Ten Years in the Academic Integrity Trenches: Experiences and Issues

Doug Atkinson
S. Zaung Nau
Christine Symons
Curtin Business School
Curtin University
Kent Street, Bentley, Perth, 6102, Western Australia
d.atkinson@curtin.edu.au, z.nau@curtin.edu.au, c.symons@curtin.edu.au

ABSTRACT

In 2016, our university launched its Academic Integrity Program (AIP) in order to promote and protect academic integrity. All commencing students must complete this online AIP within 14 days of starting their course. Satisfactory completion of this module with a test score of 80% is required before students can access their course materials. Interestingly, this university program mirrors a decade long effort in our IS discipline area to educate students regarding the importance of academic integrity and values through improvements in education, detection of misconduct, and procedures that deal with this. In this paper, we analyze four descriptive cases of academic misconduct involving plagiarism, collusion, and contract cheating. We then describe the role of academic culture and English language proficiency, noting how these contribute to academic integrity. Additionally, we analyze quantitative data from the faculty Plagiarism Recording System that reflect a decade of front-line experiences of IS academics in upholding and reinforcing academic integrity in both large (1,000 student) undergraduate and small (20 student) postgraduate courses. We describe the AIP that educated 15,000 new students commencing courses in 2016. Finally, we raise issues and make recommendations to deal with the next decade of efforts to improve academic integrity.

Keywords: Academic integrity, Plagiarism

1. INTRODUCTION

The purpose of this paper is to provide an understanding of, and support for, front-line teaching colleagues in the Higher Education sector who face systemic threats to academic integrity. These threats have been brought about by changes including pervasive access to digital technology, the internationalization of Higher Education, a shift from public to private funding, and an increasing reliance on large and culturally diverse student cohorts who require academic and cultural support to study at their chosen host institution. While this paper is situated in the Australian context, there have been similar changes in Europe (Glendinning, 2014) and the United States that either precede or lag the changes described in this paper. Thus, there is an international relevance to the issues raised in this Australian context as all Higher Education institutions have to make decisions regarding the management of academic integrity which will influence their ability to attract and sustain quality students, courses, and faculty.

A decade ago, we began researching the introduction of plagiarism detection software in our IS Faculty to deal with the rise in plagiarism that accompanied digitization (Atkinson and Yeoh, 2008). Through pervasive digitization there is an increased opportunity and ability for students and staff to create texts through searching, cutting and pasting, translating, synonym generating, sharing, and contracting online authoring services. Most of the issues raised in the earlier research, including fairness for students and workload for academics, are still relevant, and the research model consisting of education, detection, and prosecution is still useful. However, the scale has changed in our institution from ad-hoc, bottom-up efforts from individual faculty to an institutional approach with centralized provision of resources, policies, and programs to support academic integrity. Among the changing learning contexts from face-to-face, to blended, and to fully online, there are still students and staff engaging in learning, teaching, and completing assessments, some of which fail academic integrity. The following questions are raised:

What have we learned from our experiences?

What do we recommend for the next ten years?

We pursue these questions based on the experiences of the authors who are teaching academics with a combined 60 years of experience teaching and supporting small (20 enrollments) and large scale (1,000 enrollments) IS courses.

The metaphor of battle (Leask, 2006) is deliberately chosen as at times this is what it feels like for teaching academics "in the trenches" who, in order to support honest students interested in learning, have to constantly fight to protect academic integrity against newer threats such as contract cheating (Clarke and Lancaster, 2006) brought on by the increasing corporatization, commoditization, and globalization of Higher Education.

This paper provides some background and context, and then uses four illustrative cases, experienced by the authors, that describe cases of plagiarism (using others' work without proper acknowledgement), collusion (working with others' to deceive an assessor), and contract cheating (contracting for services with intention to deceive assessors), and which threaten academic integrity (honesty in valuing others' work). For comprehensive definitions of these terms, we refer the reader to our institution's academic integrity documentation (Academic Integrity, 2016) which in turn references Carroll (2002) and The Center for Academic Integrity (1999). Some tactics, issues, and responses are described with the cases. The role of academic culture and English language proficiency is discussed. Further, quantitative data is provided from the faculty Plagiarism Recording System (PRS) with some comparisons with other universities' data. Next, the Academic Integrity Program (AIP) is described as an educative entry point for new students. The paper concludes with a set of recommendations for the next decade of battle.

2. THE TRENCHES

The "trenches" is the School of Information Systems within a Business Faculty that provides undergraduate and postgraduate programs. Up to 40 units (subjects) are run each semester (half year), and these range from large, first-year units (1,000 students) to small, postgraduate units (20 students). Each unit has a unit coordinator who is a permanent member of the academic staff and is responsible for the quality of the teaching and learning as well as the administration. A small unit may be completely taught by the unit coordinator whereas a large unit may have up to 20 staff who assist in the teaching and assessment. The student cohort is culturally diverse coming from over 70 countries, and programs are run at up to five campuses both local and international.

A comprehensive set of policies, procedures, and tools are provided for students and staff to deal with academic integrity (Academic Integrity, 2016). Students submit assignments electronically to the BlackBoard Learning Management System via the Turnitin plagiarism detection service. BlackBoard is a comprehensive, large-scale Learning Management System (BlackBoard.com, 2016) used in many education institutions world-wide to support online access to learning materials and assessment of student assignments. Turnitin is a large-scale, text-matching system (Turnitin.com, 2016) that is used in many education institutions world-wide as a means of detecting plagiarism. Student submissions are text-matched against Turnitin's repository which includes other student submissions and Internet sources. While Turnitin's repository is vast and growing, there remain many sources outside of this repository. Furthermore, there exist services and tools that can assist with avoiding detection of matching text, and so Turnitin is a tool with limitations in plagiarism detection.

