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Best Practice

Ghostwriters in the cloud

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ABSTRACT

Ghostwriters are "hired guns" who complete online tests, write term papers, or even take entire courses on behalf of others. Several surrogate indicators suggest that the market for ghostwriting is growing. This paper explores the antecedents, ethical considerations, and legal issues involved with ghostwriting, and discusses the authentication techniques, identity-management methodologies, and proctoring options that can help control ghostwriting activities. It also describes a pilot study that the authors conducted of a promising authentication system. Both institutions of higher learning and accounting educators can adopt policies and procedures to deal with ghostwriters, and we include a list of best practices for this problem.

1. Introduction

In every way, GW was a model student in the online course offered by Upstate University. He took and passed all the online tests, uploaded the required term paper (on which he received a grade of "A"), and even participated in the course discussions. But GW's reward was not a good grade in the course, but rather the substantial amount of money he received for taking the course on behalf of someone else.

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GW is a (fictitious) hired gun – a ghostwriter – who does other people's work in his spare time and earns good money. He labors in the shadows of a grey market composed of the website entrepreneurs who create markets for buyers, the overworked or overwhelmed students who are too busy or too lazy to do the work themselves, and sellers, the freelancers like himself who fill in for those students (Lipka, 2008). The website that employs GW even guarantees a specific course grade – e.g., "at least a B" – or promises to refund the student's money.

Even a cursory search finds many websites acting as brokers between those students willing to pay for avatar services and the ghostwriters willing to do the work. It's a business model that protects the identity of both buyers and sellers, while participating in what appears to be a growing market of needy students and willing contractors. Most sites even take credit cards or allow students to charge their PayPal accounts. Some examples that were operating at the time we wrote this paper were:

1. Academic Ghostwriting (http://www.academicghostwriting.com/),
2. BoostMyGrade (http://www.boostmygrade.com/),
3. NoNeedToStudy (https://www.noneedtostudy.com/myclass/take-online/),
4. WeTakeYourClass (http://www.wetakeyourclass.com/),
5. AceMyAssignment (http://acemyassignment.com/), and
6. OnlineClassTutors (http://onlineclasstutors.com/take-my-class-for-me/).

Although the websites vary, the services offered by the online brokers are fairly consistent. They include (1) completing online assignments, (2) taking online quizzes or examinations, (3) writing required term papers, (4) providing online tutoring services, and/or (5) taking an entire course on behalf of the payer. Fees depend upon the amount of work required, and of course increase with the workload or grade desired. The sites that guarantee a good grade take little risk because many ghostwriters (1) are good students in general, (2) specialize in courses for which they already have expertise, and/or (3) may possess the test bank and solution manual for the course textbook – a likely possibility (Savage & Simkin, 2010).

The livelihood of a ghostwriter depends upon the availability of online courses with which to ply his or her trade. This appears to be fertile ground: the number of students taking online courses has increased nearly 100 percent in the last five years, and schools currently plan to increase their online offerings to meet growing student demand (Balkan, 2014; Reed, 2015). In 2014, about 7.1 million students took at least one such course, but both the number of courses offered and the total number of online classes taken per student are increasing (Kolowich, 2014). The dollar value of online education is also big business, with estimates of the market running as high as $32 billion in the United States in 2015 – and predicted to grow (Singer, 2015). At present, U.S. News and World Report evaluates approximately 1,200 online degree programs – an increase of 20 percent over the same total last year (Haynie, 2015).

Statistics on how many ghostwriters exist are understandably difficult to acquire, but the increasing numbers of online students, online course offerings, and ghostwriter websites are three reasons for speculating that their numbers are also growing. An Internet search on the term "academic ghostwriting" by Jenkins and Helmore (2006) yielded over 100,000 hits. Our own search of the term in early 2015 yielded over 413,000 hits.

