Critical Design and Effective Tools for E-Learning in Higher Education:
Theory into Practice

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Chapter 8
Anti-Plagiarism Software in an Irish University: Three Years Later

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ABSTRACT
A variety of anti-plagiarism software applications have appeared in recent years, but the pedagogical and institutional practices underpinning their use remains largely unexplored. It is essential to increase the amount of evidence-based literature that investigates the use of anti-plagiarism software in higher education. In the light of this, this chapter explores the integration of anti-plagiarism software in an Irish university since early 2006 and the progress made to date. We use data gathered from our own context to show how instructors are using this software to date, what trends emerge and what can be deduced about the adoption of the system to guide future research questions. Best practices are suggested for educators in order to help them to use anti-plagiarism software in proactive, positive, and pedagogically sound ways.

INTRODUCTION
Academic dishonesty is far from a new phenomenon, yet claims that it is on the rise are widespread and often associated to the use of the Internet (Chaky & Diekhoff, 2002; Scanlon & Neumann, 2002). Several plagiarism scandals, the proliferation of 'paper mills' and websites offering assignments 'à la carte', and the widespread use of the Internet for learning purposes have also amplified awareness of it. The concern of higher education institutions is manifested in their websites, where students are advised on correct referencing and plagiarism avoidance, and educators are given tools and guidance to detect cheaters. A variety of free and commercial software designed to detect plagiarism from Internet sources has also appeared and has been made available to teachers as a means to deter plagiarism and detect it when happening (Turnitin, My Drop Box, Eve, WcopyFind are some of these). The plethora of educational institutions that have adopted the use
of plagiarism prevention software indicates that its popularity is thriving.

Both practical and ethical issues can be argued for and against the use of technological solutions for the investigation of the originality of students’ work. While distributors like Turnitin assert that their plagiarism prevention module can enhance teaching by ‘deterring plagiarism before it happens’ (from www.turnitin.com), detractors regard the service pedagogically inappropriate, untrustworthy and even unethical. For example, Carbone (2001) denounces that ‘the service is not about teaching, it’s about catching, it’s a pedagogic placebo’. Similarly, Sutherland-Smith and Carr (2005) express their concerns that teachers could view Turnitin as a purely punitive tool. The authors report that some members of staff participating in their study felt that that ‘where students were caught for plagiarism and punished, that would be the educative value of the anti-plagiarism software, as students would be unlikely to re-offend’. This approach implies a reactive attitude to the behavioural manifestations of academic dishonesty, which neglects the reasons that underpin it and the actions that may prevent it from happening.

On the other hand, it is arguable that the effectiveness of plagiarism-prevention services has been assumed rather than confirmed, and only a few studies have addressed their actual impact on the student population (Baker, Thornton, & Adams, 2008; Draaijer & van Boxel, 2006; Goddard & Rudzki, 2005; Rees & Emerson, 2009). In the light of this discussion, we believe it is essential to increase the amount of evidence-based literature that investigates the use of anti-plagiarism software in higher education.

BACKGROUND

Turnitin (www.turnitin.com) is a widely used online tool which addresses academic honesty in students’ work (plagiarism prevention); formative and summative feedback (online marking); and student-centred assessment (peer review). The tool has also an important level of acceptance in Ireland, as the last conference of the Irish Educational Technology Users’ Conference saw the first meeting of the Turnitin user group, with around 20 attendees from Institutions across Ireland. The University of Limerick adopted the use of the software in 2005 and it has been used since 2006, with training and support provided by the Centre for Teaching and Learning. As it is the case with many other educational technologies offered by the institution, the use of the system has remained the prerogative of each lecturer, and voluntary training sessions have been organised on demand, with one-to-one support being offered on an ongoing basis. All seminars and support are underpinned by a positive, proactive attitude towards plagiarism prevention that puts student learning in the centre of the process. During this period, around 150 teachers’ faculty have attended training, and one-to-one support has been provided for many more. Appendix B shows a piece of documentation distributed across the institution which gives basic information about Turnitin, warns of its limitations, gives an example case scenario and provides further resources.

