courses selected for the formative assessment program, IS2241-Computer Concepts and Applications, employs a learning technology called MYItLab to test student proficiency in Microsoft Office applications. Because of significant technical requirements imposed by the MyITLab software, IS2241 was selected to be used as the beta test for ProctorU. The rationale was that if there were no significant problems using the ProctorU for this course, other less-technology intense courses should work well with the ProctorU system.

In December 2009, the first test of ProctorU was conducted for the formative assessment exam in three Troy campus sections of IS2241. Initial testing worked very well with all students being able to successfully complete the MyItLab exam under ProctorU scrutiny. There were no substantial technical problems and only a few, easily-resolved, student procedural issues. Based on the success of the IS2241 pilot, the Sorrell College of Business decided to offer ProctorU as an alternative for all formative Business exams with phased deployment beginning in January 2010.

In addition to resolving technical issues between Blackboard and third-party software, ProctorU provides one more proctoring option available to help achieve and maintain academic integrity. ProctorU provides a "live" person to observe students taking exams in a real-time environment. Additionally, ProctorU supports authentication of the student's identity. TROY anticipates that this service will help relieve live proctor scheduling requirements at its testing sites and provides a secure, tested and acceptable option for students who do not have convenient access to other approved live proctoring alternatives or sites.

The use of ProctorU provides Troy University with one more tool to help ensure and maintain academic integrity in all of its courses, irrespective of delivery mechanism. Using a combination of various tools and methods for monitoring and implementing its examinations, such as; the Remote Proctor, ProctorU, a traditional in-class live proctor, Sylvan Learning Centers, Prometric Testing and Assessment Services and the Respondus lock down browser, TROY is attempting to proactively maintain the academic integrity of its programs despite the ever-increasing sophistication of the means available to dishonest students.

DISCUSSION

The literature suggests that standard policing and prevention strategies are largely ineffective in curbing the upward trend of cheating in academia. Technological solutions are inherently limited and are likely to serve only as stop gap measures. Troy's Remote Proctor™ system seems to be a useful deterrent because of its "Big Brother" presence but those effects may be only limited or temporary as students creatively develop effective counter strategies. ProctorU appears to be another effective alternative for the proctoring issue, but students inclined to cheat will always find a way to do so once the mitigation strategy is known and they gain experience with the measures implemented. Present reactionary approaches to mitigation of academic dishonesty seem to lack penalties/consequences with sufficient deterrent capability. The "cost exchange ratio", i.e. relative costs to the student compared to the relative costs to the institution, is currently in students' favor. Some institutions have turned to much more significant penalties such as permanent notations on "official" transcripts but the effectiveness of this strategy is yet to be determined. Many institutions, including Troy University, place large emphasis on policing, detection and punishment approaches complemented by education of students on what constitutes cheating and emphasizing honesty and personal integrity. In the long term the prevailing wisdom is that the problem must be addressed and solved at the societal

level, a responsibility shared by students, instructors, institutions and all other stakeholders. Students are heavily influenced by their peers and the values of the local and general societies within which they function. Implementation of a virtues approach will require time to turn the tide on the present trend towards a "culture of cheating." Of equal concern, it seems that we are presently facing what appears to be a "new breed of students", who were raised in a culture/society that seems to be more tolerant of dishonest practices in almost every aspect of daily life. Data on the effectiveness of the hybrid approaches to mitigating the cheating problem and establishing a culture of academic honesty is now being collected. These latter issues require further investigation.

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Table 1 - Troy University Practices to Maintain Academic Integrity

	Prior to 2007	Post 2007
Academic Code		
- Definition of violations	Well published	Well published
- Penalties/consequences	Well published	Well published
- Procedures	Well published	Well published
Student Honor Code	Well published	Well published
Proctored Exams	Human Proctor	Remote Proctor
Addressing Common Problems		
- Student verification	Picture ID	Fingerprint scan
- Copying others work	Scrutiny by proctor	Remote Proctor
- Receiving assistance from others	Scrutiny by proctor	Remote Proctor
- Using unapproved materials such as copies of instructors past examinations	Scrutiny by proctor	Remote Proctor
- Using unapproved crib notes, electronic devices, storage media	Scrutiny by proctor	Remote Proctor
- Helping others commit illicit acts	Scrutiny by proctor	Remote Proctor
- Detecting suspicious behavior	Scrutiny by proctor	Remote Proctor
- Collusion	Post exam analysis	Post exam analysis
Course and Instruction Design	Discretion of the instructor based upon course and learning objectives established by committees of experts	Redesign by committee establishing standardized course templates to ensure uniformity across multiple course offerings
Controlling the examination environment	Proctored Exams (Currently optional)	Remote Proctor
Instructor Selectable Blackboard Options		
- Large test banks	Instructor discretion	Instructor discretion
- Randomized tests	Instructor discretion	Instructor discretion
- Force Exam completion	Instructor discretion	Instructor discretion
- Presentation of questions	Instructor discretion	Instructor discretion
- Multiple or single attempts	Instructor discretion	Instructor discretion
Detection tools/statistics		
- Record of student accesses	Provided by Blackboard	Provided by Blackboard
- Record of time spent	Provided by Blackboard	Provided by Blackboard
- Record of student postings to various components	Provided by Blackboard	Provided by Blackboard
- Record of communications via Digital Drop Box	Provided by Blackboard	Provided by Blackboard

Figure 1 RemoteProctor™

Prototype

Production System

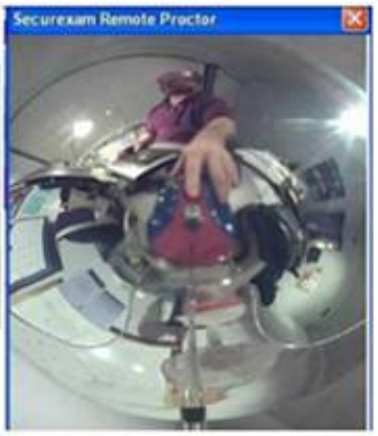

Table 2 - Strategies for Defeating the Remote Proctor ™		
Feature	**Comment**	**Counter Tactic**
Video Recording	Captures 360 degree field of view	▪Audio link to remote collaborator (Possible video link) ▪Home "surveillance" audio/video equipment
Audio Recording	Captures ambient sound from omni-directional microphone	▪Conceal/mask audio link to remote collaborator ▪Home "surveillance" audio/video equipment
SecureExam Software	Reasonably reliable in locking down student computer	▪Audio link to remote collaborator (Possible video link) ▪Home "surveillance" audio/video equipment
Biometric/Fingerprint scan		
•Initial scan	•Identifies person presumably enrolled in the class •Reasonably reliable when coupled with photographic scan	Use of alternate or "ringer"
•Periodic scans	•Ensures person initially scanned is taking the exam •Reasonably reliable when coupled with photographic scan	Use of alternate or "ringer"
Suspicious Activity Files (SAF)	Depending upon motion thresholds, will generate huge video/audio files in large numbers	•Mask behavior •Overwhelm system and instructor with false detections •Large amounts of time to review suspicious files •Interpretation of recorded activity subjective
Motion based detection		
•High threshold	Missed detections	Minimize movements
•Low Threshold	High false alarm rate	False positives requiring analysis
•"Optimum Threshold"	Ideally would provide good detection rate with low false alarms	Mask behavior with exaggerated motions, generating large numbers of false detections