One ghostwriter tells his story in *The Chronical of Higher Education*. He describes his work as a ghostwriter and specifically mentions work done for accounting students:

> You've never of heard me, but there's a good chance that you've read some of my work. I'm a hired gun, a doctor of everything, an academic mercenary. My customers are your students…Somebody in your [online] classroom uses a service that you can't detect, that you can't defend against, that you may not even know exists… (Dante, 2010)

He justifies his business activities by suggesting that he helps students "who couldn't write a convincing grocery list…" He even goes so far as to quote a student's request for a 75-page paper due a week later, who wrote in broken English: "You did me business ethics propsal for me I need propsal got approved pls can you will write me paper?" (Dante, 2010).

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There are several reasons why ghostwriting should concern those who teach or practice in the accounting discipline. In academia, one reason is because many accounting educators now utilize publisher-supplied software to collect, evaluate, and return accounting homework, administer and grade quizzes and tests, and perhaps analyze student participation in online discussion forums – software easily exploited by ghostwriters (Athavale, Davis, & Myring, 2008). Another reason is because ghostwritten work artificially inflates measures of student understanding, misrepresents student achievements, and distorts class curves. Finally, at both public and private institutions, ghostwriting that is first reported by the press instead of discovered by instructors is likely to embarrass both the teacher and his or her university (Caldwell, 2010; Harwood & Anderson, 2002).

Ghostwriting should also concern accounting practitioners. One reason is that professionals hire accounting students and desire transcripts that accurately reflect what the students learned in school. Another reason is because the profession has codes of ethics, making it important for new hires to understand why ghostwriting violates such codes and is therefore unethical (Caldwell, 2010). Then too, past research suggests that students who cheat in their undergraduate education are likely to continue such unethical behavior in their professional careers (Abdolmohammadi & Baker, 2007; Lawson, 2004). Consequently, accounting students should be held to the highest standards of ethical behavior "because of the potential for accountants to be at the center of unethical business behavior" (Richter & Burke, 2007, p. 58).

Lastly, the accounting profession depends heavily upon certification testing, and therefore shares the same reservations about ghostwriters as academicians (Sharma & Kelly, 2015). As stated by Craig N. Mills (2009), Vice President – Examinations for the AICPA Society, "Maintaining…security ensures that the value of passing the Uniform CPA Examination remains high and that all candidates have an equal opportunity to demonstrate their knowledge and skills" (quoted in AICPA, 2009). Ghostwriting in those accounting courses that prepare students to take CPA exams clearly compromises these goals.

Managing accounting education requires course providers to deal with the potential for ghosts. In on-ground (i.e., onsite or face-to-face) courses, ghostwriters may still be at work in completing any homework, take-home tests, or term papers that students complete outside of class. In online courses, the potential for ghostwriting becomes even greater because students complete most work in non-supervised environments.

In this paper, we investigate the murky world of online ghostwriting, the laws that attempt to control it, and the measures that accounting teachers and their universities can take to address it. *To be clear, we state at the outset that all four authors of this work feel that ghostwriting is unethical, illegal, and unacceptable.* The next section of this paper reviews the literature on ghostwriting and explains how we got to where we are now. After this, we identify some methods that institutions of higher learning can use to prevent ghostwriting and ensure that only legitimate students earn credits from online classes. Finally, we provide best practices and suggest safeguards for addressing this problem for instructors. The last section of the paper summarizes our work and states our conclusions.

2. Literature review

Student cheating takes many forms such as using crib notes when taking exams, copying from fellow students, plagiarizing in papers, or hiring someone else to complete one's work. These activities are not new, and we would argue that student cheating is probably as old as academia itself. In this section of the paper, we review the extant literature on student cheating, with a focus on cheating in accounting settings.

The earliest reported cases of student cheating date back thousands of years, when the Chinese found it necessary to pass laws against cheating on civil service tests (Bushway & Nash, 1977). Back then, test takers were searched, testing cubicles were designed to block viewing of another's answers, and if someone were caught cheating, both the student and test administrator faced the death penalty. Even with these draconian measures, cheaters have persisted.

