PLAGIARISM MANAGEMENT: CHALLENGES, PROCEDURE, AND WORKFLOW AUTOMATION

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ABSTRACT

Aim/Purpose	This paper presents some of the issues that academia faces in both the detection of plagiarism and the aftermath. The focus is on the latter, how academics and educational institutions around the world can address the challenges that *follow* the identification of an incident. The scope is to identify the need for and describe specific strategies to efficiently manage plagiarism incidents.
Background	Plagiarism is possibly one of the major academic misconduct offences. Yet, only a portion of Higher Education Institutes (HEIs) appear to have well developed policies and procedures aimed at dealing with this issue or to follow these when required. Students who plagiarize and are not caught pose challenges for academia. Students who are caught pose equal challenges.
Methodology	Following a literature review that identifies and describes the extent and the seriousness of the problem, procedures and strategies to address the issue are recommended, based on the literature and best practices.
Contribution	The paper alerts academics regarding the need for the establishment of rigorous and standardized procedures to address the challenges that follow the identification of a plagiarism incident. It then describes how to streamline the process to improve consistency and reduce the errors and the effort required by academic staff.
Recommendations for Practitioners	To ensure that what is expected to happen takes place, HEIs should structure the process of managing suspected plagiarism cases. Operationalization, workflow automation, diagrams that map the processes involved, clear information and examples to support and help academics make informed and consistent decisions, templates to communicate with the offenders, and databases to record incidents for future reference are strongly recommended.

Future research	This paper provides a good basis for further research that will examine the plagiarism policy, the procedures, and the outcome of employing the procedures within the faculties of a single HEI, or an empirical comparison of these across a group of HEIs.
Impact on Society	Considering its potential consequences, educational institutions should strive to prevent, detect, and deter plagiarism – and any type of student misconduct. Inaction can be harmful, as it is likely that some students will not gain the appropriate knowledge that their chosen profession requires, which could put in danger both their wellbeing and the people they will later serve in their careers.
Keywords	academic integrity, plagiarism, higher education, cheating, policy, procedure

INTRODUCTION

Academic misconduct encompasses a broad spectrum of misbehaviors. Among them, cheating on examinations, fabricating results, colluding, purchasing of essays, and plagiarism – the duplication of ideas without the corresponding acknowledgement (Bretag, 2013; Park, 2003).

According to the Daily Mail Online (2016), 50,000 students have been caught cheating in exams or essays in the past three years in the UK alone. Following investigations, a mere 1% of them has been judged guilty of academic misconduct.

Clarke and Lancaster (2006) coined the term 'contract-cheating' to describe the situation where students purchase bespoke academic assessments and submit the work as if it was their own. As Wolverton (2016) reported, a new cheating economy has emerged and policing this kind of cheating is extremely hard. Internet-based essay writing services are flourishing as it is now easy and cheap to search, find, and pay someone to complete your coursework. Ghost-written essays are another outstanding challenge that has become endemic. How prevalent is the phenomenon? The 2015 MyMaster essay cheating scandal revealed that around 1,000 students from 16 Australian HEIs had submitted assignments that had been paid for through these services (Visentin, 2015).

The scope of the present paper is to review the literature on plagiarism, one of the many aspects of academic misconduct, and recommend best practices. Plagiarism is considered a serious academic offence and all related incidents should be addressed carefully by HEIs. Despite this, many academics perceive managing plagiarism to be a daunting task, often because their educational institutions have underdeveloped procedures (Bretag, 2013; Glendinning, 2014).

A Google Scholar search for 'plagiarism' performed in the fall of 2018 showed a response of 473,000 related articles. Of interest, 30,100 of these were published in 2017 alone, thus suggesting the concern this topic raises. Following this finding, a small-scale literature review was performed to examine the existing research in this area. Our search showed that, thus far, the majority of studies in plagiarism have focused on student and institutional attitudes towards plagiarism (Jager & Brown, 2010; Tennant & Duggan, 2008; Vehviläinen, Löfström, & Nevgi, 2018; Wilkinson, 2009), reasons why and how students plagiarize (Dias & Bastos, 2014; Klein, 2011; McCabe, 2005), cultural influences on plagiarism (Hayes & Introna, 2005; Kam, Hue, & Cheung, 2017; Stappenbelt, Rowles, & May, 2009), understanding of academic writing, academic integrity, and institutional policies (Bretag, 2013; Gullifer & Tyson, 2014; Power, 2009), views on plagiarism deterrence and detection (Jones & Sheridan, 2015; Levine & Pazdernik, 2018), current policies and systems attempting to address plagiarism, or the lack of these (Hu & Sun, 2017; Kaktiņš, 2014; Macdonald & Carroll, 2006; Mellar, Peytcheva-Forsyth, Kocdar, Karadeniz, & Yovkova, 2018), and plagiarism in the digital age (Moorman & Pennell, 2017; Nilsson, 2016; Sutherland-Smith, 2015). Despite the vast literature on plagiarism, however, little attention has been given to examining the effectiveness of policies, processes, and systems in addressing this problem (see Glendinning, 2014).

