Academic Plagiarism: An Analysis of Current Technological Issues

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Abstract

Current research indicates that academic plagiarism is a serious problem for tertiary institutions worldwide. Students will resort to many methods of plagiarism in order to escape the 'hard work' required to complete assignments legitimately. The all-too-often excuse used is somewhere along the lines of "I didn't have the time". Results from an online survey targeted at New Zealand tertiary students indicates that approximately 20% of students have plagiarised to some extent in their academic careers, and 69% admit to knowing of others who have plagiarised.

Turnitin.com is the world's most popular Electronic Plagiarism Detector (EPD), being used in over 51 countries around the world. Its Document Source Analysis methodology provides an in-depth analysis of a particular document. This cross-references the document with both billions of Internet resources and previously submitted documents. It is a secure service that has received mainly positive attitudes from survey respondents.

Turnitin.com is a good method of detecting plagiarism, but cannot be expected to fight alone in the prevention battle. It is recommended that tertiary institutions educate students about how their work will be assessed and the potential penalties imposed if submitted work is detected as plagiarism.

1 Introduction

For over a hundred years, plagiarism had been a dire problem that has plagued academic institutions throughout the world. In today's digital age with the widespread use of the Internet, academic plagiarism has taken on a digital form. Students can now copy-and-past together entire essays in very little time using simple, readily available technologies such as search engines and online papermills. Although the Internet has by far increased the opportunity to plagiarise, many universities are becoming leery of its power, and are employing "data-sifting tools that can cross check billions of digital documents and swiftly recognize [sic] patterns in just seconds" (Wong, 2004).

"Technology has made plagiarism easier, but it has also made it easier to detect"
- Denise Hamilton (2003)

In this research paper, we firstly outline the general facts on plagiarism, covering how students plagiarise and why. The results of a student survey on plagiarism are then briefly outlined. We next discuss the methods involved in detecting plagiarism, as well as an in-depth focus on the world's most well-known anti-plagiarism website, Turnitin.com. We lastly cover methods to prevent plagiarism among students and discuss the limitations and future implications to this research.

2 Plagiarism

There are many forms of plagiarism occurring in tertiary institutions throughout the world. Plagiarism is defined in The University of Auckland (an anonymous university) Guidelines: Conduct of Coursework (Tippin, D., 2003) as:

"Plagiarism means using the work of others in preparing an assignment and presenting it as your own without explicitly acknowledging – or referencing -- where it came from. Plagiarism can also mean not acknowledging the full extent of indebtedness to a source."

- The University of Auckland Guidelines: Conduct of Coursework (Tippin, D., 2003)

This is the definition of plagiarism we wish to use throughout this paper. Although many sources consider any form of deception in a test or exam condition (which can include direct copying of another students answers or even impersonating another) plagiarism, we believe this is more accurately defined as 'cheating'. In layman's terms, plagiarism is a form of cheating, but cheating is not necessarily plagiarism. For the purposes of this paper, we wish to focus our scope on plagiarism of written assignments and assessments, where the student is able to prepare the assigned work in their own time and hand in by a specified submission date.

2.1 How students plagiarise

As previously mentioned, plagiarism is passing off someone else's works as your own. Traditionally, students would simply photocopy original documents such as books and newspapers from their local library and use the material to piece together their own assignment (Bugeja, 2000). This would often still involve a large effort of re-writing or re-typing what has been said by others. A class discussion was held with one of its objectives being to generate ideas of various methods of plagiarism. After all ideas had been recorded, the methods were classified under the following categories:

- Copying from Books
- Copying from Peers
- Group Collaboration on an Individual Assignment
- Self-Plagiarism
- Online Copy-and-Paste
- Online Papermills

2.2 Why do students plagiarise?

One of the most common reasons for plagiarism is because many students simply do not care (Hamilton, 2003). Not caring tends to lead to forgetting, and forgetting nearly always leads to last minute attempts to meet the assignment deadline. "Students who habitually wait till the last moment often rely on pilfered prose" (Hamilton, 2003). Students have also claimed that if the course is not within their major, it does not matter (Hamilton, 2003).

It has been indicated that the cheating trend may reflect "a deep-seated cynicism among students that getting an education is more about learning to work the system than learning math and history" (iThenticate.com, 2003). Some even argue that cheating in education is good preparation for a career in the business world, where a lack of business ethics requires people to "do whatever's necessary to get ahead" (iThenticate.com, 2003).

"University study is all a game anyway. Play the game right and you get a good grade"

- Anonymous online survey respondent

Alternatively, sometimes overachievers will plagiarise in the fear that what they write themselves will not be good enough. Even top students can unintentionally plagiarise because they are uneducated in how to paraphrase or correctly cite sources.

However, the majority of the time plagiarism is a deceitful practice. "Plagiarism is theft and lying – using information that doesn't belong to you and passing it off as your own" (Brandt, 2002). What is worse is that plagiarism and cheating have the potential to spread. More often than not, the term 'cheaters never prosper' is nonsense, with more and more students wanting to 'jump on the bandwagon' when they see cheaters and plagiarists receiving top grades for their 'work' (iThenticate.com, 2003).