The processing of academic misconduct cases (Academic Integrity, 2016) begins with identification by an academic who refers their allegation to an authorizing officer – usually the academic's line manager or Head. There are several criteria (evidence of intent to cheat, degree of advantage gained by individual, reputational risk, effect on the assessment process) used to determine three levels of misconduct. The lowest level of plagiarism – level one – is reserved for students who are 'new' to academic life (i.e., less than two semesters of study). This low level 'charge' of plagiarism is generally used as a means of drawing students' attention to poor referencing practices. It does not attract a penalty, instead recommending remedial advice or support, and is usually dealt with by the academic staff alone. The further two levels of plagiarism – level two (medium) and level three (high) – represent more 'severe' forms of plagiarism where there is evidence of intent by the student to deceive or cheat. These levels are considered academic misconduct and include instances of collusion, copying of other students' work, submission of past papers, and contract cheating. Levels two and three attract penalties such as reductions in grades and annulment (zeroing and transcript recording) of misconduct, and they require a rigorous process where the verification and the awarding of penalties are undertaken by roles other than the referring academic staff member, including the Head of Faculty and an independently constituted Discipline Panel. Students have rights of procedural fairness (Evans and Levine, 2017) and appeal set out in the university statutes (Statute No. 10 – Student Discipline, 2010).

We now describe four illustrative cases based on first-hand experiences by the authors. The cases illustrate the day-to-day reality for many academics in the trenches and range from poor referencing (exemplifying level one plagiarism) to contract cheating (exemplifying level three plagiarism).

2.1 Case One: One Time Plagiarism
This case represents the most common form of plagiarism, namely, poor or inadequate referencing. In this case a 'new' postgraduate student completed an essay style assessment. The Turnitin report showed several small passages which were direct quotes from Internet sources. The in-text reference was provided. However, there were no quotation marks around these direct quotes, and there was no page number provided with the in-text reference. The student was informed via the marking rubric and in annotations on the essay of the nature of their error and how to correct it. They were also issued with a warning from the unit coordinator stating this was a form of plagiarism and that the student should take corrective action in the second assessment. Failure to take action would result in the case being formally reported and/or escalated to a more serious level. The student complied with the feedback and their second assessment was properly referenced.

In this case, the unit coordinator had the option of entering the case into the Plagiarism Recording System and recording the nature of the offense and the corrective actions taken. The advantage of recording low level offenses is that should there be repeated behaviors in other units in the future, this could be a trigger to escalate to higher levels of

offense, with penalties. It could also be used to establish a pattern of behavior where educative advice is being ignored and there is a serious attempt to deceive the examiner.

As a result of this case, the unit coordinator made explicit links in the unit website to reference assistance offered by the Communication Skills Centre – a support service for language, referencing, and academic skills. These links now appear permanently on the unit website and are available for all students to seek proactive referencing advice as needed.

2.2 Case Two: Confusion about Collusion
This case describes the confusion that first year undergraduate students experience in distinguishing between plagiarism and collusion. This core, first year unit introduces students to the discipline of Information Systems and includes an individual assessment requiring a description of an information processing system in a context chosen by the students. To help educate students about academic integrity including plagiarism, they are required to complete a quiz on the topic prior to the release of assessment requirements.

Confusion between plagiarism and collusion is one of the issues that first year undergraduate students experience during their transition period to learning in Higher Education. Some students discuss and work on their individual assessments in their study groups and, as a result, an individual's write-up can sometimes closely match another student's work. Turnitin software detects this similarity in work, and this can lead to charges of collusion between students. After investigation, it often becomes clear that these close matches are the result of ignorance rather than intent to deceive. Some students assume that they only need to use referencing skills when they cite books, articles, and the Internet. This confusion between plagiarism and collusion brings another challenge to determining the severity of academic misconduct in regard to students' intentions. Poor referencing skills are deemed to be low level plagiarism and are not considered academic misconduct for new students whereas colluding with a peer and passing off the work as ones' own is regarded as medium to high level academic misconduct. Collusion in general is difficult to judge as to who did what, what the intentions were, and how penalties should be applied. Certainly collusion is a greater threat to academic integrity than poor referencing, and hence requires a stronger response. Penalties are determined by a Student Discipline Panel independently of the referring academic.

The use of Turnitin as a central repository is essential for the process of detecting plagiarism, as up to five campuses are involved in the delivery of this unit. Collusion can be detected among campuses and over semesters, provided the assignment link is maintained and all campuses insist on Turnitin submission. The Turnitin similarity reports provide an indicator of text matching percentages and whether the source is the Internet or another student paper.

Generally, under the institutional policy, first year undergraduates are given more leeway than experienced students and are more likely to receive warnings with requirements to attend referencing and study skills workshops. However evidence of intentional copying of current or past students' papers escalates the misconduct.

In the past, up to 30 papers (around 3%) were found to be assessed as being of medium level misconduct, but with changes to assessment design involving scaffolding assessment items into parts (Bain, 2014), this number has now halved. The scaffolding requires students to submit their assessment in two parts: the first (an initial description) enabling progress to be checked (Born, 2003) and formative feedback given, and the second (a more detailed design) being a summative assessment. This scaffolding approach makes it more difficult for students to plagiarize. Plagiarism is also less likely because students are being supported to achieve at various steps along the way in the assessment item, rather than being left to their own devices.

The difference between collusion and collaboration requires clear definitions of both with examples of what is acceptable collaboration. One example we provide is the distinction between individual and group assessments, where the former requires individual write-up while the latter is a shared effort. Having said this, we note that learning collaboratively has many benefits, so it is important to structure assessments appropriate to group or individual work. Born (2003) recommends instructor-led choice of group members, so that members are new to each other and as a result are likely to check unacceptable behaviors.

Some assessments may be structured to include a group and an individual component; however, as the next case shows, this can still be problematic.

