



Academic integrity compliance and education

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In 2002, RMIT University trialled Turnitin (Barrie 1996) a text matching software package to assist in the identification of plagiarism. Turnitin enables access to databases of text stored digitally and provides a means of comparing student submissions. Subsequent to the initial use of Turnitin by staff, a pilot was conducted during which student groups had access to the software to check their submission drafts. Now student assessments whether online or on-campus can be run through the detection software. In this paper, we discuss the process and practices of using plagiarism detection software at RMIT and briefly examine some information gathered from students, both online and on-campus, in informal comments regarding their participation in the student upload pilot. From these comments some suggested improvements to the implementation process are discussed. Some directions for future research into student use of Turnitin are also suggested.

In recent years, the Schools of Computer Science and Information Technology (CS&IT) and Business and Information Technology (BIT) have spear-headed trials of the use of plagiarism detection software, as well as implementing processes, procedures and workshops for explaining and dealing with academic integrity. This has possibly occurred because most of their student submissions are electronic and therefore amenable to use of copy detection software, or because the staff are well aware of and interested in the technologies involved. Dealing with the numerous cases of plagiarism found by the software has posed difficult questions for both Schools and the University, and is the main issue addressed in this paper.

Background

University plagiarism processes: Education and compliance

Clear policies and procedures exist within both Schools to handle incidents of plagiarism generally. Neither school distinguishes between online and on-campus plagiarism. Staff have developed procedures to implement University policy and guidelines in the first instance, and then proceeded to create resources to inform the student-staff educative interactions around academic integrity. In the School of CS&IT, JPlag software, a code matching application, has been used to compare code assignments for C and Java programs primarily to detect plagiarism in student assessments, and resources have been developed for informing students about the processes. During the same time frame, champions within the School of BIT have implemented incident policy, participated in University working parties and piloted staff use of Turnitin.

At the commencement of 2005 the Schools shared their expertise and differing development foci by crossing the boundaries of Schools and Portfolios to run workshops informing staff about plagiarism policy, local incident processes and available identifiable tools. The School of CS&IT has developed and conducted workshops for students (Hamilton et al, 2004). Online and hardcopy resources designed to assist students and staff to comply with University academic integrity policy, reference correctly and operate the appropriate software to identify transgressions in coded or text based assignments have also been developed. Champions shared experiences with other staff. Staff workshops provided a pivot to engage staff in future use of academic integrity processes and available resources. The descriptions of operational level processes and best practice experiences shared across both Schools served to improve and inform the student staff experience.

Further workshops for staff (2008) have been conducted in an attempt to engage all students and staff in maintaining academic integrity. The information presented in this paper is based on action research,

where we have incorporated the lessons learned from various staff and students about the use of online tools and processes, into suggestions for best-practice that reflect a response to all stakeholders needs with respect to education and incident detection. Both formal and informal discussions between staff have informed business processes in place, for plagiarism incident reporting and student education. Academic integrity information for all stakeholders is now disseminated using the Web and hardcopy at a School level, as well as by the University.

Plagiarism: Organisational information dissemination

There is currently an overwhelming amount of information available on the Web in relation to academic integrity. This information can be broadly divided into definitions of plagiarism, referencing guides, policies and guidelines for staff when incidents are detected, how to use Turnitin, JPlag and a range of other plagiarism detection software applications (Joyce, 2007).

The plagiarism definition disseminated online and during workshops assists staff and students in creating suitable expectations and shared understandings around academic integrity. Online and hardcopy 'how to reference' guides help students to produce assessments pieces free of incidents of plagiarism. Plagiarism detection software applications help staff to detect plagiarism and therefore maintain academic integrity in their subjects. Educative resources and descriptions of incidents of plagiarism have provided a wealth of information that underpins development and dissemination of policy, procedures, guidelines and instructions for staff and students online and in hardcopy, in a top-down manner. It has been the task of Schools and champions to implement the policies by creating efficient operational processes based on correct interpretations of University policy.