Today, cheating appears to be flourishing in colleges of business in general, and in the accounting discipline in particular (Simkin & McLeod, 2010; Singh, Mangalaraj, & Taneja, 2011; Smith, Ferguson, & Caris, 2001; Smith, Derrick, & Manakyan, 2012; Smith & Smith, 2012). For example, a study by Sims (1993) found a steady, linearly-increasing pattern of business student misconduct across a 50-year

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period. Today, experts typically describe cheating in colleges of business as "rampant," and more recent studies suggest that over half of all business students cheat (Levy & Rakovski, 2006; McCabe, 2005). An often-quoted finding is that business students cheat more than non-business majors – this despite the common requirement that students take one or more courses on ethics (Bernardi, Larkin, LaBontee, Lapierre, & Morse, 2012; McCabe, Butterfield, & Trevino, 2006).

Sadly, accounting students appear to actively participate in this spiraling trend. For example, studies by Ameen, Guffey, and McMillan (1996) and Salter, Guffey, and McMillan (2001) suggest that over half the accounting majors in the United States cheat. Similarly, in a study of 569 business majors from seven U.S. universities, Morris and Kilian (2007) found that 54 percent of accounting students (and 52 percent of other business students) admitted to cheating in college classes. Finally, in a study of 195 accounting students, Bernardi et al. (2012) found that (1) over 90 percent had personally observed other students cheating, (2) over half admitted to cheating themselves, even though (3) over half believed that cheating was "wrong, dishonest, or unethical" (Bernardi et al., 2012).

2.1. Impact of technology on cheating

Modern academia experiences many of the same issues as the early Chinese test administrators. Today, however, cheating students can enjoy the anonymity of the Internet, SSL web-based payment systems, encryption, and cloud technologies to help them and their "ghosts" take exams and quizzes, write papers, and complete entire classes. Obviously, ghostwriters employ modern technologies that facilitate cheating by creating an online marketplace for their services.

Who is responsible for these plagiaristic websites? The authors' attempts to determine the administrator for www.boostmygrade.com and similar "ghostwriters in the cloud" were unsuccessful because today's website administrators use third-party services to shield their identities. Thus, companies such as DomainsByProxy (www.domainsbyproxy.com) provide registration anonymity to those wishing to keep their identities private. Ghostwriters in the cloud often utilize these services to avoid unwanted emails and solicitation, or perhaps to dodge critics.

The growing number of accounting online offerings begs the question: "Are online courses an invitation to cheat"? (Harmon & Lambrinos, 2008). Some think so because the student and instructor are physically separated, and the ability to cheat is therefore "inherently easier" (Moten, Fitterer, Brazier, Leonard, & Brown, 2013, p. 139). However, empirical studies on this issue have yielded mixed results. For instance, in their study of 635 students, Watson and Sottile (2010) found that students in online courses are no more likely to cheat than their on-ground counterparts, although the types of cheating differ. Conversely, Lanier (2006) found that cheating was more prevalent in online classes. While Miller and Young-Jones (2012) somewhat agree with Lanier, their findings indicate that students enrolled only in online courses are less likely to cheat than those enrolled in on-ground courses only.

Although empirical investigations by Harmon and Lambrinos (2008) and Hollister and Berenson (2009) found evidence of online exam cheating, their findings did not take into account other forms of cheating. Faculty commonly augment their on-ground courses with learning management systems for administering exams, submitting assignments, and participating in discussions. These web-enhanced and blended formats of course delivery are also vulnerable to ghostwriter services. Vician, Charlesworth, and Charlesworth (2006) report that students are no more likely to cheat in online courses than in on-ground courses. This raises the question "How do we ensure the academic integrity of our courses?" Most authorities agree that we need to implement technologies that reduce cheating opportunities (Barnes & Paris, 2013b).

2.2. Ghostwriting

One possible justification for ghostwriting is because it is so common in our political, legal, and medical infrastructures. Today, for example, politicians pay ghostwriters to compose their speeches, court judges rely on law clerks to draft their opinions, and big pharmaceutical companies employ writers to compose medical research manuscripts for affiliated academic faculty. Since Franklin D. Roosevelt's administration, ghostwriters have been an integral part of every White House (Bormann, 1960).