2.3 Case Three: Persistent Plagiarism
This case was detected via Turnitin on an assessment with both a group and an individual component. Based on student feedback, the assessment was specifically redesigned from being solely individual to one focusing on a collaborative aspect for developmental activities, plus an individual 'lessons learned' section to demonstrate individual reflection and learning. In this case, two separate individual Turnitin submissions showed a 90% match. Based on the logged date and time, the sequence of submission suggested that the second had plagiarized the first. The unit coordinator then arranged separate meetings with each of the two students, including having a co-examiner present during the meetings as a third party witness. These meetings appeared to support the Turnitin reports, so it was determined to pursue the incident as an alleged case of plagiarism. In the course of checking the student-in-question's work in another unit, evidence of similar circumstances (plagiarism of another student's work) was revealed via Turnitin. A further check revealed the student had an existing level two academic misconduct penalty from a previous semester. So at this point, the persistence in plagiarism was highlighted.

The processing of the case by the Faculty resulted in a charge of high level Academic Misconduct, influenced by the track record of plagiarism and the fact that the student was 'experienced' rather than being new to study. The penalty resulted in an annulment of all the students' results for that semester. The combination of this outcome and the student's existing conditional academic status resulted in the Board of Examiners recommending termination from the course. It is noted however that students have the right to appeal termination, and in many cases if a student provides sufficient rationale for their errors and agrees to future changes to behavior, they can be re-instated. In this case, the

student was required to repeat all the units annulled as a penalty, as well as undergoing compulsory educative programs.

In this case the student was on a student visa, had poor written communication skills, was working in addition to full-time study, and was generally absent from face-to-face classes. The repeated offenses captured in three units illustrated either a complete lack of understanding about academic integrity or possibly a calculated tactic that the combination of having work and possible longer term residency, with a relatively low chance of being expelled, was worth the risk.

This persistent plagiarism case raises the recommendation that a more detailed analysis of academic integrity cases be undertaken to determine if patterns exist that could be acted upon. For example, if a certain demographic of student is over-represented, then the institution could determine whether to adjust entry levels and/or bridging courses and education programs. A more detailed analysis would also require more detailed data collection including English language entry levels and education history. In the same way that institutions mine data to find predictors of academic success, academic misconduct cases may represent a contra-indicator that is equally important for quality and reputation.

We now complete the descriptive cases with an example of a growing threat to academic integrity – contract cheating.

2.4 Case Four: Contracting and Evasion

The assessment in this case had been carefully designed to include a customization of several steps based on the unique student number and the student name (Allen et al., 2014; Singh, 2013). While not foolproof, it represented at least a first level defense against straight copy and paste plagiarism. Furthermore a 'lessons learned' section required a reflective passage by the student and could also reveal a lack of familiarity with the assessment task.

Despite these safeguards, a visual inspection of an assessment revealed one in particular that was quite different from others. First, the interface looked to be professional rather than student work. Second, it missed some of the key requirements discussed in class. The academic's intuition was that the assessment was done by someone other than the student. As the student had used a unique personal email in correspondence, the academic did a Google search and was led to a contract assignment site where there was a public contract negotiation conversation including the unique assignment requirements. The conversation masked the identities, so the academic could not be sure that it was the assignment in question. Furthermore, the deal was not completed so there was further ambiguity.

The academic was not convinced that they could prove to the student or to a disciplinary panel that misconduct had taken place, so as was common practice at the time, they arranged a meeting with the student to give them an opportunity to convince the academic it was their own work. At such a meeting, the academic would ask them to demonstrate their application and adjust some parameters. This was also one of the assignment requirements as a safeguard for just this kind of situation.

What then ensued was a cat and mouse game where, for the rest of the teaching semester, the student avoided attending either class or any scheduled meetings. In response, the academic refused to mark the student's work until they met. Despite repeatedly scheduling meetings, the student did not attend, so at the Board of Examiners the academic explained the situation and requested a Fail Incomplete – meaning the student had not completed all required assessment activities such as the requirement to demonstrate the assessment on request. The Board supported this request resulting in the student failing the unit. However, by evading the meetings and any investigation, the student avoided being prosecuted for academic misconduct and maintained a clean record.

In retrospect, the academic should have been better supported in order to prosecute this academic misconduct case. However, this incident occurred at a time (nearly ten years ago) when such a case was unusual (contract cheating was almost unheard of) and with a lack of evidence it was difficult for the academic to proceed. Now, in 2017, the culture is much different, with university processes more supportive of a fair, consistent, and stronger deterrent, so that academics feel supported in pursuing cases of academic misconduct. It is less work for the academic, and the university is more likely to support the lecturer's evidence based on the 'balance of probabilities' rather than 'proof beyond reasonable doubt.' Furthermore, the penalties are stronger than in the past. In this particular case there should have been some penalty to the student for failing to attend meetings, a form of academic misconduct in itself.

The case illustrates some of the difficulties of detecting and prosecuting those who engage in contract cheating particularly in non-text based assignments (Simon, 2016). The contract sites understandably provide identity protection of the users. The requirement to demonstrate work 'live' to the examiner is a deterrent but creates workload for all concerned. One issue that the move to online and blended learning has created is that students can choose not to attend face-to-face classes, and thus the relationship between teacher and student is more anonymous, and it is harder to track ongoing student development. Ideally there should be a few points during the semester when students can demonstrate their progress; one example is the scaffolding approach suggested in Case Two above. However, without this scaffolding attracting assessment marks, it is unlikely that this measure alone will improve standards of academic integrity.

One tactic the lecturer used to deter plagiarism was to include text in the assessment requirements noting that the use of contract cheating sites was known and that this constituted high level academic misconduct. The recent MyMaster contract cheating cases (McNeilage and Visentin, 2014) that affected many Australian universities illustrates that responding to known cases with heavy penalties such as revoking degrees and publicizing such actions is at least a deterrent to those who might casually consider contract cheating as an easy option.