As the plagiarism detection applications were adopted, academics experienced an increase in the incidence and detection of plagiarised assessment tasks and, as a consequence, have been interested in operationalising University policy effectively. Schools responded to the increase in reported incidents by developing appropriate procedures for dealing with the range of associated issues without dramatic workload changes. Clear articulation of processes was required to support staff and students. This component of the overall University environment is generally easily communicated via policies and guidelines created and disseminated through the Web, by the University and played out at the operational level by a group of informed academic staff. Subscribing to the Turnitin application allows access to the aggregated databases, web pages and the database which holds all the material that is uploaded from member institutions. The focus of this paper is the educative process represented by the use of these tools for maintaining academic integrity in the university environment. We also discuss an extension of the use of these applications to a group of students to check the drafts of their assignment work prior to submission. Prior to this pilot study, only staff had access to detection software as they were able to load student work check digital versions of assessment tasks for possible breaches of the University plagiarism policy.

Academic integrity: A staff perspective

In order to reduce the incidence of plagiarism and therefore improve student learning staff need to be committed to using plagiarism detection software, educating students and developing innovative assessment tasks to reduce incidents. To this end, the use of Turnitin and JPlag by staff has been voluntary, although encouraged. Effective use of the tools requires that staff ensure students are well informed with respect to referencing and academic integrity issues. Staff also needed to be aware of and understand their responsibilities in the situation of suspected plagiarism according to University policy and guidelines. Once potential cases have been identified, staff need to be aware of the University processes surrounding the use of Turnitin.

At a seminar held at RMIT by English expert Jude Carroll in 2003 staff expressed surprise at the extensive range of responses to questions about 'what plagiarism was and how it should be dealt with'. The workshop was an impetus for the University to create specific policy and practice to generate shared understandings. Another benefit of the workshop was the engagement of a broad range of staff across the University as champions for the improvement of academic integrity procedures. In a more recent paper, Carroll suggested that staff should model "best practice". By this Carroll meant that staff needed to pay attention to copyright issues and referencing in the delivery of their teaching resources to students online and in traditional hardcopy formats. There are few strategies in place to collect occurrences of "best-practice" and this also needs to be extended to teaching and learning models, such as the design of assessment tasks that prohibit or reduce plagiarism. Professional development, dissemination of information to staff that is offered and updated on a cyclical basis and activities that engage discussion are required to fill the process gaps. It is essential that best-practice is identified, and that the processes in place enable incremental improvements to general practice. "The effectiveness of the process was

dependent on ‘the nature of the change, on how sensitive the implementers are to the voices in the organisation, and on the recognition that change is a continuous, not a discrete process’ (Mento, 2002) In this instance the process enabled the seeds to be sown for committed staff and stakeholder partnerships tied to explicitly described and planned activities.’ (Richardson and Guss, 2002).

The use of Turnitin has been gradually introduced using a peer use, review and dissemination process. An example of this process is in the Information Management area where staff have always used their information retrieval skills to detect incidences of plagiarism by searching the commercially available databases and the Web. While this method has been fairly successful in the past, staff are now impressed by the speed of results generated by Turnitin and the readability of the reports that are produced. Staff are less impressed with the overlay of procedures that accompany the use of Turnitin, but again with discussion of the success of detecting plagiarism, staff have been encouraged to continue to experiment. The next hurdle has been educating staff in the process of dealing with the detected incidents of plagiarism. In this area the University policy and guidelines are useful but can not necessarily cover all the questions and issues that arise in taking disciplinary action against students. Organisational sub-culture characteristics or issues and the availability of resources impact on the School’s ability to support staff taking disciplinary action at this next stage. The support of the Head of School and the development of administrative procedures to support the disciplinary action are important. Discussion of cases and dissemination of information about action taken and outcomes is then part of the education process.

Staff workshops

Staff need to remain informed about current software that can be utilised to detect plagiarism incidents and the availability of resources for students to inform them of their responsibilities in relation to written work. To this end a workshop has been developed and run to enable staff to relate their expertise and experiences. Topics covered are:

- Discussion of academic integrity policy and plagiarism processes implemented in the School
- Highlighting of important academic responsibilities
- Demonstration of Turnitin - pre-requisite processes for successful operation
- Presentation of case studies and stories of staff using Turnitin
- Discussion of issues regarding software for identification of plagiarised code
- Discussion and demonstration of School-based methods and tools required to communicate with students
- Plagiarism message and School processes to students and staff
- Discussion of student education processes including the methods and tools required for the education of students.

Participation in the workshops provided a number of positive outcomes for staff as they encouraged the debate of issues, ideas, models and best-practice in relation to all aspects of academic integrity. Broad-based dissemination of information has been enabled.