Almost three years after the initial introduction of the software at the institution, the statistics collected along six semesters of use offer some insights into the patterns of use of the system. In this chapter we use data gathered from our own context to show how instructors are using this software to date, what trends emerge and what can be deduced about the adoption of the system to guide future research questions.

OUR EXPERIENCE SO FAR

According to cumulative statistics collected in April 2009, 210 instructor accounts had been created in the system since 2006, there were 7,802 student accounts, 11,970 submissions had been completed, 10,144 originality reports produced,
1,783 peer reviews\(^4\) had been performed and 226 papers had been marked online. Therefore, although the online marking and peer review features of the system have been used by a minority, most faculty members approaching the system have used the plagiarism prevention tools. The statistics presented next correspond to the first five semesters of use of the system (from early 2006 to mid 2008), when 140 instructor accounts were active in the system.

**Number of Accounts**

There are indications from the rate of creation of new student accounts in the system that the teachers who adopted the use of Turnitin after its introduction did not do so with whole classes. Figure 1 shows the creation of student accounts largely increased in the last part of the second year of implementation (semester 4), indicating a progressive standardisation of the use of Turnitin with full classes. We can reasonably assume that if the system had been integrated with the institutional learning management system the early rate of adoption could have been higher and the use across full cohorts would be likely to become the norm.

The representation of student registrations across colleges was however very uneven: while the College of Engineering and Humanities was largely represented by the student accounts in the system, the use by the College of Education, Informatics and Electronics and Science was minimal. We have no reasons that justify this distribution and this could possibly be an area for further exploration, although this trend mirrors the adoption of other proposed educational technology at the institution, which suggests there are different motivators towards technology enhanced teaching innovation across departments and colleges. See Figure 2.

The number of total reports by college reflects the number of student accounts created in the system, with Humanities and the Kemmy Business School leading (with approximately 2,300 and 1,700 originality reports produced respectively), followed by Engineering with roughly 1,450 reports.
It is also interesting to explore the results of the originality reports produced by Turnitin (the system provides an originality report with a ‘similarity index’ per submission, corresponding to the percentage of text in the student’s work which matches text in publicly available online sources and every single document submitted to Turnitin in the past). During the first five semesters that the system was used, over 11,200 were generated, including both all the submissions made by students and by faculty. While just over 40% of the reports were found to have an overall similarity index of 24% or less with publicly available sources in the Internet or the Turnitin database, almost 27% of the originality reports produced rendered a similarity index of 75% matching text or higher. These results are inclusive of bibliographies, as the feature that allows the lecturer to exclude them from the originality report was only included later on. It must be noted too that the university does not adhere to a particular percentage as an acceptable level of plagiarism, and it is left to the lecturer to judge, according to personal teaching experience, when the ‘matching text’ identified constitutes actual plagiarism.

When looking at the evolution of the results of the originality reports semester by semester, we can observe that the number of reports where less than 24% text was matched to online sources has progressively increased, from around 45% in the first semester to approximately 75% in the fifth semester of use. In contrast, the number of originality reports containing more than 75% of text matching other sources has decreased overall, representing less than 5% of all documentation submitted into the system in the same semester (from around 20% in the first semester of use of the system). This could indicate an increasing trend to use Turnitin with whole classes, as opposed to each lecturer submitting student material which is deemed to be suspected of plagiarism.

**Emerging Practices**

These results pose questions on how the instructors used Turnitin with their classes, in order to further understand the high number of reports (which amount to over 1,100 potential plagiarism cases) in which a high level of matching text was found. The 140 faculty accounts created in the system at that stage represented 31% of their population. When examining the online records
closely, we discovered that 73 of them (52% of the total) did not create student accounts so their students could submit their work into Turnitin; instead they submitted all assignments into the system themselves. 48 of them (34.3%) have at least one student account created, which allows students to submit their own work, although we cannot guarantee from the records this was always the case. Finally, 19 of them have created instructor accounts in the system, but have not submitted any documents. See Figure 3.

We were particularly interested to learn who had submitted the documentation into the system, so we proceeded to examine further the group of lecturers who created student accounts. From the 48 lecturers that created student accounts or facilitated their students doing so, 22 had classes with more than eight students (the size of a small tutorial class) and at least eight submissions, the other 26 seem to have created a few student accounts to cater for special cases. That is, out of 121 instructors with submissions in the system, only 18% had organised student submissions with their classes.