Essentially, at the end of the day, many students plagiarise because it takes less time than legitimately completing the assignment and hardly ever involves much effort. Even with the current existence of Electronic Plagiarism Detectors (EPDs) such as Turnitin.com (www.turnitin.com), many students still believe that educators will not take the time to check (Hamilton, 2003). This perception needs to change.

2.3 Detecting plagiarism

Traditionally, detecting plagiarism in the past and proving it was a laborious task. When students copied directly from books and newspapers, you not only had to track down the source documents they used, you often had to argue convincingly to a supervisor that the student's paraphrase was, actually, plagiarism (Bugeja, 2000). "Ironically, it was your word against the plagiarist's word" (Bugeja, 2000).

In these fast paced days of the Internet, it may have become easier and faster to plagiarise, but it has also become easier and faster to detect (Hamilton, 2003).

2.3.1 Direct Investigation

Direct investigation is probably the most practiced way to detect plagiarism, as it simply involves analysing the work and cross-referencing phrases. A common trait among plagiarised work is the inconsistency of vocabulary and writing style. Often if a work is plagiarised, it may still have telltale signs of copying, such as British and American spellings and colloquialisms. Hamilton (2003) states that "Cheating and haste often go together", with marks of copy & paste still remaining on the submitted assignment, such as hyperlinks, web addresses in the header and footer, and any incorrect naming conventions that should have been changed (Hamilton, 2003).

If a teacher detects a certain phrase that does not match the style of the assignment, directly searching on the Internet for that phrase can often result in proof of plagiarism. Simply typing the part of or the entire phrase into a search engine can often produce multiple pages containing the phrase, the top results often containing the entire assignment if this were the case (Vernon et. al., 2001). Hamilton (2003) states that students often use the top 5 results produced from the 3 most common search engines:

Yahoo (www.yahoo.com), Ask Jeeves (www.askjeeves.com) and Google (www.google.com). Meta-engines can examine several databases at once, often speeding up the search process. CNet's Search.com (www.search.com) searches Yahoo, Ask Jeeves, Google and many more (Vernon et. al., 2001).

2.3.2 Electronic Plagiarism Detectors

Electronic Plagiarism Detectors (EPDs) are the Internet's answer to online plagiarism issues. EPDs build massive databases by continually cataloguing and indexing academic works as well as general websites from the Internet (Vernon et. al., 2001). Several EPDs exist on the Internet, but by far the most popular and well-known one is Turnitin.com (www.turnitin.com), the front-line service of iParadigms, LLC.

2.3.3 Turnitin.com

Turnitin.com is a 'software-free' system, operating through online document submission to its web site.

How Turnitin.com works

Turnitin.com works via a technique called Document Source Analysis (DSA). DSA is primarily made up the following three steps:

- Digital Fingerprint Creation
- Database Cross-Referencing and Web-Crawler Deployment
- Originality Report Generation

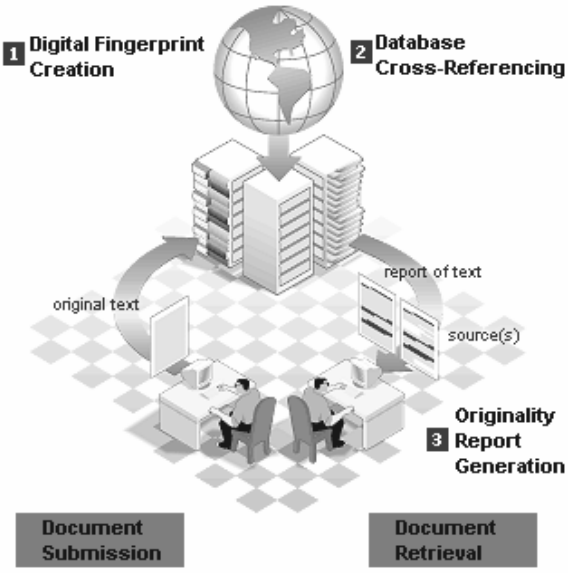

Figure 1: How Turnitin.com works (iThenticate.com, 2003)

Digital Fingerprint Creation

First, a 'digital fingerprint' is made of the submitted document using a series of extremely sophisticated (and constantly improving) custom algorithms. This fingerprint acts as an identifier for the document (iThenticate.com, 2003, Plagiarism.org, 2003).

Database Cross-Referencing

The document's 'fingerprint' is then cross-referenced and compared against other document's fingerprints in Turnitin.com's local database of previously submitted papers

(Plagiarism.org, 2003). The document is then added to this database, increasing the range and accuracy of Turnitin.com for future usage.

At the same time as this, automated web crawlers are released to scour Turnitin.com's online database, which contains references to other academic databases (such as ABI/INFORM and ProQuest), tens of thousands of electronic books, as well as the rest of the Internet's 4.5 billion pages (iThenticate.com, 2003).

Turnitin.com uses Apple Xserve RAID systems to store more than 30 terabytes of data in its central database and claims to add approximately 40 million new web pages each day (Apple Computer, 2004).

Originality Report Generation

Finally, a customised originality report is created, outlining exactly how original the document is (See Appendix II). The report is colour-coded to indicate similar matches and contains URL links to any online sources used. Additionally, the originality report gives a similarity index, indicating the overall percentage of other sources the document relates to. (iThenticate.com, 2003, Plagiarism.org, 2003)

This entire three-step process takes only seconds. Originality reports are available within one minute of document submission (iThenticate.com, 2003).