While many HEIs have clear protocols of plagiarism that are followed to the letter (see Henderson, Whitelaw, & Jose, 2014), a great deal of them have been found to be inconsistent when it comes to acting (Joob & Wiwanitkit, 2014; Park, 2003). The current highly commercialized and competitive academic climate and the financial viability of HEIs may interfere with their adherence to academic integrity guidelines and regulations. There are several reasons why inaction is rather problematic, if not harmful. First, because it may inadvertently encourage or at least defuse an unacceptable practice. Second, because students who rely on cheating to pass exams are unlikely to gain the appropriate knowledge that their chosen profession requires – something that could put in danger both their wellbeing and the people they will later deal with in their careers. As such, it is imperative that HEIs reflect on what they wish to be known and remembered for, and what caliber of students they expect to graduate. Instilling a culture that values academic integrity above all else should be a priority (Macdonald & Carroll, 2006; Macfarlane, Zhung, & Pun, 2012; Park, 2003).

When HEIs are determined to act, unclear, cumbersome or unstandardized processes in managing student plagiarism may result in inaction or inappropriate action, unnecessary efforts, and unfair outcomes (Gibson, Ivancevich, Donnelly, & Konopaske, 2011). For instance, Tennant, Rowell, and Duggan (2007) identified substantial variation in the range and spread of the penalties available for plagiarism among UK HEIs and in the procedures involved in their recommendation.

The literature review found no studies examining the actual systems that HEIs use to manage plagiarism incidents from start to finish. An in-depth examination of a sample of 12 large Australian HEI websites showed that although nearly all included elaborate and widely dispersed Institutional Policies, Statutes and Regulations, Codes of Conduct and Guidelines, only two of them included a practical and easy to use web-based system for reporting, processing, and recording plagiarism incidents. The rest suggested the academics should report the incidents, presumably using traditional emails or printed reports. Similarly, although some HEIs had established protocols for reporting and recording academic misconduct, in the documentation that was publicly available (noting that much is staff restricted), the process appeared to be lengthy and inefficient. Academics were instructed to download proformas and submit them to the Head of School or Dean as appropriate. Academic Registrars were to keep a record of all findings of academic misconduct and penalties imposed, but there was no mention of a method or system.

In this paper I urge authorities to develop the appropriate structures and automate the processes to manage student plagiarism cases. I begin by discussing some of the challenges academics face in detecting plagiarism and then describe the process and provide step by step guidelines for developing efficient systems. The focus is placed on how academics and institutions can address the challenges that *follow* the identification of an incident.

THE IMPORTANCE OF PLAGIARISM CHECKS

Students who plagiarize by presenting someone else's work or ideas as their own pose a dual challenge. The first one is when the student is not caught. Surprisingly, a second – and often more intricate – challenge emerges when a student is caught. Consider the first scenario. Students who plagiarize and are not caught present two serious issues: one for academia, and one with even broader consequences for society. The credibility of a HEI is measured, among other variables, by the caliber of the students and professionals it produces (Hazelkorn, 2015). Graduates who have systematically plagiarized but have not been detected affect, or should affect, the HEI's research funding, ranking, and ultimately its reputation. Most HEIs are liable to the taxpayers and the society and should therefore safeguard the quality of education it provides and the graduates it produces, because the second issue, the consequences at the broader societal level, may be severe. For instance, students who receive grades and degrees they do not deserve can become incompetent professionals (see Martin, Rao, & Sloan, 2009). Lawyers who may jeopardize their clients' rights, doctors who misdiagnose and put at serious risk the health of their patients, and surgeons bound to perform mala praxis. According to Nonis and Swift (2001), students who engaged in dishonest acts in college are more likely to

engage in dishonest acts in the workplace. Considering these potential consequences, every institution should strive to prevent, detect, and deter plagiarism – and any type of student misconduct.

The second major challenge for academics arises when the instructor suspects that the student may have incurred in plagiarism and is planning to pursue the case. To illustrate the complexity of this process, consider the following scenario. An academic has just received 200 student assignments. Using detection software supplied by the HEI, s/he performs a plagiarism check. The originality report shows that 20 students have serious issues in citing work, thus suggesting that they have plagiarized. The academic is now required to make several important decisions, which for inter-rater reliability purposes should be consistent to those of other colleagues. This is to say, the academic should follow the same standards and procedures as his/her colleagues to avoid bias.