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The legal community relies on ghostwriters as well. Supreme Court Justice John Paul Stevens once estimated that judges' law clerks have written "well over half" of published opinions (Rosenthal & Yoon, 2010). It also seems that the medical community is not immune to ghostwriters. In 2005, the Editorial Board of the *Clinical Journal of Oncology Nursing* tried rejecting manuscripts written by medical writers or communication companies (Griffin-Sobel, 2005). Under such circumstances, it is easy to understand why a student in one plagiarism study commented "If the President can use a ghostwriter, why can't I?" (Hawley, 1984).

Although ghostwriting is common in some circles, the practice raises concerns because very real problems can result. For example, plagiarism in medical and scientific circles not only introduces questionable authorship, it potentially creates medical errors via research violations (Coelho et al., 2015). Some have also suggested that medical authorship is not as relevant as it once was and that such individuals as "co-authors," "gift authors," "ghost authors," "co-opted authors" and "sub-authors" require us to revise our traditional notions of authorship (Cronin, 2015). Studies of accounting students who cheat suggest that such misconduct is "contagious" in that it encourages other students to cheat and affects ethical attitudes later in their professional careers (Bernardi et al., 2012; Lawson, 2004).

We also note that not everyone believes that ghostwriting is necessarily wrong or unethical. Certainly, those students who employ others to take their courses or complete their assignments constitute one group of supporters. Others argue that the responsibility for poor student performance rests with us, and that students are driven to ghostwriting websites because they are unprepared or ill-equipped to handle the professional expectations of university-level evaluators (Molinaria, 2014). Still other stakeholders say that ghostwriting is only a form of collaboration, and that it contributes to the economy by employing out-of-work students, professional speech writers, and pharmaceutical wordsmiths (Riley & Brown, 1996). Finally, there are those who run the ghostwriting websites, one of whom states:

> But what about the ethics of such a class taking service? [An] Online class taking service, especially one like AceMyAssignment is not ethically wrong as we merely help you achieve your objective. Throughout history those who have put a premium of efficiency and expediency are the one[s] who have survived, taking on far greater foes and triumphing over them. (Ace My Assignment, 2015)

But we also note an important counterargument: the fact that others are not informed of such ghostwriting activities. This information asymmetry takes many forms – the speechwriter in the world of politics, the paid law clerk in the legal world, the hired manuscript writer in medicine, and the unethical student contracting for ghostwriting services who does not let it be known that the submitted work is not his own because he knows it is wrong.

2.3. Is it legal?

Bormann (1956) argues that an audience assumes a speaker is using his or her own words, and along these lines we believe that most professors assume their students are doing their own work. Threats to this assumption have caused academics to search for ways to exorcise academic ghostwriters and indeed some have suggested that the commercial ghostwriters used by students should be reported to the Criminal Division of the Regional Inspector's Office or the state attorney general (Hammer, 1976).

Some states have enacted legislation to prevent ghostwriting. For example, New York, North Carolina, Illinois and California now have laws against the commercial sale of term papers (Hawley, 1984; Stearns, 1992), and at least nine states now have laws against posing as someone else online (Luckerson, 2013). Still others ask whether plagiarism should ever be a crime, citing Polish law where a priest faced jail for plagiarizing sermons (Bailey, 2015). This suggests that ghostwriting is not universally illegal, leaving academia to rely on ethics to discriminate against ghostwriters.

The U.S. Congress sought to address online course integrity with better student authentication in the Higher Education Opportunity Act of 2008 (Schaefer, Barta, & Pavone, 2009). Subsequent to the passage of this federal act, the U.S. Department of Education undertook substantial rule-making procedures for higher education. In this process, the Secretary of Education amended regulations to

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implement changes to the Higher Education Act of 1965, as amended (HEA), resulting in the enactment of the Higher Education Reconciliation Act of 2005 (HERA) and the Higher Education Opportunity Act (HEOA), with the intent to update the current regulations and put the new regulations into effective on July 1, 2010 (U.S. Department of Education, 2009).