Turnitin.com not only detects outright duplication of another's work, it can pick up when students attempt to mislead instructors by changing words (by inserting synonyms), adding sentences, or reorganising their papers. "We've tested each of these methods to ensure that they do not bypass our anti-plagiarism technologies" (Plagiarism.org, 2003).

Students may attempt to find sensible synonyms for nearly half the words in a pilfered paragraph or paper, but Turnitin.com will still identify the document as plagiarised. Quite often a student may attempt to mix two sources together in an attempt to create something 'original'. Although the similarity index from the originality report may not appear as high as if the information had only come from one report, it is still high enough to identify the paper as plagiarised. "Even more noteworthy is the fact that combining two separate sources not only fails to escape detection, but actually increases the likelihood a paper will be flagged: instead of one source to detect, we now have two" (Plagiarism.org, 2003).

Turnitin.com Usage

Turnitin.com is used by more than 3,500 educational institutions in over 51 countries worldwide (Apple Computer, 2004), including many New Zealand tertiary institutions such as The University of Auckland, The University of Waikato and Auckland University of Technology (iThenticate.com, 2003).

Turnitin.com boasts a student usage of over 5 million, with an average of one new user every 20 seconds. During peak usage, it processes over 20,000 documents per day (iThenticate.com, 2003), a figure that is expected to increase to more than 50,000 over the next year (Apple Computer, 2004). iParadigms charges universities a US$500 annual licensing fee plus US60cents per full-time student (Wong, 2004). iParadigms provide unlimited help desk support at no charge for active account administrators (iThenticate.com, 2003).

In January 2004, iThenticate.com (www.ithenticate.com) was launched, a commercial version of Tunitin.com designed to cater for Newspapers, Law firms and other businesses. Even the U.N. Security Council has begun using iParadigms'

technology since Spring 2003 to ensure the originality of reports by its researchers and freelance writers. Business can expect to pay $1000 a year and $10 for each page submitted for screening through iThenticate. Newspapers face different charging options based on word count or circulation (Wong, 2004).

Turnitin.com Security

"In a culture in which copying without permission is as easy as MP3, the parameters of intellectual property are tricky – and raise new questions about where to draw the line between student trust and student freedom" – Christine McCarroll (2001).

Due to Turnitin.com's growing popularity, the question of Intellectual Property protection has been raised among many concerned academics. It is a constant concern whether locating documents on an online database could compromise students and academics unique ideas.

Turnitin.com's response to this concern is one of high-level security. "We achieve extremely high levels of security and reliability through the use of SSL encryption, redundant servers, sophisticated firewalls, and offsite secure backups" (iThenticate.com, 2003). Turnitin.com also offer an additional co-location facility, where any intellectual property submitted is put on a server at a carrier-neutral co-location facility. There is no direct connection between the co-location server and the Internet as all intellectual property submitted through Turnitin.com must first arrive at the iParadigms server farm. As an additional measure of security, clients wishing to use the co-location facility have the additional option of having an encryption key placed on their server. This service only entails a small co-location charge, while iParadigms assume all hardware, configuration, installation, maintenance, and update costs. If the client wishes to end their contract with iParadigms, they have the option of removing all intellectual property from their co-location server (iThenticate.com, 2003).

A limitation of the analysis is that the data gathered about the functionality of Turnitin.com. Nearly all information relating to Turnitin.com was gathered from one of iParadigms' sites (www.iparadigms.com, www.turnitin.com, www.ithenticate.com, www.plagiarism.org). Considering that iParadigms own Turnitin.com, some of the published functionality and results about Turnitin.com may also be biased. Although every effort was employed to try and find information about Turnitin.com from an unbiased third party source, essentially the iParadigms websites provided the best information. It should also be noted that some staff at the University of Auckland have been using Turnitin.com for more than three years.

3 Methodology

Information for this study was collected through three methods. First, during the seminar sessions of a one-semester postgraduate course, opportunity was given to hold discussions on various topics, each one lead by a nominated student. From a review of the literature and these discussions an on-line survey was created. Third, turnitin.com was used to analyse student assignments.

3.1 Academic plagiarism survey

An online survey was conducted in mid 2004 from the University of Auckland (with Ethics Committee approval) targeted at tertiary students. The survey was constructed using the WebSurveyor application, and was hosted online through one of the University's servers.

The survey required students to read 12 academic plagiarism scenarios (Appendix I), ranging from barely plagiarism (like attempting to extract hints from a lecturer) to extreme plagiarism (handing in someone else's work as your own), and comment on the acceptability of each using a 7-point Likert scale. Students were then asked for their opinion on plagiarism among tertiary and other institutions, and were given the opportunity to make any further comments they may have had. Demographic information was finally collected from each student.

An e-mail message, with the link to the survey url, was sent to Bachelor of Business and Information Management (BBIM), as well as other Information Systems students.

4 Results

Over the three-and-a-half weeks the survey was active, 106 responses were collected. This response rate is considered very good, and the results can give a reliable indication of the general attitude towards plagiarism among New Zealand tertiary students.