While institutions may vary in how they approach student plagiarism, there is consensus among scholars that certain steps must be taken when addressing this issue (see Lampert, 2014; Vehviläinen et al., 2018). Such steps involve (a) detection and selection of cases with high similarity; (b) careful examination of the evidence (e.g., comparison of the script and the sources), including contacting students or colleagues for further information if needed (e.g., to establish whether the offence was intentional, who copied from whom); (c) completion of a detailed report form; (d) decision, which may require consultation with other parties (e.g., unit convenor, chair, authorized officer, administration); (e) communication of the decision to involved parties; and (f) recording on student records (see also Bretag & Mahmud, 2009). Figure 1 summarizes this process.
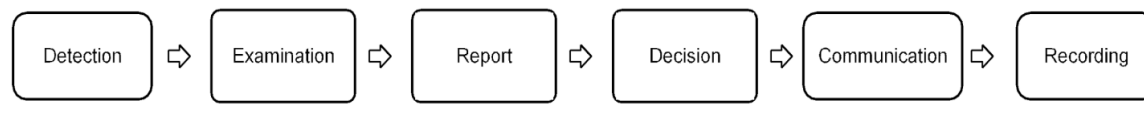
Figure 1. Steps in dealing with plagiarism

STRATEGIES TO DETER STUDENT PLAGIARISM

Previous research examining the reasons why students cheat has provided useful information for the development of models aimed at preventing plagiarism (Academic Integrity Project, 2013; Bretag, 2013; Macdonald & Carroll, 2006; Park, 2003, 2004; Sims, 2002). Prevention is always the best medicine. Although this is not the focus of this paper, the following key aspects have been found to be helpful in deterring student plagiarism: (a) optimal training on academic writing and referencing skills; (b) education on academic integrity and what constitutes plagiarism; and (c) full awareness of the consequences of engaging in it (Devlin, 2006). Stoesz and Yudintseva (2018) in their review reported that online formats or short face-to-face sessions can result in plagiarism behavior change, particularly if practice or hands-on experiences are included.

In terms of methods, to improve academic writing it is suggested to break down the learning process into steps. Institutions could first focus on teaching the student how to paraphrase a concept from a given article and further learn how to cite it properly. Likewise, it is equally important that the student learns how to convey ideas in a concise way – a literary device that is in fact an essential skill in academic writing. On the other hand, as positive reinforcement has been shown to be a successful approach when applied to education (Wheldall & Merret, 2017), students should be praised when their academic writing has shown improvement. As per methods aimed at reinforcing the student integrity, the use of audio-visual tutorials explaining the expectations that the institution holds about their students is recommended. Ideally, this will be presented both in the students' induction program and within each foundation and core subject to be undertaken. The implementation of prevention programs is likely to reduce plagiarism, although some students are still expected to engage in plagiarism,

as certain personality traits (i.e., low levels of conscientiousness) are associated with proneness to plagiarism (Wilks, Cruz, & Sousa, 2016).

NATIONAL POLICIES ON PLAGIARISM

Many countries have developed strategies to promote academic integrity and address the challenges presented by academic misconduct at a national level (Bretag et al., 2011; Morris & Carroll, 2015; Murray & Rowell, 2009). These comprehensive guidelines require HEIs to promote and maintain assurances of quality, standards, and academic integrity within their alumni. One such example of a national initiative can be found in UK (Macdonald & Carroll, 2006). To comply with Quality Assurance Agency (QAA) requirements, HEIs in the UK must possess codes of conduct, policies, and procedures on managing academic misconduct. Likewise, Australia's Tertiary Education Quality and Standards Agency (TEQSA) has issued a Guidance Note on Academic Integrity, setting out broad requirements for HEIs. Such is the case in the US and some EU countries whose quality assurance organizations have developed similar frameworks. Yet, many non-English speaking countries tend to be more lenient towards student plagiarism (see Foltýnek & Glendinning, 2015).

Teaching and learning differs both across as well as within cultures. As a result, plagiarist attitudes and practices are likely to be dependent on complex culturally situated influences (Handa & Power, 2005). For example, regions with high levels of trust such as Sweden and Scandinavia tend to exert less control on students, precisely because of the confidence factor (Charron & Rothstein, 2018). Cultures such as the Chinese are dominated by moralistic and regulatory discourses, and as such tend adopt a punitive element and react with sanctions (see Hu & Sun, 2017).

Remarkably enough, there is wide variation in definitions of plagiarism and in approaches to dealing with plagiarism and academic integrity policies among HEIs within the same country; for instance, in Canada (Eaton, 2017), Australia (Bretag et al., 2011), China (Hu & Sun, 2017), and Germany, Finland, and Austria (Glendinning, 2013). As Mcgrail and Mcgrail (2015) demonstrated by exploring the policies published in the web sites of US research-intensive institutions, "there is no specific agreement nor standard treatment of plagiarism for undergraduate work" (p. 23). This is not to say that these countries do not have clear guidelines, but rather they do not seem to have national policies that unify common criteria. In view of these extensive variations, Bretag and her colleagues (2011) recommended aligning policy and practice. Whether these systems are effective is the subject of our next discussion.