It is also noticeable that the trend of results of the originality reports changes with the method of submission used. When the faculty created student accounts with group sizes of 8 students or more, the results of the reports tend to cluster around the low similarity index of 0–24% of matching text. See Figure 4.

These results indicate that anti-plagiarism software is best used integrated in an assessment strategy for the whole class that addresses the issue of academic honesty, aided by Turnitin as a learning tool. Some of the informal interactions with our faculty give us indications the system may be best used with proactive practices which emphasise writing skills and specific training in referencing practices, as the excerpt from one email received in Appendix C shows.

**DISCUSSION AND FURTHER RESEARCH DIRECTIONS**

The results rendered by the plagiarism-prevention system throughout five semesters of use at the institution have shown that the majority of submissions fall below the level of 25% matched text. However, a significant percentage has been found to contain over 50% of verbatim text from websites and other submissions to the system, which is largely due to the lecturer’s submitting into the system only those assignments that are deemed suspicious of plagiarism. When instructors
facilitate their students submitting their own work the picture shown by the originality reports is quite different compared to when it is the faculty member who submits the work. The results in our context suggest therefore that the statistics offered by Turnitin cannot be used to make inferences about the incidence of plagiarism in any given institution, as the system can be used in very different ways. This in turn relates to underpinning assumptions on the role of students and instructors, trust, and collective responsibility at the institution.

We have also seen that only a small minority of faculty members have had all their students submitting work into the system. However the escalating rate of creation of student accounts and the progressively increasing number of submissions with low similarity indexes seems to indicate the system is starting to be used with full classes in a standardised fashion.

From the results presented, two distinctive practices emerge. On one hand are those lecturers who are proactive, encouraging students to submit their assignments and take responsibility in the process. On the other hand are those who themselves use the system to submit documents written by students that are likely to have been plagiarised. It remains to be seen how these different practices are intertwined with a comprehensive approach to plagiarism prevention, how they affect academic performance, student learning, and development of attitudes towards academic honesty. We could hypothesise that the fact that the majority of faculty members are using the system without creating students accounts, submitting assignments when they are flagged as ‘suspicious’, constitutes an ad-hoc approach which may alienate students from the use of the system and can provoke reactions of resistance, fear, etc. We could also conjecture that the use of the software may actually provide more added value if students are encouraged to submit their work through the semester, are allowed to see their own originality reports, and have an available tutor (or peer support) to learn the conventions of referencing and academic honesty.

Of course there is a need to find out more from lecturers on how and why they are using the system. (See proposed survey questions in Appendix 1) Also, questions can be asked about the reasons why around 70% of the teaching population at this particular institution do not use the system at all, and whether they are they addressing the issue of academic honesty and how. It may well be that, despite managerial support for the use of Turni-
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tin, many remain sceptic about the effectiveness of technology-enhanced, plagiarism-prevention methods or oppose its use for pedagogical reasons. However, it has also been well established in the literature that the issue of plagiarism is likely being neglected, as faculty often avoid the issue (Vandehey, Diekhoff, & LaBeff, 2007). There is also interest in gathering students’ views on the use of the system, complementing the picture drawn by some other emerging research (Dahl, 2007; Ledwith & Risquez, 2008; Savage, 2004; Sheridan, Alany, & Brake, 2005; Smith, Evans, Jastram, & Leader, 2008).