One of the most obvious limitations of this research was in the survey results. Approximately 71% of respondents indicated that they were BBIM undergraduate students. This was most likely due to the fact that the communication channels among BBIM students were available to the researcher at the time, and a request was sent to all BBIM students asking them to fill out the survey. The BBIM course is taught at three campuses, and is not taught at the central city campus, where the majority of The University of Auckland students are located. Although potentially 29% of respondents were not BBIM students (and may not have been University of Auckland students), many of them had heard about the survey only through word of mouth rather than mass email. This distribution of respondents indicates that the survey could possibly be biased. A suggested solution to this problem would be to communicate a survey request to all tertiary students throughout New Zealand using one method only, namely e-mail, as this is definitely the most efficient and effective way.

We will now discuss the results of the survey.

4.1 Copying from books

Scenario 12 in the online survey described a similar act to that of copying material directly from a book. 16% of survey respondents admitted to doing something similar, and a large proportion (47%) claimed that they personally knew of another student who had done so. Overall, a large proportion of respondents believed that Scenario 12 was unacceptable to a certain degree (80%) while 14% were neutral.

It is stated by Plagiarism.org (2003) that directly copying out of a book is rare these days, mostly "out of fear that it will be known by the professor" (Plagiarism.org, 2003). Studies have also recently shown that when it does occur, it is one of the easiest methods of plagiarism to detect.

4.2 Copying from peers

Copying work from your peers can range from simply basing the structure and ideas of your assignment on another's work to word-for-word duplication.

Scenario 5 in the online survey described a scenario where a student bases their assignment on work another student had handed in the year before. 33% of survey respondents admitted to doing something similar, and 67% claimed that they personally knew of another student who had done so. Only 48% of respondents believed that Scenario 5 was unacceptable to a certain degree, while approximately 19% were neutral.

Scenario 10 described an act where a student bases their assignment on the work a friend has completed for the same assessment. It clearly states that their assignment is only based on the friend's, and not copied. 70% of survey respondents claimed they had never done anything similar, while 65% stated that they personally knew of another student who had done so. 58% of respondents believed that Scenario 10 was unacceptable to a certain degree, while approximately 20% were neutral.

Scenario 8 describes a situation where a student steals another student's assignment and directly copies parts of it into their own assignment. Over 97% of survey respondents stated they had never done anything similar, and approximately 89% claimed that they personally did not know of another student who had done so. Over 93% of respondents believed that Scenario 8 was unacceptable to a certain degree, while only approximately 3% were neutral.

Scenario 6 and Scenario 11 both described a similar situation in which a student copied word-for-word another student's assignment. The results from both questions were similar, with only 3% of survey respondents admitting to doing something similar, and 28% claiming that they personally knew of another student who had done so. 49% of respondents believed that Scenario 6 was unacceptable to a certain degree, where almost 90% believed that Scenario 11 was unacceptable.

Overall, 69% of survey respondents stated that they were aware of other students plagiarising, and 42% admit to knowing of others plagiarising their own work.

4.3 Group collaboration on an individual assignment

Often when an assignment is issued with the expectation to be completed individually, students will form study groups and contribute equal efforts towards a final product. The students may then make their own copy and paraphrase or re-structure in order to differentiate the assignment from fellow group members, yet the main ideas remain the same.

Scenario 1 in the online survey described a situation where two students work on an individual assignment together, then hand in slightly different variations. 46% of survey respondents admitted to doing something similar, and 85% claimed that they personally knew of another student who had done so. 51% of respondents believed that Scenario 1 was acceptable to a certain degree, while approximately 26% were neutral.

In the class discussion held, group collaboration on an individual assignment was mentioned along with the idea of unequal contribution in a group assignment. Essentially if a particular member of a student assignment group put in substantially less effort than the other group members, then is that member guilty of plagiarism? Are they passing off other people's work as their own? Surely they do not deserve the same grade as the harder working members.

4.4 Self-plagiarism

When studying a particular topic for some time (over 3 or 4 years), assignment specifications from different courses may often overlap. This can result in the opportunity to plagiarise one's own work from a previous or current course and submit it for another course. The University of Auckland identifies the following as a form of plagiarism:

"Submitting the same, or a substantially similar, assignment that you have done for assessment in more than one course"

- The University of Auckland Guidelines: Conduct of Coursework (Tippin, D., 2003)

Scenario 4 in the online survey described a similar act to that of a student copying work they had done from an old assignment from a previous subject and submitting it in a newer assignment for a current subject. 31% of survey respondents admitted to doing something similar, and a surprising 60% of respondents claimed that they personally knew of another student who had done so. 51% of respondents believed that Scenario 4 was acceptable to a certain degree, while 19% were neutral.

4.5 Online copy-and-paste

These days, with the widespread use of the Internet in many tertiary institutions across the globe, the crime of plagiarism is much easier to commit. Students can access various sources on their topic through flexible search engines and piece together essays within a couple of hours before an assignment deadline.

"Students are using the World Wide Web as a multibillion-page, digital, searchable, cut-and-paste encyclopaedia"

– John Barrie, founder of iParadigms, LLC (McCarroll, 2001).

Often students will attempt to paraphrase or modify sentences or complete paragraphs in order to avoid getting caught. They may add new sentences in between others or simply find appropriate synonyms for particular words for which they do not know the meaning.