Glendinning (2014) surveyed EU students, teaching staff and senior managers. The aim was to determine how well institutional procedures were understood and implemented, and whether outcomes within and between institutions were consistent and aligned with policies. Results indicated that 71 per cent of all academics (N = 5,000) agreed that their institution has policies and procedures for dealing with plagiarism. However, academics from certain EU countries, including Italy, Spain, France, Portugal, Belgium, Finland, Bulgaria, and Germany, were less confident. Senior management respondents (70 per cent) expressed doubt about the consistency of approach to penalties for students. According to Glendinning, it appears that systemic failures are common, and review and reforms of policies across all levels of higher education governance are required. Glendinning concluded that "HEIs in many parts of Europe had poorly defined policies and systems for assurance of academic integrity. In some countries and institutions where policies were in place, there was little evidence of monitoring and review" (p. 17). Of interest, Glendinning found that obstacles for implementation include dangers of possible litigation by the accused students against the HEI, and the reputation of a HEI that reports large numbers of such cases.

Two additional operational factors, which do not appear to have received the required attention, turn the reporting of plagiarism incidents a difficult task. The first is the complexity and subjectivity of decision-making once plagiarism has been detected (Carroll, 2016). The second is the amount of administrative work involved in pursuing suspected plagiarists, which staff perceives to be fiddly and

cumbersome (Morris, Buswell, & Robertson, 2010). Indeed, to carefully collect data, investigate, compile, and present the evidence can be extremely time consuming, and require substantial human resources. The lengthy and unpleasant disciplinary procedures that ensue may deter some staff from reporting plagiarism (Atkinson & Yeoh, 2008). Holbeck et al. (2015) explored these and other challenges that seem recurrent when implementing plagiarism procedures. Online faculty members reported they "were more inclined to follow the protocol if plagiarism reports were easier to submit, took less time to submit, and the submission forms were integrated into the learning management system" (p. 202). In addition, as Hyland (2001) noted, due to the complexities of the line between paraphrasing and plagiarism, some staff may find providing feedback to students who have plagiarized uncomfortable.

Finally, Jones (2006), in his review of the academic regulations from Scottish HEIs where law is taught, reported that there was no universal methodology for recording offences. In some HEIs the recording of plagiarism breaches was not mandatory or only serious instances were recorded. As a result, some HEIs did not record a single instance of plagiarism during the three academic years under examination. Jones pointed out that this may lead to inequalities for students who have been found to have plagiarized at different institutions, as they may receive very different references after graduation.

Hence, automating this process could be a key to increasing adherence to the protocol, reducing workload and improving consistency. Incidents can be processed effortlessly and efficiently only when the whole process is carefully mapped and structured. Workflows and decision trees can assist the decision makers, while automated checks can improve consistency among staff.

DEALING WITH PLAGIARISM

The University Policy Benchmarking Project (Freeman, 2010) conducted a comparative analysis of policy frameworks in 16 Australian and New Zealand HEIs, identified good practice exemplars and features and established models for HEI policy management. Once again, it was evident that governance and policy varied among the HEIs studied. In terms of plagiarism policies, some HEIs adopted a progressive, educative approach, whereas others a more legalistic and punitive approach. The report outlines several recommendations for a comprehensive plagiarism policy, including a clear definition of plagiarism, student and staff responsibilities, procedures for educating students, detailed and fair procedures for investigating suspected cases of plagiarism, differential responses and penalties to different levels of plagiarism, and student appeal and grievance procedures. Finally, it highlights the need to maintain records in a central academic register or database.