CONCLUSION

In a context where academic honesty is actively promoted and rewarded, it would be expected that values of integrity and honour would be internalised, based on the principles of individual freedom and mutual responsibility. On the other hand, it is also possible that educational contexts based on student competitiveness and control result in ‘self-fulfilling prophecies’ of deceit and fraud. In this sense, I believe the use of anti-plagiarism software can play a role as a learning tool within comprehensive approaches to plagiarism prevention, in which students have an available tutor (or peer support) and learn the conventions of referencing and academic honesty. The knowledge creation and informal learning that happens through collaborative work in wikis, blogs and other social networking Web 2.0 tools based on the principles of sharing and repurposing poses new challenges but also offers new exciting learning opportunities as students are immersed in knowledge creation and informal learning which challenges traditional notions of authorship. Learning tasks should be underpinned by the principles of authentic assessment, as the dangers of plagiarism are greatly reduced when students are set authentic work assignments where ‘learners should demonstrate, rather than tell about, what they know and can do’ (Cole, Ryan, & Kick, 1995). Positive and creative, rather than punitive ways, of introducing anti-plagiarism software in the class are recommended (for example, peer assessment exercises, allowing students to see their own originality reports, giving feedback on writing skills, and so on) in order to ‘practice what we preach.’

REFERENCES


**ADDITIONAL READING**


**ENDNOTES**


3 Student accounts are created by lecturers administering a class or can be created by the student when provided with a username and passwords. Student accounts are unique and non transferable. Students submit their work through their student account and can receive feedback from the lecturer or tutor, and by default cannot see other peers’ submissions.

4 There is a peer review feature in Turnitin which allows lecturers to set up a peer review assignment for students to evaluate each others’ work. Once students have completed their own submission, they are randomly assigned one or more assignments for anonymous peer review.

5 Adapted from the cases available in the webpage of the Instruction Technology Services of Diego State University, [http://its.sdsu.edu/resources/turnitin/index.html](http://its.sdsu.edu/resources/turnitin/index.html)
APPENDIX A.

Table 1. Proposed questions for faculty study

Survey Questions
1. Do you use Turnitin? yes/no
   (if ‘no’, respondents are taken automatically to question ‘Why did you choose not to use it?’)
2. Please select what feature(s) in Turnitin you use (tick as many as apply):
   □ Plagiarism prevention
   □ Peer review
   □ Online grading
3. What type of classes do you use Turnitin with?
   □ Small (1–49 students)
   □ Medium (50–99 students)
   □ Large (over 100 students)
4. When do you use Turnitin? (tick as many as apply):
   □ At the beginning of the semester
   □ During the semester
   □ At the end of the semester
5. Please describe in a few lines your main purpose for using Turnitin:
   ..................................................................................
   ..................................................................................
6. What of the following do you do? (tick as many as apply)
   □ I personally submit students’ work into Turnitin
   □ I get students to submit their work into Turnitin themselves
   □ Other (please explain):
   ..................................................................................
   ..................................................................................
7. Which of the following you do? (tick as many as apply)
   □ I only submit/get my students to submit work into Turnitin that is deemed suspicious of plagiarism to get an
     originality report for those students only
   □ I submit/get my students to submit into Turnitin all students’ work to get an originality report for all students
   □ Other (please explain):
   ..................................................................................
   ..................................................................................
8. How are your students introduced to Turnitin? (tick as many as apply)
   □ They are not introduced to it
   □ It is mentioned in the syllabus for the module
   □ They get a handout with instructions for Turnitin
   □ They get a demo on a main screen in class/tutorial
   □ They get a hands-on demo in a pc lab
   □ They are requested to submit a test document into the system
   □ They get to see their originality report
   □ Other (please explain):
   ..................................................................................
   ..................................................................................
9. What do you use the originality report for?
   ..................................................................................
10. Do you allow students to see their originality reports? Yes/no
    Please explain why:.................................................................
    ..................................................................................
11. Do you give your students any feedback on the result of their originality reports? Yes/no
    Please explain why
    ..................................................................................
12. Do you use Grade Mark? Yes/no
Which of these features of Grade Mark do you use?

☐ the Highlighter Tool
☐ the Comment List
☐ the Rubrics Library
☐ the Quick Mark Sets
☐ the Clipboard Library
☐ Statistics Tool
☐ Student Mode
☐ the Edit feature

13. Finally, please explain how using Turnitin has aided your teaching and your students’ learning?
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14. Why did you choose not to use it?
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This survey is anonymous and confidential. However in order to understand better our findings we would greatly appreciate you giving us some demographic information. All details will be strictly used for research purposes only.