Rule-making activities included meetings with representatives from affected institutions, field experts, and interested parties. In the published notes concerning Distance Education and Correspondence Education (Sec. 602.17), participants discussed the difference between student identification and identity. The task of verifying student identities means making certain that the students participating in the course are those who have registered for the course. Under the statute, agencies are required to do the latter, as Section 602.17(g)(1)(iii) has been amended by replacing the word "identification" with the word "identity" (U.S. Department of Education, 2009). From these discussions it is clear that schools must verify the identity of those taking distance education courses.

Some of those involved in the discussion of rule making believed that institutions needed more stringent requirements to prevent ghostwriting activities. One commenter made a distinction between systems verifying identity via personal identification numbers, passwords, knowledge-based questions and technologies such as biometrics. This forward-looking participant believed that the continued use of simple identity mechanisms was inconsistent with the intent of the statutory changes. "The commenter described software that can be used to capture a student's movements and create a unique biometric profile that can be used *to ensure that the person who registers for an online course is the person who does the work and receives the credit*" (our emphasis) (U.S. Department of Education, 2009).

2.4. Marketing ghostwriting

The entrepreneurial spirit of cloud-based ghostwriters is obvious. Amazingly, there are even online reviews of ghostwriters such as Online Class Cheat Reviews or Online Class Help (Online Class Cheats Review, 2015; Reviews for Online Class Help, 2015). It is reasonable to think that ghostwriting sites appeal to students wishing to avoid coursework (Jenkins & Helmore, 2006). One site implores students to "do your research" when selecting a ghostwriter. It seems odd to think that these same students would "do research" to find a quality contractual service in order to avoid doing research for a class. Institutional plagiarism by ghostwriters in the cloud now requires rating systems to control information asymmetry in this entrepreneurial black market.

3. Methods of prevention

To ensure the integrity of academic degrees, most authorities agree that instructors must minimize the opportunity for ghostwriters to earn class credit for the students enrolled in both online and on-ground classes. The Higher Education Opportunity Act requires that regional accrediting agencies address this issue of authentication (Hill, 2010). Accordingly, various regional accrediting agencies now require universities and colleges to ensure that the students enrolled in a course are in fact the ones who are completing the work. For example, the Southern Association of Colleges and Schools Commission on Colleges' (SACSCOC) Resource Manual (2012) Standard 4.8.1 states:

> An institution that offers distance or correspondence education … 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 … using, at the option of the institution, methods such as (a) a secure login and pass code, (b) proctored examinations, or (c) new or other technologies and practices that are effective in verifying student identification. (p. 103)

3.1. Identity management

The act of verifying the identity of a student is known as "authentication" or "identity management." It is not new, but has become more important because of (1) financial fraud and the need to ensure that the students who receive financial aid actually enroll in the courses for which they receive

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funds, and (2) ghostwriting in both on-ground and online venues – for example, high-stakes certification testing (Wilborn & Foster, 2004).

To authenticate a student, a live person working for a vendor offering identification-management services initially screens the student to create a profile. The student must present a government issued picture ID, answer some personal questions that financial institutions often use to verify someone's identity, and create a biometric profile – e.g., using a system that enables face, voice, eye, finger or palm prints, or key-stroke recognition.

Identification becomes cost effective when it is automated and no longer requires a live person to perform authentication tasks in subsequent screenings. This method can also help ensure that coursework beyond exams (i.e., assignments, discussions, quizzes, exams, etc.) is the work of the enrolled student. The premise is that a student's identity can be verified randomly at any point during the course with any activity, as opposed to just during scheduled exams.