An innovative online Australian HEI commissioned an external software company to consult with the authorized officer of the HEI and develop an online system that would simplify and automate the process of handling suspected plagiarism incidents and recording the data. Following six months of development, and a semester of testing with a single department, the system was fully deployed with success. This section delineates the challenges involved in each step of the process and presents a workflow (see Figure 2) and some recommendations on how to streamline dealing with suspected plagiarism incidents.
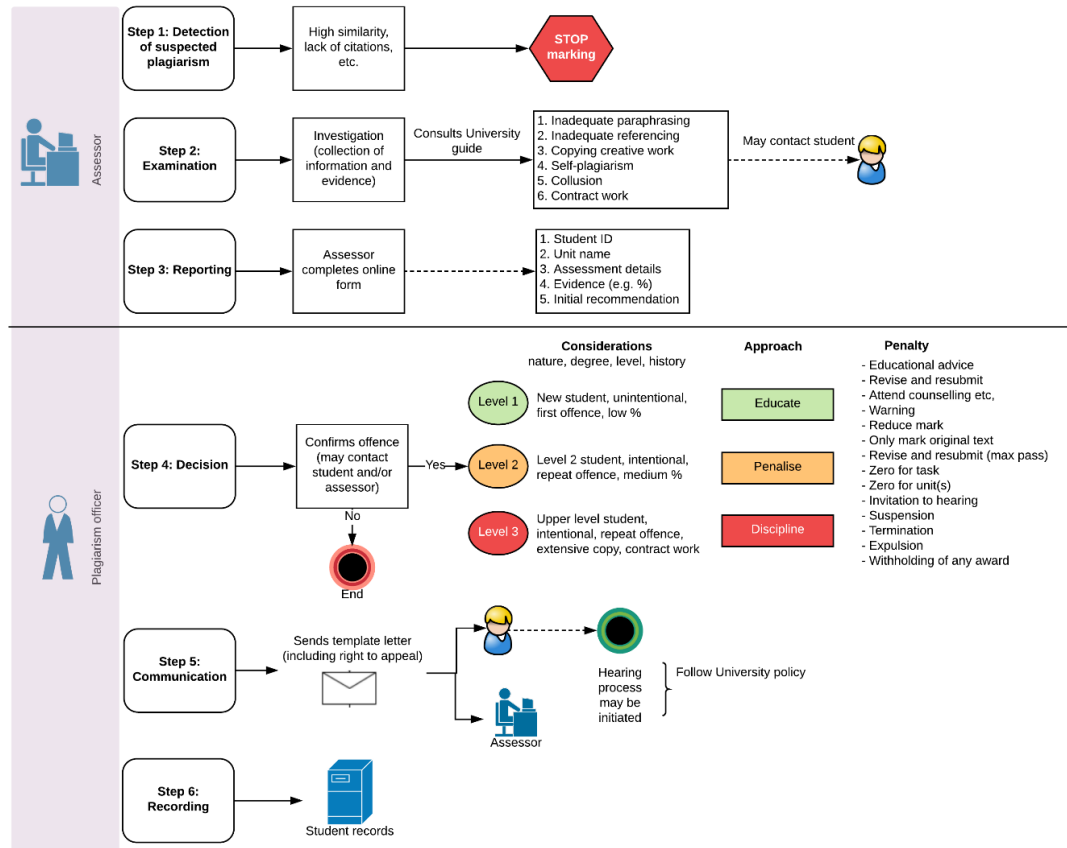
Figure 2. Suspected plagiarism management workflow

STEP 1: DETECTION

Plagiarism can be detected either manually or with the assistance of specialized software. Rogerson (2017) described the clues, patterns, and irregularities that set off the 'alarm-bell' in an academic's mind (e.g., irrelevant material, irregularities in references). Digital detection, on the other hand, involves sophisticated and relatively accurate software that retrieves and presents the evidence so that it's easy to identify. As already alluded, only in the past couple of decades have academics been able to use such methods to confirm their suspicions about a submitted assignment. These web-based systems compare a student's work with other online sources or past submissions. Commercial software applications include Turnitin [http://turnitin.com/] at a cost of a couple of dollars per student for institutional subscriptions, and SafeAssign [https://www.blackboard.com/safeassign/index.html], which is available to institutions with Blackboard enterprise accounts. Free plagiarism detection sites are also available, although some of these are reputedly fronts for essay banks or essay mills.

Not all 'text matching software' are equally effective at finding matches to sources and not all HEIs use them. These tools are highly accurate in detecting verbatim plagiarism, but they still require human engagement, are they not able to detect when the student has employed 'essay mills' to produce his/her work (a.k.a. 'contract cheating'). Other limitations include their capacity to match relevant sources in other languages and sources that have not been made available online. They are also not able to detect when a student copied entire concepts without doing this word for word. Gipp (2013) addressed this issue by developing a Citation-based Detection System (CbDS) that uses citation patterns rather than text comparisons to detect heavily disguised plagiarism. Similarly, Meuschke, Siebeck, Schubotz, and Gipp (2017) developed software that focuses on the detection of semantic text

relatedness and structural similarity. While a 100 per cent of accuracy may be unfeasible in the short term, plagiarism detection software is undoubtedly improving their technologies at a very fast pace. For the latest review of existing plagiarism detection techniques see Chowdhury and Bhattacharyya (2018).