"There is an attitude that if it's on the Internet, it's public knowledge, and therefore doesn't need to be cited"

– Don McCabe, founding president of the Centre for Academic Integrity at Duke University in Durham, N.C.

Scenario 9 in the online survey described a situation where a student copies paragraphs of content from a website for their assignment and fails to cite the website. A surprising 82% of respondents stated they had never done anything similar, yet 56% claimed that they personally knew of another student who had done so. A large majority of respondents believed that Scenario 9 was unacceptable to a certain degree (80%) while approximately 11% were neutral.

4.6 Online papermills

When time is of the essence and money is seen as no object, students can often resort to purchasing pre-written assignments from one of the over 250 papermill sites listed on the Kimbel Library of Coastal California website (Anonymous, 2003). Papermills, such as Buypapers.com (www.buypapers.com), make money by selling assignments written by other students. Buypapers.com alone boasts over 20,000 papers in its database, offering them for sale for as little as US$9.95 per essay with an electronic delivery system that can deliver in 30 minutes or less. Additionally, several papermills exist that provide papers free of charge, such as All Free Essays (www.allfreeessays.com).

In 1997, Boston University filed a federal lawsuit against eight Internet papermill companies, alleging that the online services "devalue" the university's degree programs (Clayton, 1997). A 1973 Massachusetts law forbids the sale of term papers or assignments by someone knowing or "having reason to know" that it will be submitted as somebody else's work (Hickman, 1998). 17 other US states have also passed law making it illegal to sell term papers and assignments that students may pass off as their own work. It is noteworthy that although there is a potential to sue the papermills that sell papers to students, nothing can be done about the papermills that provide their service for free (Hickman, 1998).

Scenario 7 in the online survey described a similar act to that of purchasing an essay from an online papermill. Less than 1% of survey respondents admitted to doing something similar, however a surprising 26% of respondents claimed that they personally knew of another student who had done so. A large majority of respondents believed that Scenario 7 was unacceptable to a certain degree (93%) while approximately 5% were neutral.

4.7 Turnitin.com attitudes

Over 93% of the online survey respondents stated they had heard about Turnitin.com, and 92% stated they had been required to submit work to it. Only 5% of respondents disagreed to some extent with screening their work through an EPD like Turnitin.com, while 8% were neutral.

24% of respondents believed to some extent that if they were required to submit their work through an EPD like Turnitin.com, then it is an indication that their lecturer does not trust them. 8% of respondents stated they would be offended if they were required to screen their work through an EPD.

65% of online survey respondents believe that plagiarism is practiced widely in universities today, whilst 20% state that they have plagiarised before. This higher apparent level of plagiarism is surprising in the light of knowledge that the University uses a plagiarism detector and regards the practice seriously.

5 Discussion

Despite general awareness of plagiarism issues and knowledge that plagiarism detectors may be employed, the survey results indicated that plagiarism is still common.

5.1 Preventing plagiarism

“Criminologists argue that what deters rational criminals is a high rate of detection and subsequent conviction”- M. A. Polinsky (cited in Anonymous, 2004)

The above quote indicates that in order to deter students from plagiarising, methods of high detection need to be employed (such as the use of EPDs) as well as methods of conviction. In other words, students need to be informed about how their work will be assessed and any penalties that may be imposed upon conviction of plagiarism.

5.2 Assessment

Students need to be informed about exactly how their work is going to be assessed. Plagiarism needs to be defined accurately in clear terms that students can understand. More often than not, defining it is not enough, and students require everyday examples to which they can relate (Brandt, 2002). Universities should let students know that they do know about the existence of papermills, and could even go a step further and demonstrate exactly how easy it is to cut and paste information from a website into a text file. Any policies on referencing the course or university may have need to be discussed with students, and they need to be taught how to reference in this style (Vernon et. al., 2001, Clayton, 1997, Tippin, D., 2003).

“I think it is hard not to plagiarise because we are not taught how to reference well. APA referencing was just a piece of paper given to us, we weren’t told how to use it effectively or practically”

– Anonymous online survey respondent

Other ways to prevent plagiarism are to closely tie all assessments to the course. Lecturers should ensure all assignments relate to the goals of the course and should pre-

approve all assignment topics in advance (Hamilton, 2003, Clayton, 1997). They should also require all bibliographic references to be up to date (e.g. no more than 5 years old), in order to avoid the re-cycling of old assignments (Vernon et. al., 2001).

5.3 Penalties

The penalties that students may face if they are convicted of plagiarism need to be made clear (Vernon et. al., 2001, Brandt, 2002). The University of Auckland has published the Guidelines on Conduct of Coursework on their website as well as in many course books for individual courses. In these guidelines, the university states the following:

- Definition of cheating and plagiarism, including situations where cheating and plagiarism may occur.
- Ways to avoid cheating – practical advice for both students and staff.
- Procedures of investigation.
- Potential Penalties imposed.

The University of Auckland uses Figure 2 to outline their investigation procedure when cheating or plagiarism is suspected.