3.2. Beyond authentication

Because the student would have to be present along with the ghostwriter for any activity requiring authentication, this may discourage ghostwriting. A problem is that the ghostwriter could do the work and send it back to the student, who then submits the paper just as a student in an on-ground class might have someone else write a paper. Consequently, those in academe have begun to employ more extensive measures beyond credentialing to access course content housed on Learning Management Systems (LMS) such as Canvas, Blackboard or Moodle. LMS providers continue to develop measures for ensuring the security of examinations, such as:

1. Using large question banks from which the LMS pulls a smaller number of test questions at random, so that no two students take the exact same exam.
2. Randomizing the order of questions for the same test, again so that no two tests are the same.
3. Encouraging teachers to create their own tests that do not use the (often-compromised) test banks that come with the publisher's books.
4. Randomizing item answers so that students cannot easily share responses.
5. Limiting the time allotted for tests in order to constrain a student's ability to look up or communicate answers.
6. Locking down browsers so that students cannot visit other websites (only useful in lab settings because students can use multiple devices at home).

3.3. Proctoring options

The measures discussed directly above still do not fully address the potential for ghostwriting because students using ghostwriters can give their login credentials to others. Also, ghostwriters are experts in the field and would not need help from others once a test has begun. This is why online test administers may also use proctoring options to help verify that it is the original student, and not a proxy, who takes the examination.

Proctoring takes place under the watchful eye of a live person. Because coming to campus can be problematic for online students, distance educators require alternate options. One solution is for students (or their university) to arrange for proctors close to their locations, who then monitor students under strict guidelines. Two other options utilize third party vendors to proctor students remotely, using either "live" or "recorded" modalities.

With *live proctoring*, students must first create a profile that authenticates them as previously described before they can access the examination. Then, the proctor enters a password and monitors the student and his or her activities via a webcam and computer monitor. The difference here is that students are monitored throughout the process, not just at the time of authentication. This method is naturally more costly because more proctors are needed to monitor a large set of students for an extended amount of time.

With *recorded proctoring*, students are video recorded either online or via separate hardware. Some solutions with video proctoring also authenticate, but not all of them do so. The best systems flag certain

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behaviors for the instructor to scrutinize later in order to determine if cheating occurred. The challenge with these systems is whether faculty will follow through and review the videos – a labor-intensive process.

4. A pilot study

Two of the authors agreed to test the beta version of a multifactor authentication and proctoring system developed by an online proctoring vendor that their university was already using. The authors conducted this pilot study in two courses of the Spring 2015 semester: (1) a Fraud Examination course in the Master of Accounting program, and (2) a Web Analytics course in the Master of Information Systems program. A total of 34 students participated in the study. Of those, 47 percent were female and 53 percent were male. A total of 73 percent were Caucasians, 15 percent were African American, 9 percent were Asian Pacific Islander, and 3 percent were of unknown origin.

The authors' school regularly used the vendor's software and a live proctor to authenticate students during high-stakes examinations (i.e., tests that counted substantially toward a student's final course grade). In the new system, the proctor verifies that the students, their test environments, and their computer monitors are within the parameters defined by the instructor (such as "no notes," "no other mobile devices," and "no other person in the room"). The proctor then creates a profile via a webcam and multiple layers of authentication, as used by financial institutions for identity security. During the initial screening, students must provide such personal information as the student's university-assigned ID card or government-issued photo ID, and the answers to several personal questions (such as the name of a pet, the name of a former street address, or the make of a former car). After authentication, the system provides the student with a password with which to access the exam. The proctor continues to monitor students throughout the exam to ensure that they comply with the test parameters described above.

What about other course components that may also contribute significantly to a final grade? With the new beta authentication feature, the system makes a biometric recording of a student's keystrokes when typing a given paragraph – for example, the university's student honor code. This biometric profile provides an opportunity to authenticate students beyond examinations and without a live proctor during any course activity (e.g., assignments, cases, discussions, quizzes, etc.) – a more cost-effective system because it eliminates the need for a live proctor. The system matches student biometric keystrokes with the ones in their original keystroke profile, and can also take a photo of each student for further validation. However, the researchers did not use this feature in the pilot study because they did not believe faculty would take the time to compare the "test-time photos" with those in the student profiles.