Academic integrity: A student perspective

There has been a systematic approach across the University to disseminate information about Academic Integrity via policy making and institution of appropriate procedures. For the students, dissemination of information, development of an appropriate procedure for using Turnitin and creation of policies in consultation with the student group have been emphasised. As well as the workshops conducted to teach students about academic integrity and changes to procedures for submitting assessment tasks, a pilot project allowing students to upload their assessment tasks using Turnitin software, has been conducted within the University.

An informal questionnaire was sent to gather some preliminary information detailing the students initial perceptions of the effectiveness of the use of the software. As the software is a reasonably new addition to standard suites of University desktop software, usage is obviously being trialled in a variety of ways by staff. The issue is not the province of Universities only. From copyright in publishing to digital technologies, the need for technological assistance in the detection of breaches is ever increasing.

Student workshops

One section of the academic integrity workshop developed for students explains plagiarism, the School’s intention to run detection software to identify it, and the procedures within the School and University which exist. If this plagiarism is a problem caused by lower entry levels and internationalisation of

Programs then this workshop should address any lack of awareness students may have, either about tertiary expectations of learning, or about various cultural differences in approaches to learning.

At the beginning of their first semester at the School of CS&IT, students are encouraged to attend a workshop on academic integrity. “Though many students are reluctant at first, particularly the postgraduate students, by the end, most are satisfied that the material is sufficiently thought provoking to warrant their attention” (Hamilton et al, 2004; Hamilton and Richardson, 2005). The basic purpose is to inform students of lecturers’ expectations of them and their assignments, how to reference sources and code in particular from the internet, and for them to discuss several scenarios involving actual episodes of student cheating, plagiarism and private tutoring. These student workshops have had a measurable effect in that no student who has attended a workshop over the five years they have been running has been called in for a hearing. However, they cannot be made compulsory, and hence we still have instances of plagiarism, though fewer. (Hamilton et al, 2004)

In the School of BIT staff champions teach referencing and inform students about their responsibilities in relation to academic integrity. Students are guided through the technical requirements of Turnitin and assisted with the entry of their own assessment tasks. Time is scheduled to enable students to correct referencing errors identified by the detection application.

Academic integrity in the educational technology landscape

Survey results of students using *Turnitin* to test draft assessments

Access to Turnitin is available via a weblink, and so both online and on-campus students can test their assessments for similarity against other submissions in the database. The students who participated in the trial of using Turnitin were asked a number of questions about their experience. Evaluation of the use of the software by the students strongly supports the development and delivery of workshops to train students to utilise the application, as well as providing them with information about correct referencing of their work using the accepted University style. The subject in which the application was trialled includes some general teaching with respect to referencing correctly in essay style submissions. Most of the students find that the software is easy to use and they generally report that they had a positive experience.

The students were fairly evenly divided between positive and negative responses regarding the benefit of using Turnitin. A summary of students recommendations for characteristics of assessments tasks, teaching and learning processes and timelines that determine the usefulness of Turnitin are:

- The nature of the assessment task was not appropriate for the use of the application. The view of these students was that report style documents do not require as much referencing as more academic style submissions.
- The impact of using the application imposes time constraints due to the necessity to prepare submissions early to utilise Turnitin and then review the submission. These students recommended an alteration to submission timelines to allay the extra work imposed by use of the application.
- Students have only used the software for this one subject and felt their lack of experience incurred a learning time cost. Hence they felt that they would need to use it more often throughout their degree to become effective end-users and take better advantage of the learning time cost.
- Some students felt that they already possessed the requisite referencing knowledge and the task of using Turnitin was therefore unnecessary.

The students reiterated their request for further training in relation to how to use the application effectively. This request supports the introduction of the workshops conducted prior to the commencement of each semester and online dissemination of reminder instructions already used to disseminate University guidelines for academic integrity. However, students not only requested additional training relating to how to use the application but also required assistance in understanding the reports generated. A small number of students asked for extended submission time frames within the teaching and assessment schedules to enable them to obtain the requisite application knowledge and skills to become effective end-users.

Some final responses regarding any negative aspects of using Turnitin describes the students’ acceptance of the benefits of utilising the software to check their draft assessment pieces for academic integrity compliance prior to submission. The use of the application for this purpose shifts the focus to one of educating students about correct referencing styles rather than incident detection for compliance with University rules.