Department (drop down menu of all departments here)
Role:
☐ Lecturer
☐ Teaching Assistant
☐ Researcher
☐ Working status
☐ Full time
☐ Part time

Number of years teaching at UL:
Number of years teaching in total (UL and elsewhere):
Number of modules taught by semester:
Size of module(s):
☐ Small (1–49 students)
☐ Medium (50–99 students)
☐ Large (over 100 students)
APPENDIX B.

RECOMMENDATIONS FOR FACULTY USING TURNITIN.COM

What is Turnitin?

Turnitin (www.Turnitin.com) is an online resource for educators and students, which offers varied diverse web-based class management solutions. This document deals with the Plagiarism Prevention module only.

What Does the Plagiarism Prevention Module Involve?

Submitted papers are compared to millions of pages of content located on the Internet and Turnitin.com proprietary databases. The results of those comparisons are compiled, one for each paper submitted, in custom ‘Originality Reports’ (Figure 5). These reports are sent to the lecturer.

Some Important Points about the Plagiarism Prevention Module

- It can identify matching text even when a student has added, deleted or substituted significant amounts of text

Figure 5. Originality report
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- It is faster and more effective than investigating for the original sources through conventional search engines (i.e. Goggle), allowing for citation verification and providing documentation of any alleged plagiarism
- Turnitin stores in its database every new submitted piece of work, but your work can not be released without the permission of the instructor who submits and/or is responsible for the class
- All the software does is matching text, not examining citation correctness, in other words, it is perfectly possible that a document full of quotations properly referenced returns an originality report with a high percentage of similarity with other source. Therefore, instructors must judge, according to personal teaching experience, when the ‘matching text’ identified constitutes actual plagiarism.

Possible Case Scenario

An originality report has shown a match for the following passage:

According to the authors of the Report for the Policy Center on the First Year of College at Brevard College numerous studies use Tinto’s model as a springboard from which to explore further the dynamics of departure; in doing so, the authors often draw attention to several features of first-year student persistence that the model fails to fully address.

Upon clicking on the comparison link, your lecturer finds that the text is found in an on-line report, entitled ‘Designing an Assessment of the First College Year: Results from the 1999–2000 YFCY Pilot Study. Report for the Policy Center on the First Year of College at Brevard College’. This may be interpreted as an instance of poor citation instead of plagiarism. While the student makes an effort to attribute the proper source, the citation itself is incorrectly done, and your lecturer may decide to drop some marks for this.

UL Resources to Avoid Plagiarism

http://www.ul.ie/ctl/plagiarism.html
http://www.ul.ie/~library/referencing.html
http://www.ul.ie/%7Elibrary/tutorials.html

(Appendix 5: Plagiarism at College)

http://www.ul.ie/%7Elibrary/tutorials.html

(Library online tutorials on Harvard referencing style, Refworks, researching with the internet, etc.)
APPENDIX C. A LECTURER’S VIEWS ON THE USE OF TURNITIN

…it seems that I am the only one that requested that students submit all of their texts to Turnitin. I have found them reluctant to do so, but I’m not sure why. At this point, only a few have been exposed for documentation violation through Turnitin.

In fact, Turnitin doesn’t pick up everything. For instance, paraphrased and summarized information is not picked up by the software. During the editing and proofing process, tutors have to inform students when it is appropriate to document information. Electronically, I edit using Microsoft Track Changes. I think that next time, I will try to use the program available on Turnitin to make commentary and flag errors, but I just wasn’t ready to do it this time. I would only have to convert my code list into rubrics on the website, but it just seemed like a time-consuming task that I just wasn’t up for. Anyway, to indicate that a passage needs to be documented, I use the code ‘Cit.’, for ‘citation necessary here’. I’m finding that these first year students are, understandably, uncertain about what kind of information needs to be cited. As a result, many of the errors detected by Turnitin were related to the fact that the students are altogether uninformed and uncertain about how to reference. We should expect more of these students in second year.

As to the lack of submissions, there was a simultaneous lack of tutorial attendance. There’s speculation that a number of the students have jobs, but I don’t buy it. They just don’t seem that industrious. Who knows. For the few students who did attend tutorials and submit regularly, I think the combination of essay writing tutorials, feedback and originality verification was a boon of a benefit. We’ll see.