In 2016, we experienced an upsurge in alleged contract cheating cases. Acting on information from whistleblowers, we discovered assessment questions from our units on contract cheating sites (Figure 1). An examination of these questions revealed that the ghost writer does not know the class context. This then places the student under alleged academic misconduct with severe consequences.
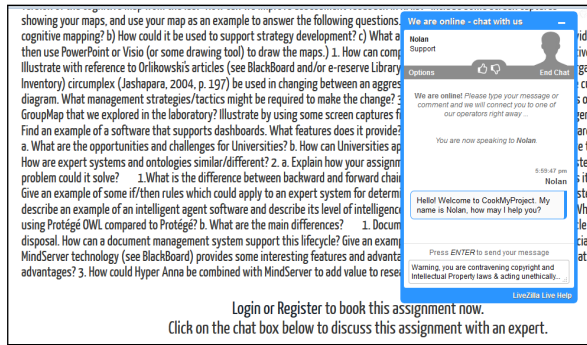
Figure 1. Contract Cheating – A Risky Business for the Student

We are also using verified pieces of student work, such as exam scripts and in-class assignments, combined with stylometric analysis as a means to check assignments of dubious authorship. The onus is then on the student to prove to the Student Discipline Panel that their assignment submissions are their own work. In addition to written submissions, this may require the student to attend an interview and/or complete a test of authorship (Glatt and Haertel, 1982). Failure to prove authorship to the Panel can result in severe penalties. The most severe penalty is the rescinding of a degree, which could occur for degrees by research where a thesis is proven to be contracted.

The rise in contract cheating is also being counteracted by a move to mandatory pass requirements in exams where there are ID checks and high levels of invigilation. Our institution permits a fail to be given if a student does not pass an examination. However this requirement must be stated in the unit outline provided to students at the beginning of the unit.

Another tool to detect contract cheating is analyzing differences in student results between unsupervised continuous assessment and supervised exams. At a recent Contract Cheating seminar, Clare (2016) presented work based on criminology theory of preventing crime through reducing opportunity and targeting repeat offending. He used a few simple rules based on large differences (e.g., two or more grades) between supervised and unsupervised assessments to analyze student results and thus identify a small group of students (2%) who likely accounted for a large number of potential contract cheating cases. This work, based on learning analytics, and easily available assessment data, has the potential to discover units, assessments, and students at risk and thus target future interventions.

The four illustrative cases raise issues and tactics of responding to plagiarism, collusion, and contract cheating. We now discuss the role of culture and language in the context of academic integrity.

2.5 Culture

In 2015, over a quarter of a million (272,000) international students studied in the Higher Education sector in Australia, of which 8,000 studied at our institution (Duncan et al., 2016). International students have a strong preference for Business and Commerce courses. Our Business Faculty hosts students from over 70 countries and cultures. In 2016, 53% of our taught load of 16,600 students consisted of international students. For many of these students, studying abroad is a new experience, and there are many shocks and adaptations to be made, including dealing with a new academic culture and language. Macdonald and Carroll (2006, p. 233) in advocating a holistic approach to dealing with plagiarism for all students note that "we [institutions] have a responsibility to ensure that they [students] move fairly quickly to an understanding of the appropriate conventions and practices implicit in academic study in a western university."

There are those who argue further that there needs to be adaptation and intercultural learning for both teachers and students (Leask, 2006; Sowden, 2005). This adaptation demands more resources (e.g., education, training, and support staff) to help the beleaguered teacher (East, 2016). While cultural diversity can be used to enrich the classroom, there is a point where a stand-alone teacher cannot adequately deal with both quantity and diversity. This is the point at which institutions need to make strategic decisions about quality (e.g., academic integrity) and the capability of the institution to support all staff and all students in meeting that quality.

2.6 English Language Proficiency

In addition to the challenges of cultural diversity, there is the ongoing challenge of English language proficiency. Our university requires use of the English language as the norm and only as an exception may teachers request special exemption, and they must demonstrate equivalence of standards. Practically, this means that our courses are taught and assessed in the English language. Furthermore, the university has minimum English language (University Admission Centre, 2015) entry requirements (an equivalence of a 6.5 overall on the International English Language Testing System) that are similar to competitors. These requirements allow students to demonstrate their English language qualifications in a variety of ways. Around 15% of our students enter our institution via an IELTS score, while the rest come via pathway courses or demonstrated equivalence from previous studies. While this promotes flexibility for students and the institution, it means that the classroom will generally have a wide range of English language skills (usually not explicitly known by the teacher until after assessment submission) ranging from proficiency in the language to those requiring language support and development in order to successfully complete their discipline studies.

Poor English language skills may contribute to a student plagiarizing either inadvertently through misunderstanding or simply because there is no other way to pass the unit. The relationship between English language proficiency (as part of a 'cultural influence' construct) and student self-reported plagiarism was verified by Guo (2011) and has been reported by others (Le Masurier, 2009).

A teacher who reports a student for alleged academic misconduct where poor English is a factor can be at risk of being seen as unfairly targeting international students, especially as the institution has already given its approval to the student's entry level English qualification. Given that international students are an important source of income both for institutions and national economies, this can be compromising for all involved. In 2011, following

complaints from international students, a State Ombudsman recommended that universities review their English language entry requirements so that entry was based on course requirements rather than business directives (Stuhmcke, Booth, and Wangmann, 2016).

Detecting insufficient levels of English language and recommending and providing language support services is one measure that can reduce its influence in plagiarism. The author has recently trialed the use of a language checker, e-rater (e-rater, 2017), provided via the Turnitin service. The software automatically detects and annotates student assignments with language errors and suggested corrective actions. Furthermore, it provides a quantitative summary of grammar, spelling, mechanics, word usage, and style. The software holds promise for objectively supporting assessment, referral, and student self-diagnosis (Ramineni et al., 2012).