Academic integrity and using Turnitin: The student perspective

RMIT has followed a cautious process to implementing the use of Turnitin over a long period of time. The ability for students to upload their work and have their drafts checked and then make corrections or additions is only one of a series of processes that appear to offer a way forward. It is quite clear that more education and training should be undertaken, with students and staff. The software package is only being partially utilised with this rather piecemeal approach of student upload at the discretion of the individual lecturer and the other abilities of the software need to be explored. Recently there have been problems with the databases that are available to be scanned by Turnitin and this will be an issue that needs further surveillance. For the students, it is clear there is guarded approval for the use of the software and the change from a punitive checking approach to an educative use of draft checking is much more appreciated.

Comments from students and staff regarding the use of Turnitin suggest that there are a number of measures that need to be continued or undertaken. These are:

- Continued education of both staff and students of the benefits of using Turnitin
- Better training in using the software
- Better timing of assessment tasks to facilitate the use of Turnitin.
- Improved design of assignments
- Better preparation for avoiding plagiarism
 - Training in using referencing style guides
 - Continuing education about how to use resources for assignments

Academic integrity and using Turnitin: The staff perspective

Student use of the application may of course enable the identification of breaches of academic integrity policy in assessment text prior to submission to staff. There is little or no mention of procedures to follow if a staff member is suspected or accused of plagiarism. Queries are being raised about giving students access to Turnitin for fear of them identifying staff who have plagiarised. Only recently has the problem of self-plagiarism been raised in the literature (Collberg, 2005; Giles, 2005). These papers discuss what might qualify as legitimate reuse, giving definitions of many different types of text reuse or self-plagiarism and concluding that:

“It is our belief that we should hold ourselves to the same high standards as we do our students. Many professors use tools such as MOSS (Aiken, 2004) or Glatt Plagiarism Services (www.plagiarism.com) to detect plagiarism among students. Similar tools would be useful to detect self-plagiarism among academics?”(Collberg, 2005). Staff can also generate original and real assessment tasks to which there is no solution that can be down loaded from the Web.

The description of the rules governing academic integrity are generally available for students post enrolment via the Web. There are also detailed information booklets created by most Schools to instruct students about referencing requirements, as well as instructions provided by academics during class. However, this is patchy across the University and can be confusing for students. The information is provided but not clearly aligned with usage.

Unfortunately there are still gaps in the student knowledge and perception of what constitutes academic integrity, and their past training and experience before entering the University has not often given them the necessary skills or context for dealing with issues of academic integrity in the University context. Students have almost unlimited access to computers connected to the internet, providing free use of the web and making copying easy. There is also a common belief that what is on the web is available for free public use and does not need to be referenced. Because the web is so vast and ever-changing, students often say that they found it on the web, but cannot find it again, and so cannot reference it. The environment for plagiarism is ripe and the students need a lot of guidance in dealing with information at the University level.

The way students study has altered irretrievably. Once upon a time a student would write copious notes during a lecture and then visit the library to add to the notes from hardcopy texts or journals. Now the same student may download the lecture notes and cut and paste sections into a file stored on their hard drive at home for later reference. They may later visit the library physically or virtually and add to their digital study notes stored on a memory drive. When the time comes to complete an assessment task the collection of files are effectively merged into another focussed file. It is easy to forget where small sections of text have been drawn from at assessment construction time when another process of creation, copying, pasting, merging and re-construction occurs. The process used for revising lectures, answering tutorial questions, researching for an assignment requires rigorous attention to referencing to ensure that

when the assignment is checked prior to submission it conforms to appropriate academic integrity standards. This represents a new method of working and studying and student access to Turnitin and additional training with respect to referencing is required. Academic integrity needs to become an integral component of all tasks undertaken by students and staff not just those associated with assessment.

This indicates a need for clear information to be provided at various times throughout a student's academic career. There is a need for a block of time to be allocated after enrolment (perhaps during orientation). This also needs to be supplemented by material that can be referred to at any time on the Web and "in-context" teaching in every course. Student Unions currently provide information and support for students accused of breaches of academic integrity. Our Student Union website has another main link to "student rights" which gives an overview of the role of a student rights officer (SRO) and a long list of how they can help students with confidential advice. The Union's SROs defend students. Disciplinary hearings are treated like minor court cases and SROs are there to make sure the student is heard and their case is stated clearly and the procedure followed exactly. Any departure from procedure will allow the SRO to have the case dismissed.