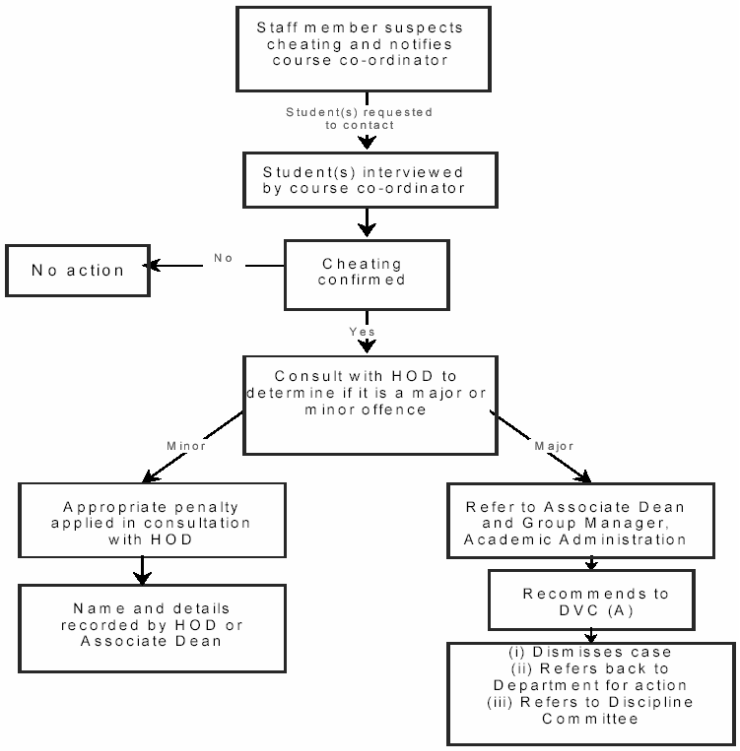

Figure 2: The University of Auckland's process to be used when cheating on coursework is suspected (Tippin, D., 2003)

The following is also an extract from The University of Auckland Guidelines: Conduct of Coursework, outlining potential penalties imposed:

The penalties for cheating can vary with such factors as the seriousness of the offence, previous instances of cheating by the student, and extenuating circumstances.

Departments or faculties may impose the following penalties in minor cases of cheating in coursework:

- Reduce the grade for the piece of work to which the cheating offence refers, down to and including a grade of zero.

- Cancel any marks previously given for the piece of work concerned – hence zero.
- Not mark the piece of work, thus giving it zero.
- Oral or written reprimand.

Discipline Committee may impose the above penalties plus:

- Not credit a course or courses to the student's degree programme.
- Cancel any previously-credited pass in a course associated with the offence.
- Impose a fine not exceeding $1,000.
- Suspend attendance at the University for a period to be determined.
- Cancel enrolment, i.e., expulsion from the University.

In accordance with the University's Disciplinary Statute it is possible for students to apply for a review of any penalty imposed pursuant to these Guidelines to the Appeals Committee of the Council.

(Tippin, D., 2003)

5.4 Plagiarism Detection Issues

During a class discussion, the contents of this paper were outlined. Participants were asked to consider other implications of academic plagiarism. The following highlights some future implications that were discussed.

5.4.1 Lexical Analysis

Turnitin.com manages to identify the use of external sources to a certain degree, yet only focuses on the text rather than the style. Lexical analysis is concerned with the analysis of the style of a particular piece of writing. As previously mentioned, a telltale sign of copying is when there is an inconsistency of vocabulary and writing style, yet Turnitin.com fails to mention any technologies it may employ to detect such inconsistencies. Other software based EPDs such as Essay Verification Engine 2.2 state that they "analyze [sic] sample prose for consistency, stylistic continuity, and other clues". If these lesser known EPDs can analyse such a thing, why can Turnitin.com not?

Future research needs to be conducted into the benefits and accuracy of lexical analysis, including the potential for Turnitin.com adopting such a methodology.

5.4.2 The limitations of Turnitin.com

Another point brought up in the discussion was the actual limitations of Turnitin.com. Aside from not performing lexical analysis, it was identified that Turnitin.com has both a character limit of 150,000 and a file size limit of 0.5 megabytes. Masters and doctoral students at The University of Auckland often complete theses that are well over both size limitations. The only apparent solution to this is to break the final file down into smaller files for analysis, or strip out certain sections. Doing either can often be inconvenient, and can give rise to other problems.

5.4.3 Plagiarism of figures and tables

It has been identified that Turnitin.com makes every attempt to detect plagiarism of text in sentences and paragraphs. However, it has become evident that Turnitin.com fails to check whether Figures and Table used within an assignment are legitimate or plagiarised. Turnitin.com's current technology simply ignores both when conducting an analysis.

Future research needs to be conducted in order to discuss the appropriateness of detecting plagiarism of both figures and tables, and a potential solution to this problem

needs to be suggested. Students do not appear to be taught how to reference figures and tables in most courses (i.e. specifically the source).

5.4.4 Plagiarism of computer code

Another avenue for potential research is the plagiarism of computer code, particularly in Information Systems and Computer Science courses. It is believed that many students will copy sophisticated code from one another without the knowledge or detection from teaching staff. One of the potential problems with detection is that in many languages it is often easy to change variable names in order to make the code to look different or 'authentic'. This introduces the need for plagiarism detection measures that can not only analyse the source code of comuter programs, but also the functionality and machine versions of the applications created. This is where thumbprints, deliberate efforts to change code and structural inconsistencies (Paynter, 1996), can often be discovered.