Concerns about English language, particularly for postgraduate students, has motivated our university to introduce a Post Entry Language Assessment (PELA) (Dunworth, 2009; Moore, 2012) based on a timed written task which provides an entry baseline of students' language abilities. The PELA can then be used to recommend language support services so that students have more possibilities of being successful in their studies. Following extensive trials in 2016 in significant undergraduate and postgraduate units, the plan for 2017 is that all newly enrolled postgraduate students will undertake the PELA in the first two weeks of their enrolment.

In order to manage academic integrity, it is important to record and analyze potential cases of plagiarism and academic misconduct so that attempts to improve integrity can be correlated with objective evidence. We now describe the quantitative data from our Faculty reporting system.

2.7 Quantitative Data

The Plagiarism Recording System (PRS) was first developed in 2009 as an online, centralized system to enable institutional recording that had previously been primarily within the faculty organizational units. The advantages of the system mean that all three levels of plagiarism (low, medium, and high) are recorded centrally, and those who repeatedly plagiarize can be easily identified, particularly where students may have changed courses and faculties.

The PRS is currently being improved using case management software (Polonius.com.au, 2014) to support processing, tracking, reporting, and analyzing cases and outcomes awarded including educational advice, warnings, reductions in marks, and annulment of results and any requirement to re-enroll and repeat a unit.

The recorded data for the Faculty of Information Systems is provided in Table 1 below. The cases represent those that have been detected, processed, verified, and awarded an outcome.

Low level cases appear to have increased while high level cases have decreased. This can be viewed positively in as much as students are being 'cautioned' for poor referencing while they are still new to study, rather than progressing to the more severe levels of intentional and serious misconduct.

While 2016 had the highest total number of cases, it also had the highest number of enrollments, and the overall percentage incidence of 1.4% was close to the average of 1.1%. The increased number of cases, despite the Academic Integrity Program (AIP) introduced in 2016, warrants further investigation to determine if factors such as changes in student recruitment or increased vigilance in detection are the cause. An immediate response by the Faculty for 2017 includes mandatory pass requirements on all invigilated exams so that any student who cheats and escapes detection in continuous assessment cannot pass overall. While a 1.4% incidence superficially does not appear 'bad,' it is difficult to know whether this figure underestimates the true incidence and by how much. McCabe's research on self-reporting by undergraduate and graduate students indicates rates from 1%-6% (McCabe, 2009) for serious offenses such as contract cheating, collusion, and substantial plagiarism. Our serious offense (medium and high level offenses) rate was 0.6% (35 in 5,672) in 2016. Comparing our actual 0.6% to an estimated 1%-6% incidence indicates a one-in-two to a one-in-ten 'catch' rate. Furthermore, does a zero percent result indicate success or rather a lack of detection? A recent report (The University of Sydney, 2015) noted that under-reporting was likely, particularly in the absence of mandatory use of detection tools.

It is difficult to get benchmarking data from other institutions to make comparisons given the sensitive nature of academic misconduct reporting. However, one institution reported an incidence rate of 2% in 2014 and a range from 1.5-3% over the period 2006-2014 for a Business Faculty that had mandated use of Turnitin (The University of Sydney, 2015). So the figures for our Faculty, 0.4-2.3% over the period 2010-2016 with an average of 1.1%, are in the lower part of that range. It should be noted, however, that differing classification of incidents and differing measurement of the denominator (head count multiplied by number of units, or just head count) for incidence rates makes institutional comparisons problematic.

Given that the teaching staff, and in particular the unit coordinator, are the primary gatekeepers of the plagiarism detection and reporting system, it is primarily their resources, skills, and motivation in detecting and reporting plagiarism that will heavily influence detection rates. Thus providing resources, training, and incentives for teaching staff is very necessary.

Even though text matching tools like Turnitin may report more high text matches, the current system still requires the unit coordinator to make a judgment before reporting an alleged (yet-to-be-confirmed by an authorized officer) case of academic misconduct. There are both short-term and longer-term costs associated with detecting plagiarism. Heavy workloads and frequent deadlines act as disincentives for many staff when it comes to engaging in the detection of plagiarism in the short term. In the longer term, plagiarism detection may also bring about negative perceptions of performance from both students and the institution. This is particularly so if many cases are detected. These issues make the prevention of plagiarism through education and self-regulation by students a much more attractive and sustainable strategy for the institution.

Plagiarism Cases	Year							Average 2010-16
	2010	2011	2012	2013	2014	2015	2016	
Low	4	6	20	3	31	40	45	21
Medium	3	17	30	10	11	21	34	18
High	5	10	12	5	1	4	1	5
Total Cases (all levels combined)	12	33	62	18	43	65	80	45
Total Enrolment Opportunities (head count by units)	2336	2931	2678	4058	5609	5671	5672	4140
Incidence Rate (all combined)	0.5%	1.1%	2.3%	0.4%	0.8%	1.1%	1.4%	1.1%
Incidence Rate (academic misconduct)	0.34%	0.92%	1.57%	0.37%	0.21%	0.44%	0.62%	0.64%

Table 1. Number of Plagiarism Cases (Low, Medium, High) and Incidence Rates Recorded for the Faculty of Information Systems, 2010-2016. Note that low level plagiarism is not considered academic misconduct and affected students receive education advice with no penalty. Medium and high level cases are considered academic misconduct and receive a penalty. Shaded cells represent above the average for the period 2010-2016.

The next section describes the Academic Integrity Program (AIP), introduced in the first half of 2016 by the university, to educate all new-to-university students and reduce threats to academic integrity.