While most scholars would agree that plagiarism detection software offers substantial assistance in the detection of plagiarism, there is disagreement as to whether students should be allowed to view their similarity report prior to their final submission. In a study exploring the impact of student awareness in the use of plagiarism detection software for their works, Youmans (2011) found that this did not reduce student plagiarism. However, that study only recruited students with previous plagiarism records. Stappenbelt and Rowles (2010), on the contrary, found that allowing students to check their work before submitting the final draft can help them improving their paraphrasing skills, while raising awareness for the need to acknowledge sources. Thus, assuming that students review the report they obtain for each submission, they make the necessary changes and do not submit last minute, this should result in a substantial drop of plagiarism. A counterargument is this method allows students to 'cheat' by editing their work to avoid matches to the sources used.

STEP 2: EXAMINATION OF THE EVIDENCE

Even when the HEI uses plagiarism detection software, the examination of the evidence is a manual process, which still requires effort, especially for borderline cases. As a result, academic staff is notoriously reluctant to do what is expected from them to do in instances of suspected plagiarism (Ellis, 2012). In addition, to correctly apply the software tools requires a certain level of training. Examples include adjusting the settings on text recognition, exclusion of quotes or references, and the interpretation of the similarity reports. With regards to the latter, originality reports help instructors identify the text within the submitted papers that is highly similar to other sources (e.g., student papers, articles, or online material).

Yet, there are no clear guidelines in terms of the percentage of similarity that may justify further examination and action. In fact, the question 'how much is too much' has been the cause of much frustration, particularly for new students and academics (Graham-Matheson & Starr, 2013). A high percentage of similarity is most likely a good indicator, but no system is perfect. A manual check is always required. Instructors should carefully examine and drill down into the report to check for similarities between the paper and the sources, review the parts that have been highlighted, exclude quoted material, commonly used phrases, references, and compare these to the original sources.

Often, the instructor may need to request permission from another HEI's instructor to access a copy of the source material their student has used to examine the similarities. At other times, for example, when it is not obvious who copied from whom, an informal investigation and communication with the students in question may be required.

STEP 3: REPORTING

Once the required information has been collected, the instructor needs to submit a report to the Academic Department and to the Registrar. The report should include details about the student, the unit, the assessment, the amount of similarity, and past episodes if any. In addition, the report should also include any relevant comments from the academic.

As mentioned, most of the HEIs sampled for the purposes of this study required academics to download proformas, record the details of the incident, and submit them to the Head of School or Dean using traditional emails or printed reports. The amount of administrative work involved in pursuing suspected plagiarists, which may deter some academics from reporting cases (Morris, Buswell, & Robertson, 2010), and the complexity and subjectivity of decision-making (Carroll, 2016) can be reduced by using web-based forms or tailor-made software. Such systems can automate the process and significantly reduce the effort required. By autocompleting certain fields, these reporting

proformas can accelerate the steps and make it easier for the academics to follow the protocol (Holbeck et al., 2015). For instance, entering the student ID number can bring up the students' record, units studied during the current period, past incidents, among other important pieces of information. Of course, date and time stamping can also occur automatically, thus eliminating extra unnecessary effort.

What is even more useful, these systems can reduce the complexity and subjectivity of decision-making (Carroll, 2016) by guiding the instructor with a simple decision tree that incorporates the institution's policy, the related definitions, and guidelines how to proceed – all in one place. Once completed, the report and the instructor's recommendation can be automatically shared and submitted to other parties (e.g., Department Chair, Authorized Officer, Registrar) before it is communicated to the student, as described in Step 6 below.

STEP 4: DECISION MAKING

When deliberating about the possible response to plagiarism (i.e., whether a punitive or an education approach), academics need to examine the extent of plagiarism and the student's intent to cheat. Policies in most HEIs distinguish between poor academic writing and plagiarism. The former is due to lack of knowledge or skills, while the latter is usually characterized by intention. To conclusively establish intent may be quite difficult. In this respect, the Australian Centre for the Study of Higher Education has created a guideline and criteria to assist staff in the classification of incidents (see the full report in James, McInnes, & Devlin, 2002).

The most prominent criterion is the extent of similarity to other sources. Yet, a high match does not necessarily warrant intention. For instance, the student may have used an excessive amount of quotations but cited or referenced the corresponding sources. While the responsibility always lies on the student, it is nonetheless true that many academics often omit to remind that direct quotes, even when appropriately attributed to the source, should not exceed 10 per cent of the material. A low similarity report, on the other hand, does not necessarily rule out plagiarism. For example, if in a 3,000 words essay the only plagiarist act involves the verbatim copy of a 200 words paragraph without providing a citation, the software will most likely report a low overall percentage. However, the little incidence in the report, this surely represents an act of plagiarism that warrants attention. Additionally, before deciding the action to be taken on the plagiarist, the instructor needs to ensure that the incident was not accidental, inadvertent, or due to fixating on the language of the original author. Often, students who do not fully understand the concept of plagiarism – generally first year students – tend to make mistakes in quoting, citing, or paraphrasing. In other occasions, students forget the source from which they got a given idea and further use it for their assignments without acknowledging the actual source – a phenomenon known as cryptomnesia (Brown & Murphy, 1989).