It has been beyond the scope of this current paper to explore this area of plagiarism of computer code, but the authors recognise it as a promising area of future research using EPDs and intend analysing student submissions in the future.

6 Conclusion

This paper has discussed the general facts on plagiarism, including how students plagiarise. The results from an online survey conducted in mid-2004 indicate that the most common form of plagiarism among New Zealand students is group collaboration on an individual assignment, followed by copying from peers, self-plagiarism, online copy and paste, copying from books and finally purchasing from online papermills. It has been identified that many students plagiarise simply because they do not care about the particular course in which they are plagiarising, and also because plagiarism takes less time the completing legitimate work.

Methods for detecting plagiarism among student assignments can range from the laborious yet free task of direct investigation to the high tech option of Electronic Plagiarism Detectors (EPDs). Turnitin.com, possibly the world's most widely accepted and used EPD, works through process called Document Source Analysis (DSA). When a paper is submitted to Turnitin.com, DSA compares its text to other texts, and an originality report is given, indicating the authenticity of the document (Brandt, 2002). More than 3,500 educational institutions in over 51 countries use Turnitin.com (Apple Computer, 2004). A large majority of the online survey respondents had both heard of and submitted work to Turnitin.com. Only 5% disagreed with using EPDs such as Turnitin.com.

In an attempt to prevent plagiarism among students, it is important to educate them about how their work will be assessed and potential penalties imposed if they are convicted of plagiarism.

Despite the limitations of this study and the need for future research, this study makes a contribution to the knowledge of the current state of Academic Plagiarism and the attitudes of New Zealand tertiary students. The use of Electronic Plagiarism Detectors has been outlined, and plagiarism prevention methods have been discussed.

"Originality is undetected plagiarism" - William R. Inge (1860 – 1954)

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Appendix I

Scenario One

You get together with a friend of yours and work on an assignment together. Both of you contribute equal amounts of work towards the assignment. The assignment you submit is only slightly different to the one that your friend submits. The assignment is meant to be done individually.

Scenario Two

In order to get assistance with an assignment, you post to a newsgroup on the Internet asking for help with the assignment topic.

Scenario Three

Over the course of a semester, you show your work to your lecturer several times with the intention of getting the lecturer to approve your answers and give you hints on the assignment.

Scenario Four

In a subject, an assignment is set which is very similar to an assignment you have already done in a previous subject. You take the old assignment, make a few small changes and submit the assignment for the new subject.

Scenario Five

A friend of yours offers you their assignment for the subject from the previous year. This year's assignment is very similar to last years. You decide to use the assignment as the basis of your assignment.

Scenario Six

You are working on an assessable computer lab exercise worth 5% of your final mark. Your computer has crashed several times and you have not completed the task. A classmate sitting next to you has had no problems with their computer and has finished. They give you their solution. You take it and show it to your tutor as your work.

Scenario Seven

You hear that at a website, people are offering to write assignments for a price. You go to the website and contact a person who agrees to do your assignment for a reasonable price. You submit the assignment as your own.

Scenario Eight

While working on a computer in the student laboratories you find another student's copy of the assignment. This copy is nearly finished and better than what you have done to date. You make a copy of the other student's assignment, and then cut and paste parts of it into your assignment and submit it as your own work.

Scenario Nine

While doing research for an essay, you find a website with material that is exactly on the topic of the essay. You copy two or three important paragraphs from the website and use it in your essay. You do not acknowledge the use of these paragraphs.