2.8 Educating and Preventing – The Academic Integrity Program (AIP)
Academic Integrity Programs (AIPs) are now common in Australian universities, with 40 universities reporting such programs on their websites. Of these, 12 universities have mandatory programs. Building Academic Integrity (n.d.) is a useful website linking to resources from many of these universities. The AIP for our university was influenced by the AIPs from La Trobe University, University of Canberra, University of Newcastle, and University of Wollongong.

The AIP was designed as online content with a test to be taken on completion, accessible in the BlackBoard Learning Management System. The content is divided into modules including: a) academic integrity at the institution, b) plagiarism, c) referencing, and d) avoiding plagiarism. The test consists of twenty randomly chosen, multiple choice questions. All new-to-course students are required to take the

AIP and achieve over 80% in the online test in order to receive their course results at the end of the semester. In 2016, 97% of all 'new' students had successfully completed the AIP, so the incentive was considered highly successful.

The content of the AIP is comprehensive and includes scenarios (Figure 2), videos, and activities. The need to make AIPs both engaging and mandatory is noted by East (2016).
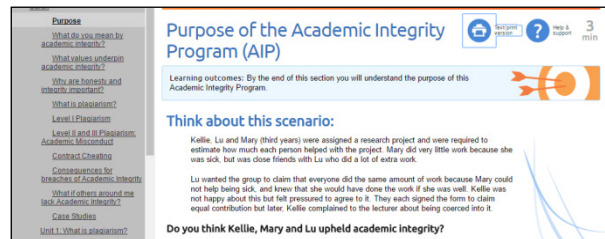

Figure 2. Online Academic Integrity Program with Collusion Scenario.

The content of our AIP consists of a mix of off-the-shelf content purchased from Epigeum (Epigeum, n.d.), videos from Ryerson University, and content specific to the institution. This specific content includes definitions of key

terms, explanations of the levels of plagiarism, and explicit discussion of academic values. An average student is expected to take two hours to complete the content and 20 minutes to undertake the test.

The first author's assessment of the AIP is that a student who spent two hours examining and interacting with the content should gain a deeper understanding of academic integrity at the institution. A student would be hard pressed to plead ignorance as a defense ("I didn't know – you didn't tell me") to any investigation of alleged misconduct. Of course, it is possible for a student to skim the content and go straight to the test, taking it repeatedly until they get 17 of the 20 questions correct. In this case, they would have a superficial understanding of academic integrity and could be at risk of committing misconduct in the future. Despite this, the AIP appears a good entry point.

Given that 2016 was the first roll-out of the AIP (to approximately 15,000 new students at local and offshore campuses), it is important to obtain student feedback. Of more than 3,000 students surveyed to date, approximately 90% agree that their knowledge of, and confidence to manage, academic integrity improved as a result of their participation in the program.

Staff have raised issues including the scale of the content and the fact that students with English as an Additional Language (EAL) may find the language used complex, resulting in a disincentive to engage properly with the content. There is also the issue of the inconsistency of the purchased content and design from different sources that still requires streamlining. With time and further feedback from students, it is expected these issues will be addressed. Also, within the next three years, the vast majority of enrolled students should have completed the AIP. Hence, it might be expected that in the absence of other influences such as changes in university recruitment practices, academic misconduct cases would decrease.

One major advantage of the AIP is that all new students will have the opportunity to acquaint themselves with institutional academic requirements and practices along with the many academic support services offered that are often vital in helping students successfully transition into university. The entry status of AIP means that, regardless of the many different pathways by which students enter the university, there is a minimum of two hours exposure to academic integrity issues as a starting point. From here, individual lecturers and discipline specific courses (Bretag, 2016) can reinforce and develop AI further.

Having described 'the trenches,' the role of culture and language, quantitative data from our Faculty reporting system, and the educative entry point of the Academic Integrity Program, we now conclude with recommendations for the next ten years.

3. RECOMMENDATIONS FOR MANAGING ACADEMIC INTEGRITY

The following recommendations are based on our experiences and reflections on the cases above, the literature reviewed, and our participation in a Contract Cheating Seminar held at our institution in 2016. Each institution and Faculty will need to consider and prioritize its own strategies and tactics based on its current situation and desired future.

Improve education regarding Academic Integrity.
In the long term, education of students and staff is the only sustainable course of action. The AIP needs reinforcement with designated units in each program where students learn more about academic integrity within their discipline. Owens and White (2013) reported the value of improving students' writing skills through an in-class writing exercise with feedback, contributing to reducing plagiarism from around 2% to less than 0.5%.While detection and response remains necessary, it becomes too expensive and diverts resources from the primary teaching and learning activities of Higher Education institutions. A serious academic misconduct case, in our institution, currently involves processing by five staff members over a duration of up to six weeks from detection to resolution. At incidence rates of less than 2% (one in fifty students), this may be sustainable. At higher rates, institutions would need to make their processing more efficient (Felton and Steele, 2016) and provide staff and students with incentives for detection and reporting.

Encourage students to take greater responsibility for maintaining academic integrity.
Greater representation and involvement of students in integrity processes will help to create a culture where integrity is the norm and misconduct an exception or taboo (James, 2016). Providing opportunity and incentives for reporting would be particularly helpful for contract cheating and collusion cases where intelligence from student whistleblowers is crucial. Baird (2016) presented on the successful use of anonymous student feedback acquired via end-of-unit institutional feedback systems and supplemented by ongoing anonymous feedback.

Link academic integrity to professional integrity and ethics.
Many graduates expect to work in a profession. Understanding the integrity and ethics of that profession and linking it to academic integrity increases the likelihood that students will take on those values.