In the pilot study, once the system establishes a profile, each subsequent student authentication is automatic. To participate in a discussion, for example, the student first uses his or her webcam and the vendor's software to (1) video record his or her identification card held in front of the camera, (2) provide answers to randomly-selected challenge questions drawn from the student's profile, and (3) retype the test paragraph described above. The authentication system verifies the student's inputs before allowing him or her to continue. Teachers are free to embed these same verification requirements at any other point of contact – for example, before a student uploads online homework or takes a weekly quiz.

While the system seemed promising, the pilot study revealed that it needed further development. The following observations demonstrate some of the unanticipated pitfalls of authentication:

1. One student was conversing with another while setting up the profile with a live authenticator. The student was even handed some documents by another person during this time. The problem here is that a ghostwriter could have been setting up his or her profile to complete the course, taking cues from the enrolled student.
2. Another student was able to copy and paste the phrase that she was supposed to type for a keyboard biometric measure, thereby negating the biometric test.
3. A third student disagreed with the terms and conditions, but the system still approved him.

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4. A fourth student showed his ID by holding it up briefly. It was blurry onscreen, but again, the system successfully completed a profile for him.
5. Several students experienced technical issues and were unable to create profiles.

In each of the first four cases above, the student passed the authentication test and was able to establish a profile. In fairness, both educators encouraged the students to attempt to circumvent the system by offering extra credit for successful attempts. The vendor continues to work with the researchers to improve its product based on these findings.

5. Best practices[1]

As with other forms of accounting controls, security for online accounting course offerings begins at the top with overarching policies that impact the individuals downstream – i.e., administrators, faculty, and students – and that foster academic integrity (Barnes & Paris, 2013a; Hill, 2010; Kitahara & Westfall, 2007; Lorenzetti, 2010; Master, McDonald, & Williams-Jones, 2012). McNabb and Olmstead (McNabb & Olmstead, 2009) recommend a three-pronged approach to that end that includes prevention, policing, and ethics.

Our experiences with even the newest authentication software suggest that institutions cannot rely solely on technology to deter cheating. As the market for authentication products matures, we expect that systems will improve and testing will become less vulnerable to compromise. Until then, best practice dictates that both university institutions and accounting educators use multiple safeguards to deter cheaters and ghostwriters, such as:

5.1. For institutions

1. Clearly define and identify specific types of academic misconduct (Howell, Sorensen, & Tippets, 2009) and create policies that include severe consequences for ghostwriting such as school expulsion and forfeit of all tuition and fees – penalties that may impact a student's ability to enroll in another college.
2. Make policies and procedures conspicuous to faculty and students by including them consistently in online course syllabi and/or online course templates, and require students to read and electronically agree to them. An alternate is to require students to complete a quiz that tests their understanding of, and agreement to, such policies.
3. Studies suggest that university educators often do not pursue cases of academic misconduct because of the time required to do so (Zobel & Hamilton, 2002). For this reason, administrators should employ specially-trained staff to handle cases of academic misconduct. This both helps institutions meet legal requirements consistently and encourages faculty to report cheating incidences when emotions run high.
4. Encourage professors and administrators to pursue infractions of the academic honor codes.
5. Alert students about ghostwriter scammers. Some take money from students and then never perform the ghostwriting service. When students demand refunds, the ghostwriters threaten to expose them to their universities. Entire websites may be devoted to such practices.
6. Link student ID photos from the institution's student identity management system (such as Banner) to the learning management system so that faculty and those employees responsible for authentication can easily verify a student's identity when establishing his or her profile. This makes it more difficult for students to use ghostwriters because they would have to hire the same ghostwriters to take their ID photos at registration and complete the entire program – an unlikely scenario.
7. In states in which anti-ghostwriting laws exist, prosecute students to the fullest extent.

[1] The lead author is the Interim director of eLearning and Professional studies at her university, has a Ph.D. in the field, and has supervised the development of hundreds of online courses. These best practices reflect years of active work, study, and development in this position.