Academic integrity and using Turnitin: The quality process

There are dual perspectives and steps within the process that require attention. The information is available but fragmented and difficult to access or find. The overwhelming volume and the different steps in the process cause many staff and students to ignore all rather than tap into the section required when they need it. The information, policies and processes are first created and disseminated from the University level to implement the strategic objective supporting academic integrity. Guidelines designed to check practical work through the use of Turnitin and/or other plagiarism detection software, inform students of proper referencing standards and assist staff to inform students and participate in the University processes as defined by the University and followed by the School. Information dissemination needs to be integrated into the teaching of all courses.

Plagiarism detection is part of quality assessment which occurs at the course level. All the course reports are collated for the annual Program report, and linked with other University and stakeholder processes. This bottom-up approach identifies serial offenders which may then be referred to further disciplinary hearings, either at School or University level. Students should also be required to attend additional information and teaching sessions to prevent further breaches.

The effectiveness of the processes created to inform students and staff about academic integrity University expectations are dependent on cyclical review, dissemination of information and improvements to processes and activities. As Mento (Mento, 2002) stipulates the effectiveness of dynamic aligned processes is dependant on the recognition that change is a continuous, not a discrete process. The organisation must enable dynamic process growth through bottom-up and top-down communication of the impact of trialled academic integrity processes. This type of planned, incremental change should be the desired state for an organisation using its human capital to its full potential to innovate and solve complex problems.

The building process evidenced by the cycle of staff plagiarism workshops, student information and training sessions, disciplinary proceedings and planned changes to all of these activities demonstrate an action research approach to organisational development. This is not a linear process in fact it exhibits considerable overlap within the cycle of planned action, feedback and more planned action. In the Schools in question a four-step process has been adopted. The steps are: entering and contracting; diagnosing and feedback; planning and implementing; evaluating and institutionalising

Conclusions

The material presented in this paper is broadly based on responses of staff and students to the use of Turnitin. Much more detailed study of the use of Turnitin by students is necessary to refine the processes and emphasise the educative outcomes. Issues about intellectual property and the use of Turnitin need to be addressed also. Education of staff about improved outcomes is also necessary. Procedures for staff to use Turnitin appear to be in place, although more education and training still need to be undertaken. What is clear is that concerted effort is required from staff within Schools and support from administration and management within Universities to educate and encourage staff to continue to support and comply with academic integrity processes.

References

- Aiken, A. (2004). *Moss: A System for Detecting Software Plagiarism*.
<http://theory.stanford.edu/~aiken/moss/>, accessed 13/10/2008.
- Barrie, J., Berger, S., Lipscomb, M., Storm, C., Briand, M. (1996). *Turnitin*. www.turnitin.com, accessed 13/10/2008.
- Collberg, C. K., S. (2005). "Self-Plagiarism in Computer Science" *Communications of the ACM* 48(4): 88-94.
- Giles, J. (2005). "Taking on The Cheats" *Nature* 435(7040): 258.
- Hamilton, M. & Richardson, J. (2005). "The Question of Academic Integrity: Two Schools' Experiences at RMIT" *The Journal of University Teaching and Learning Practice (JUTLP)* 2(3b): 1-13.
- Hamilton, M., Tahaghoghi, S., Walker, C. (2004). *Educating Students About Plagiarism Avoidance - A Computer Science Perspective*. ICCE2004: International Conference on Computers in Education, Melbourne, Australia, 1275-1284.
- Joyce, D. (2007). "Academic Integrity and Plagiarism: Australasian Perspectives" *Computer Science Education* 17(3): 187-200.
- Mento, A., Jones, R., Dirndorfer, W. (2002). "A Change Management Process: Grounded in Both Theory and Practice" *Journal of Change Management* 3(3): 45-59.
- Richardson, J. & Guss, S. (2002). *In Search of a Complete Metaphor for Scaffolding the User of On-line Course Materials*. OZCHI 2002, Fremantle.
- Richardson, J., Weisz, M. (2005). *Engaging Internal Communities and External Stakeholders in Program Quality Assurance*. Australian Universities Quality Forum 2005, Sydney.

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