Improve data collection and analysis to determine patterns of academic misconduct.
Centralize data collection within institutions (Felton and Steele, 2016) but with the ability for relevant users at the Faculty level to conduct analyses, benchmark, and make comparisons (Clare, 2016). Agreement on recording and measurement standards is needed so that comparisons can be made within and between institutions. Once data is available, analysis of patterns can be used to diagnose problems and allocate resources.

Consider the drivers of academic misconduct.
If an individual is primarily interested in migration rather than education, then a disincentive to engaging in academic misconduct could be a report to the appropriate government department which compromises the standing of visas. A recent case in Australia highlighted this possibility (The Australian, 2016).

Improve processing of academic misconduct.
This is particularly the case where high levels of misconduct and new forms such as contract cheating are concerned, so that teaching staff are the first line of detection, but specialist

support staff then take-over the investigation. This would lower workload on teaching staff and improve consistency and the quality of institutional responses to emerging patterns of misconduct. Improved institutional systems could increase the speed of processing and ensure compliance with procedural fairness for students (Evans and Levine, 2017; Felton and Steele, 2016).

Reduce opportunities for plagiarism through assessment design.
This could include customization, scaffolding (breaking assessment into parts with formative feedback) (Born, 2003), applying requirements to sources for papers (Bain, 2014), and adjusting the balance from continuous assessment to invigilated examination. A mandatory requirement to pass an invigilated examination is a defense against contract cheating on continuous assessment. An examination also provides authentic work to use in cases where continuous assessment is questionable. Furthermore, an examination can include questions to check students' understanding of their continuous assessment.

Increase support services.
These include the provision of stand-alone classes and embedded (i.e., team teaching) practices where communication skills and referencing (among others) are taught, plus the provision of counseling for at-risk students. If institutions are keen to open up entry to a more diverse cohort of students, then there is an obligation to provide services to ensure students have every chance of success.

Provide cultural transition courses.
Students who spend their formative education in different cultures are at higher risk of difficulties in transitioning to their chosen institution's culture (Chen and Macfarlane, 2015; Zhou et al., 2008). Postgraduate students in particular have completed all their education including Bachelor's degrees or equivalent in their own culture, yet they are expected to have similar attitudes, values, and beliefs to teaching and learning as other students at their destination institution. A cultural transition course could complement language and referencing courses to provide a comprehensive transition for new students. Education for teachers would also help with cultural adaptation in the classroom (Zhou et al., 2008).

4. ACKNOWLEDGEMENTS

5. REFERENCES

Academic Integrity. (2016). Retrieved January 12, 2017, from https://academicintegrity.curtin.edu.au/.

Allen, G., Ball, N., Chapman, J., & Davies, R. (2014). Examining Student Learning in Spreadsheet Assignments: The Value of Activity-Trace Logs. *2014 Proceedings of the Information Systems Educators Conference*, Baltimore, MD.

Atkinson, D. & Yeoh, S. (2008). Student and Staff Perceptions of the Effectiveness of Plagiarism Detection Software. *Australasian Journal of Educational Technology*, 24(2), 222-240.

Bain, L. Z. (2014). How Students use Technology to Cheat and What Faculty can do About it. *2014 Proceedings of the Information Systems Educators Conference*, Baltimore MD.

Baird, M. (2016). Contract Cheating in Business Simulations: Detecting, Investigating and Improving. Presentation at the *WA Forum on Contract Cheating*, Curtin University, WA, October 12, 2016.

BlackBoard.com. (2016). Retrieved December 21, 2016, from www.blackboard.com.

Born, A. D. (2003). How to Reduce Plagiarism. *Journal of Information Systems Education*, 14(3), 223-224.

Bretag, T. (2016). Discipline-Specific Approaches to Academic Integrity: Introduction. In Bretag, T. (Ed.) *Handbook of Academic Integrity*, Springer Reference, 673-676.

Building Academic Integrity. (n.d.). Retrieved February 25, 2017, from http://www.buildingacademicintegrity.org/online-tutorials.

Carroll, J. (2002). *A Handbook for Deterring Plagiarism in Higher Education*. Oxford, UK: The Oxford Centre for Staff and Learning Development.

Chen, S. & Macfarlane, B. (2015) Academic Integrity in China. In Bretag, T. (Ed.) *Handbook of Academic Integrity*, Springer Reference.

Clare, J. (2016). Rational, Motivated Students and Suitable Units: Detecting Suspected Contract Cheating for Unsupervised Written Assignments. Presentation at the *WA Forum on Contract Cheating,* Curtin University, WA, October 12, 2016.

Clarke, R. & Lancaster, T. (2006). Eliminating the Successor to Plagiarism? Identifying the Usage of Contract Cheating Sites. *CiteSeerX* 10.1.1.120.5440.

Duncan A., Kiely D., Leong K., Phillimore, J., & Seymour, R. (2016). *Western Australia's International Education Sector: Performance and Prospects*, Bankwest Curtin Economics Centre and John Curtin Institute of Public Policy.

Dunworth, K. (2009). An Investigation into Post Entry English Language Assessment in Australian Universities. *Journal of Academic Language and Learning,* 3(1), A1-A13.

East, J. (2016). Educational Responses to Academic Integrity. In Bretag, T. (Ed.) *Handbook of Academic Integrity*, Springer Reference, 481-496.

Epigeum. (n.d.). Retrieved January 12, 2017, from https://www.epigeum.com/.

e-rater. (2017). Educational Testing Service. Retrieved January 12, 2017 from https://www.ets.org/erater/about.

Evans, M. & Levine P. (2017). We Need to Talk about your Assignment: The Requirements of Procedural Fairness when Academic Misconduct is First Suspected. *Monash University Law Review,* 42(2), 339-359.

Felton, T. & Steele, A. (2016). Taking Student Discipline Online. Presentation at the *WA Forum on Contract Cheating*, Curtin University, WA, October 12, 2016.