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5.2. For accounting educators

Although ghostwriting would appear to be best addressed at the institutional level, it is not enough. Students must know that the faculty demand academic integrity of them, and support the institutional policies, procedures, and academic code of conduct. Some options here include:

1. Hold students accountable for every violation of the institution's honor code. This is important not only because professors are themselves ethically bound to enforce institutional policies, but also because isolated incidents of student cheating may in fact be part of an unreported pattern of dishonest behavior.
2. Include links to, or actually post, the academic honor code and institutional policies and procedures about cheating in course syllabi in order to communicate clearly the consequences of academic misconduct (McNabb & Anderson, 2014).
3. Inform students that ghostwriters are sometimes themselves scammers – see item 5 above.
4. Customize course designs to prevent cheating (Lavoie & Rosman, 2007). One idea is for faculty to partner with professional instructional designers to develop course materials and assignments that vary from semester to semester – for example, different course books, ancillary materials, assessments, or class activities. These unique course designs result in fewer "canned" resources for ghostwriters to exploit and eliminate the economies of scale that ghostwriters otherwise enjoy.
5. Include open-ended discussions in courses on academic misconduct and the implications of this type of misconduct in the real world. Instructors can also use scenarios, cases, and/or team-based learning activities.[2]
6. Provide multiple assessments (e.g., discussions or group projects) that are frequent, that vary, and that enable students to apply what they have learned. The more assessments, the costlier and the more difficult it is to use ghostwriters.
7. Use existing software such as TurnItIn to identify non-original submissions.
8. For examinations and quizzes, utilize the various security features provided with your institution's learning management system (e.g., large test banks developed by the instructor, randomizations of questions and answer choices, algorithms that change numerical values in quiz and exam questions, time limits to complete quizzes and exams, and not allowing backtracking on test questions).
9. For high-stakes examinations, use authentication and proctoring services. There are many vendors from which to choose.
10. If using online proctoring and/or keystroke biometrics, require students to type the academic honor code when establishing their initial profiles, and to retype it in subsequent authentications to keep it fresh in their minds.
11. Call students on their cell phones during their examinations and watch them answer in order to ensure that they are the ones taking the test.

6. Summary and conclusions

Ghostwriters are "hired guns" who complete online tests, write term papers, or even take entire courses on behalf of others. We believe that most ghostwriters contract with students through websites that act as middlemen and therefore also protect their identities. Because universities continue to expand their online programs and course offerings, and also because the numbers of students taking online courses is increasing, we believe that ghostwriting is also growing.

[2] For example, McKnight, Manly, and Carr (2008) provide an accounting case that instructors might use. This is a real case about a student who engaged in academic misconduct that was tolerated by the peers in her group and not reported to the instructor. Subsequently, as an auditor, this person committed fraud. The case requires students to reflect upon the sequence of events and discuss the potential consequences of not holding a peer accountable for academic misconduct.

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The stakeholders who support ghostwriters include the students who hire them, the websites who broker them, and of course the ghostwriters themselves. Most regional accrediting bodies require universities to authenticate their students and to install safeguards against ghostwriting. But the legality of ghostwriting depends upon the state in which it is committed, and only some states have specific laws against it. No federal statute outlaws it.

The best safeguards against ghostwriting require teaching institutions to authenticate students when they first enroll at the university, thus creating text and biometric profiles. Educators or automated LMS software can then compare any similar information gathered during subsequent class registrations, tests, or other times against these profiles. Institutional policies that establish baseline ethical practices and that also promise both institutional and legal actions for violations may also help.

A pilot study of one promising identity-management system conducted by the authors proved less than perfect. The authors uncovered several ways that students could circumvent existing identity controls and thus thwart the security measures that seemed to limit system compromises. We conclude that current identity management systems are better described as "works in progress" than "foolproof systems."

There is much that both institutions and accounting educators can do to thwart incidents of ghostwriting in their classes. The previous section of the paper provided suggestions for efforts at both levels. Sadly, however, both through our research for this paper and our experiences with teaching, our overall conclusion is that, at present, there is no foolproof way to eliminate ghostwriting on-ground or online, technology solutions included.

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