To determine intention, decision makers should also consider the level of the student and whether it is a first or a repeat offence. Likewise, institutions should also be aware that certain international students belong to cultures whose education systems have been more lenient about the use of sources without the corresponding citation. To illustrate some of the difficulties in making the right decision, I present a case of poor academic writing followed by a more serious case.

(a) A student addresses the criteria in a well written assessment. However, in-text citations are scattered throughout the paragraphs and end-of-text referencing is very poor. The originality report shows a high similarity to several sources. From the written work it is evident that the student has done the reading and the research required to complete the assessment. The work of others has been referenced and acknowledged in places but not as well in other areas, which suggests a lack of understanding by the student around referencing, paraphrasing, and summarizing. As this is a first level student with no previous history of plagiarism, the instructor ensures the incident is recorded for future reference and determines that it was poor academic practice and not intentional plagiarism. As such, the

instructor decides that the best approach is to focus on educating the student. Readings and links to resources and policies are provided, a warning is issued, and a small reduction in marks may be applied.

(b) The originality report shows a high similarity with sources that have not been referenced or paraphrased. The assessor examines the report closely and discovers that the student has extensively copied multiple quotes and slabs of text from multiple sources including e-books and websites. The entire assessment is a patchwork of work from multiple authors and may lack logical structure and flow. The student in question pleads ignorance even though he has already completed several units. The instructor disregards the poor argument of the student and decides to adopt a punitive approach.

A final consideration is that the perceived seriousness of plagiarism may vary depending on the subject area and the faculty. For example, in law school, where findings of dishonesty are an impediment if not a bar to practice, penalties tend to be highly rigorous. Such punishments, however, are usually not the case in engineering faculty, where practitioners often reproduce standard technical descriptions without attribution.

Procedures. Although dealing with plagiarism protocols may differ among institutions, the goal is to standardize the logistics, reduce the effort required, and improve the consistency among cases and instructors. Once an incident is identified the instructor is expected to prepare and submit a report. Template forms (preferably online) that include the required information are recommended to reduce the effort and the time required to gather and submit the evidence. These should include a preliminary assessment and recommendation, preferably using dropdown menus with prefilled options and courses of action for each level of plagiarism. Next, a notification is to be sent to the head academic or unit chair – preferably automatically.

For low level cases, instructors ought to be able to decide and determine the sanction or penalty. However, in more serious offences, due to the potentially severe implications for the student or the HEI in case of appeals, it is imperative to ensure that each decision is accurate and well justified. Issues of concern include incorrect classifications and false accusations. False positives, on the other hand, refer to instances when a student's work is wrongly identified as plagiarism. Obviously, false negatives can occur too – that is, students who have copied work and are not picked or identified as such. In addressing this issue, Carroll (2007) concluded that rather than looking for evidence 'beyond all reasonable doubt', the standard of proof should be 'on balance of probability'.

Penalties. Poor academic writing normally does not carry penalties. Rather, the aim is to educate the student, build a culture of academic integrity and promote good practice to celebrate achievement in academic writing. For this purpose, options usually include a combination of educational advice, requirements to study writing and referencing material, requests to revise and resubmit, an informal warning, or a small reduction in marks.

As the degree of seriousness of the plagiarism offence increases, so do the sanctions. Curtin University (2015) recommends the following system of penalties, which are ranked from a minor to a major level of seriousness. Students may be asked to attend counseling, a lecture, or a workshop; repeat the assessment with reduced maximum mark; receive a reduced or nil grade in respect of the assessable item in which the academic misconduct occurred; have their assessment voided; suspension of student's rights for a short or longer period; exclusion from attendance; denial of access to facilities or services; exclusion; termination from the course; expulsion from the HEI; or rescission of any award.

Consistency. Inter-rater reliability, fairness and consistency within instructors of the same institution is another matter of concern. In view of the large variation in the treatment of plagiarism cases found in earlier research (Tennant et al., 2007), Tennant and Rowell (2010) developed the Benchmark Plagiarism Tariff, which may serve as "a reference against which institutions can compare their own

procedures, and use as an informed and practical framework when updating or constructing new penalty Tariffs for academic misconduct" (p. 13).

As mentioned, other safeguards include clear HEI step by step guides and cross-checks by more experienced academics or dedicated academic integrity staff. Judgments on culpability or decisions on penalties should not be made by untrained academics. Hence, to achieve consistency and reduce errors, senior members of staff (e.g., the chair or the authorized officer) should overview all cases, determine or approve the final decision, decide on appropriate sanctions, or recommend the case to a discipline committee.