Glatt, B. S. & Haertel, E. H. (1982). The Use of the Cloze Testing Procedure for Detecting Plagiarism. *Journal of Experimental Education,* 50(3), 127-136.

Glendinning, I. (2014). Responses to Student Plagiarism in Higher Education across Europe. *International Journal for Educational Integrity*, 10(1), 4-20.

Guo, X. (2011). Understanding Student Plagiarism: An Empirical Study in Accounting Education. *Accounting Education,* 20(1), 17-37.

James, C. (2016). Academic Integrity in Legal Education. In Bretag, T. (Ed.) *Handbook of Academic Integrity*, Springer Reference, 695-712

Le Masurier, M. (2009). Telling Tales in the Negligent Office. *Angelaki,* 14(1), 51-64.

Leask, B. (2006). Plagiarism, Cultural Diversity and Metaphor—Implications for Academic Staff Development. *Assessment & Evaluation in Higher Education,* 31(2), 183-199.

McCabe, D. L. (2009). Academic Dishonesty in Nursing Schools: An Empirical Investigation. *Journal of Nursing Education,* 48(11), 614-23.

Macdonald, R. & Carroll, J. (2006). Plagiarism—A Complex Issue Requiring a Holistic Institutional Approach. *Assessment & Evaluation in Higher Education,* 31(2), 233-245, 68.

McNeilage A. & Visentin, L. (2014). University Essay Cheating Scandal Rises from Chase for the Foreign Student Dollar. *Sydney Morning Herald.* Retrieved from http://www.smh.com.au/national/education/university-essay-cheating-scandal-rises-from-chase-for-the-foreign-student-dollar-20141114-11mmi3.html#ixzz44RsnT2gF.

Moore, P. (2012). Post-Entry Language Assessment in Australian Higher Education – A Brief Overview. Retrieved January 4, 2017, from http://www.aall.org.au/sites/default/files/Post-entry%20language%20assessment%20_PELA_%20report.pdf.

Owens, C. & White, F. A. (2013). A 5-Year Systematic Strategy to Reduce Plagiarism among First-Year Psychology University Students. *Australian Journal of Psychology,* 65(1), 14-21.

Polonius.com.au. (2014). Complaints Management. Retrieved January 6, 2017, from http://www.polonious.com.au/2014/09/complaints-management/.

Ramineni, C., Trapani, C. S., Williamson, D. M., Davey, T., & Bridgeman, T. (2012). Evaluation of the e-rater® Scoring Engine for the TOEFL® Independent and Integrated Prompts. *ETS Research Report Series*, Retrieved January 13, 2017, from http://onlinelibrary.wiley.com/doi/10.1002/j.2333-8504.2012.tb02288.x/epdf.

Simon. (2016). Academic Integrity in Non-Text Based Disciplines. In Bretag, T. (Ed.) *Handbook of Academic Integrity*, Springer Reference, 763-782

Singh, A. (2013). Detecting Plagiarism in MS Access Assignments. *Journal of Information Systems Education,* 24(3), 177-180.

Sowden, C. (2005). Plagiarism and the Culture of Multilingual Students in Higher Education Abroad. *ELT Journal,* 59(3), 226-233.

Statute No. 10 – Student Discipline. (2010). Retrieved January 12, 2017, from http://policies.curtin.edu.au/local/docs/statutes-rules/Statute_No_10_Student_Disciplinary_Statute.pdf.

Stuhmcke, A., Booth, T., & Wangmann, J. (2016). The Illusory Dichotomy of Plagiarism. *Assessment & Evaluation in Higher Education,* 41(7), 982-995.

The Australian. (2016). Student Loses Appeal over Plagiarism Ruling. Retrieved January 13, 2017, from http://www.theaustralian.com.au/higher-education/overseas-student-loses-appeal-over-plagiarism-ruling/news-story/e254773faee87a45972af91082c767f9.

The Center for Academic Integrity. (1999). The Fundamental Values of Academic Integrity. Retrieved December 23, 2016, from http://www.academicintegrity.org/icai/assets/fvproject.pdf.

The University of Sydney. (2015). An Approach to Minimizing Academic Misconduct and Plagiarism at the University of Sydney. Retrieved December 22, 2016, from http://www.smh.com.au/cqstatic/givnzv/Taskforce.pdf.

Turnitin.com. (2016). Retrieved December 21, 2016, from www.turnitin.com.

University Admission Centre. (2015). Qualifications Accepted as Satisfying Curtin University's Minimum English Entry Requirements. Retrieved January 13, 2017, from http://students.curtin.edu.au/local/docs/English_List.pdf.

Zhou, Y., Jindal-Snape, D., Topping, K., & Todman, J. (2008). Theoretical Models of Culture Shock and Adaptation in International Students in Higher Education. *Studies in Higher* Education, 33(1), 63-75.

AUTHOR BIOGRAPHIES

Doug Atkinson is a Senior Lecturer in the School of Information Systems, Curtin University. He has 30 years of tertiary teaching experience and has received university awards for his excellence and innovation in teaching. His research interests include IS education, knowledge management and data science. His recent work includes improving online assessment and feedback, and plagiarism detection using stylometry and rules.

S. Zaung Nau is currently an Associate Lecturer in the School of Information Systems, Curtin University. She received her Bachelor degree (Information Technology), first class honours in Information Systems and PhD from Curtin University. For her PhD thesis, she analysed the determinants of public transport use in Western Australia and its temporal and spatial variations. Her research interests include collaborative e-learning, data mining, demand modelling and transport data analytics. She has been working on the PATREC project for public transport: travel behaviour pattern analysis.

Christine Symons is a Lecturer in the Communication Skills Centre at the Curtin Business School. She holds Masters degrees in Education and Business Leadership and is currently undertaking a PhD in the field of management. She has had a long term involvement in teaching communication skills.

STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the Journal of Information Systems Education have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.