Scenario Ten

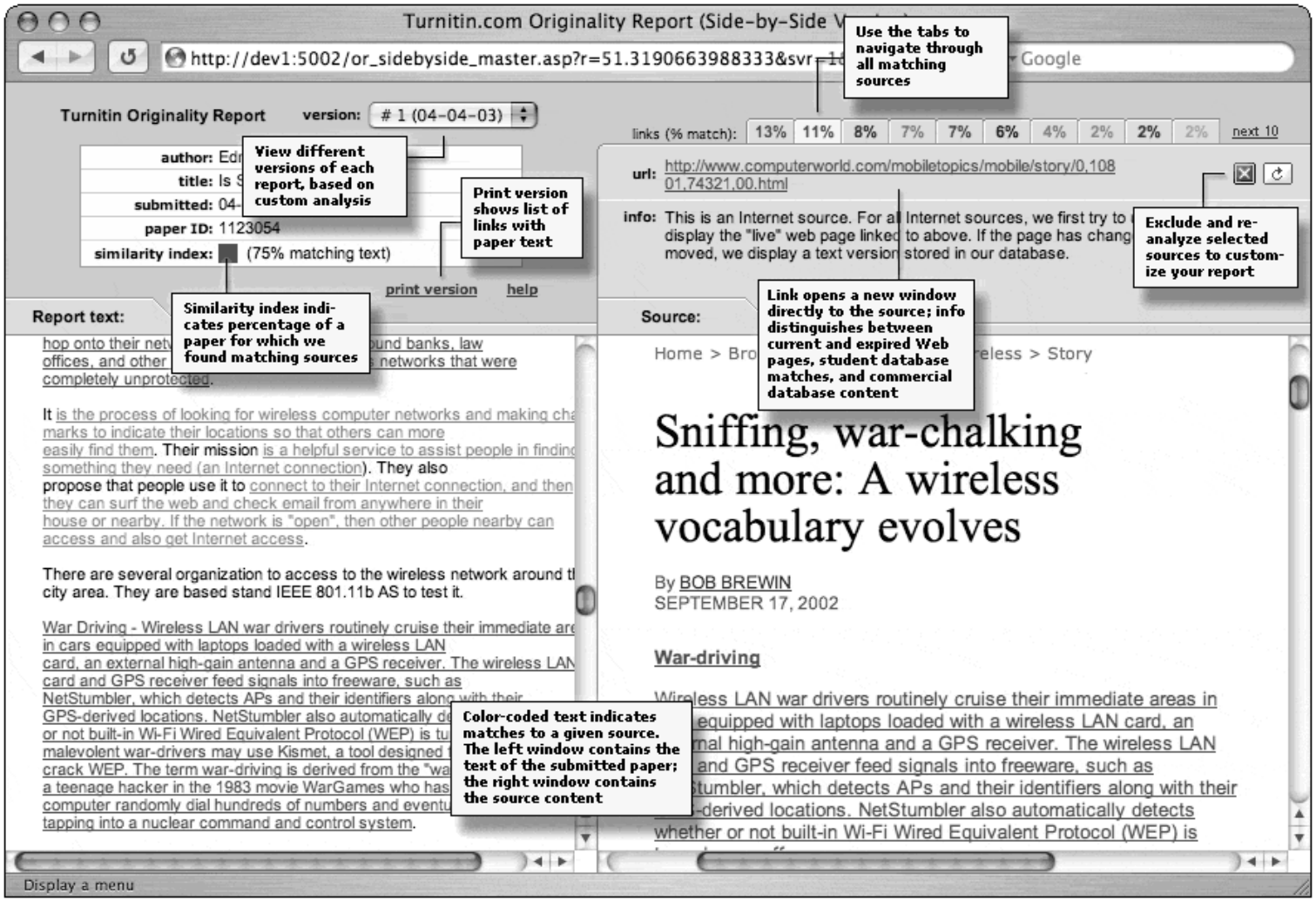
You are having problems with an assignment and your friend offers you her assignment to use as a basis for your own. The majority of your assignment is based on your friend's but you do a fair bit of work as well.

Scenario Eleven

It is the day before a minor assignment is due and you have not started. Your friend who is in another tutorial offers his assignment for you to copy. You copy it and change the identifying details (name and student number) and submit the assignment.

Scenario Twelve

While doing research for an essay, you find a textbook with material that is exactly on the topic of the essay. You copy two or three important paragraphs from the textbook and use it in your essay. You do not acknowledge or reference the textbook.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Print version shows list of links with paper text
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url: http://www.computerworld.com/mobiletopics/mobile/story/0,10801,74321,00.html
info: This is an Internet source. For all Internet sources, we first try to display the "live" web page linked to above. If the page has changed moved, we display a text version stored in our database.
Exclude and re-analyze selected sources to customize your report
Similarity index indicates percentage of a paper for which we found matching sources
Link opens a new window directly to the source; info distinguishes between current and expired Web pages, student database matches, and commercial database content
Report text:
Source:
hop onto their net
und banks, law offices, and other
networks that were completely unprotected.
It is the process of looking for wireless computer networks and making cha
marks to indicate their locations so that others can more easily find them. Their mission is a helpful service to assist people in findin
something they need (an Internet connection). They also propose that people use it to connect to their Internet connection, and then they can surf the web and check email from anywhere in their house or nearby. If the network is "open", then other people nearby can access and also get Internet access.
There are several organization to access to the wireless network around t
city area. They are based stand IEEE 801.11b AS to test it.
War Driving - Wireless LAN war drivers routinely cruise their immediate are
in cars equipped with laptops loaded with a wireless LAN card, an external high-gain antenna and a GPS receiver. The wireless LAN card and GPS receiver feed signals into freeware, such as NetStumbler, which detects APs and their identifiers along with their GPS-derived locations. NetStumbler also automatically d
or not built-in Wi-Fi Wired Equivalent Protocol (WEP) is tu
malevolent war-drivers may use Kismet, a tool designed
crack WEP. The term war-driving is derived from the "wa
a teenage hacker in the 1983 movie WarGames who has
computer randomly dial hundreds of numbers and eventu
tapping into a nuclear command and control system.
Color-coded text indicates matches to a given source. The left window contains the text of the submitted paper; the right window contains the source content
Home > Bro
eless > Story
Sniffing, war-chalking and more: A wireless vocabulary evolves
By BOB BREWIN
SEPTEMBER 17, 2002
War-driving
Wireless LAN war drivers routinely cruise their immediate areas in
equipped with laptops loaded with a wireless LAN card, an
nal high-gain antenna and a GPS receiver. The wireless LAN
and GPS receiver feed signals into freeware, such as
tumbler, which detects APs and their identifiers along with their
-derived locations. NetStumbler also automatically detects whether or not built-in Wi-Fi Wired Equivalent Protocol (WEP) is
Display a menu