STEP 5: COMMUNICATION

Once a final decision has been made, someone must communicate it to the student in the most appropriate way. A professional and firm, yet polite and respectful official notification letter should be sent to the student, seeking to resolve the matter in a manner that encourages understanding, consensus, and acceptance. Due to the seriousness of the situation, the process of writing carefully phrased letters to students who may appeal their case is cumbersome and fiddly for academics (Morris et al., 2010). Again, a system that simplifies the process and reduces the effort required would benefit academics and institutions. Hence, using standard templates for each level of offence is recommended. These should include (a) a description of the problem and the nature of the offence; (b) links to HEI policies and educational resources; (c) the outcome; and (d) the process to be undertaken should the student wishes to appeal. Once the academic has made the decision and the penalty, and selects the template based on the level of the offence, the automated solution can generate a letter and prefill the student details that were entered in the previous steps. All the academic must do is to press the send button, and a copy is emailed to the student, the authorized officer and the registrar.

STEP 6: RECORDING

In institutions where the protocol for dealing with student plagiarism is underdeveloped, it is not unusual to find that some instructors rely on practices that are rather precarious. This includes relying on their memory, maintaining their own records, and circulating emails to check whether other colleagues within the same department have had any issue with a specific student. While it is essential that the instructor makes an informed decision when dealing with student plagiarism, one that is free from preconceived bias, the student's history on plagiarism should always be considered. However, an issue of concern with plagiarism records is who has access to such sensitive personal information. Confidentiality requirements present a challenge, and as such data should be handled and stored appropriately and be inaccessible by other parties. The most common student administrative management systems used by Australian HEIs are Callista and PeopleSoft (Paulsen, 2002). These platforms allow an authorized user, among other things, to record student plagiarism.

Yet, as discussed, even among HEIs that require academics to keep records, the exact process is usually left to the discretion of each department or faculty (Jones, 2006) who may invent their own systems. Alternatively, academics are required to report the outcome to the academic registrar, usually by submitting emails or printed forms. Instead, the proposed automated solution removes the manual effort required and stores all related information and documentation on a plagiarism or academic misconduct database, which is maintained by the registrar.

DISCUSSION AND CONCLUSION

Plagiarism is a serious academic misconduct and as such it should be dealt with corresponding seriousness. Although there is no doubt that discipline reinforces integrity, much like traffic fines reinforce speed limits, as many researchers have illustrated (Devlin, 2006; Sims, 2002; Stoesz & Yudintseva, 2018), the first and best line of defense against plagiarism is education and prevention. Following

that, mechanisms for detection and management of incidents fortify institutions and academics to guard against breaches of academic integrity.

Nevertheless, due to the sensitivity and the difficulty in handling each individual case, plagiarism represents one of the biggest challenges for academia. This paper identified the importance of detecting student plagiarism for the HEIs and the society, and the gap between what National policies recommend and what HEIs do when managing suspected plagiarism cases, due to the challenges that academics face in examining and determining an outcome. The focus of the paper was on the need to establish appropriate support systems for managing students who breach academic integrity.

Based on the review of the literature, a Benchmarking Project with a comparative analysis of several HEI policy frameworks, and the experience acquired from developing a successful application in an innovative Australian HEI, I described the workflow and provided recommendations for the challenges that academics may face in each stage and level. The six stages in dealing and managing suspected plagiarism cases are detection, examination of the evidence, reporting, decision and selection of an appropriate and fair penalty, communication of the decision to the involved parties, and recording of the incident on a database. When institutions establish a framework that standardizes the process as outlined in this paper, HEIs can address the challenges and accomplish the objective of managing plagiarism cases more efficiently for both students and staff.

As I argued throughout the paper, automation and recording of cases are two key and vitally important aspects that have not received the appropriate attention. Automation can assist HEI academics and administrators streamline the process, minimize the errors and the effort required, improve consistency in outcomes, and ensure that the actions that are expected actually take place. Reducing the time required to deal with plagiarism will result in lower costs and allow for a more effective use of academic and administrative time. Recording incidents can ensure serial offenders won't get away and will receive fair treatments rather than mock their instructors and the HEI.

The proposed system has been developed and tested by a medium to large (approx. 10,000 students) Australian HEI with success, according to its two authorized officers and the management. A limitation is that no empirical data have been collected yet. Although the efficiency of the proposed process and automation system may be difficult to assess as a whole due to confounding variables, future research can examine the efficiency of individual components as measured by the reduction in administrative workload, for instance, or the consistency in penalty outcomes (e.g., Badge, Green, & Scott, 2011; Scott, Rowell, Badge, & Green, 2012).

While opportunities to cheat are becoming more available due to technology, the world is becoming more aware and sensitized to ethics and their violations. HEIs more than ever need to protect those students who study hard and safeguard the quality of education they provide and the graduates they produce. If these challenges are not dealt appropriately at the HEI, they may have a spillover effect in society.

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