

Bridge over troubled water¹: A literacy approach to using Turnitin

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The text matching software Turnitin is now used in one form or another by over 90% of Australian universities. Unfortunately, both educators and students commonly view Turnitin as a plagiarism detection tool. We argue that this focus limits the effectiveness of Turnitin by contributing negatively to staff and students' anxiety and may incongruously lead to poor academic practice. In line with emerging research, we advocate a literacy approach to using Turnitin that harnesses its potential to develop students' academic writing. However, unlike this research which has tended to focus on discipline-specific courses rather than academic language and learning courses, our study developed teaching resources and activities designed for use by students of all disciplines and programs. The resources were evaluated in month-long preparatory academic skills programs with 46 international students. Our approach not only reduced students' anxiety; importantly, it assisted students to develop their authorial voice and better understand appropriate citation practices. Our results demonstrate that Turnitin has potential to assist students with their writing, particularly if it is primarily viewed as a tool that is inextricably connected to academic writing, and intersects with timely and constructive academic learning resources.

Key Words: Turnitin, plagiarism detection software, authorial voice.

1. Introduction

The significant uptake of Turnitin across the Australian higher education sector over the last decade has been met with varying responses. These range from praise for its ability to detect cases of plagiarism, indignation at its limited capabilities to detect all forms of plagiarism, and anxiety on the part of students who are concerned that unintentional mistakes in academic integrity conventions will be construed and punished as deliberate plagiarism. Although the higher education sector has embraced Turnitin, its technological advantages have frequently led to punitive and/or simplistic approaches to academic integrity, which create an environment of mistrust and anxiety (Penketh & Beaumont, 2014; Purdy, 2009). Coupled with this mistrustful environment, Turnitin's emphasis on a digital quantification of the text matches in students' work iterates a simplistic approach that can lead to misinterpretation of a student's actual skill in citation practices. Studies have repeatedly shown that Turnitin's originality report is in itself not a measure of student plagiarism (Betts, Bostock, Edler, & Trueman, 2012; Penketh & Beaumont, 2014; Thompsett & Ahluwalia, 2010; Stapleton, 2012). The similarity percentage does not indicate whether plagiarism has occurred as it does not identify whether a student has appropriately referenced, quoted, and/or paraphrased. Yet the percentage is emblazoned at the top of the orig-

¹ We note that in an article on academic integrity it would be remiss to not attribute this reference to its rightful author (Simon, 1970).

inality report, adjacent to the grade, and is accentuated on the submission menu where students see their name and grade. Although many educators and even Turnitin's website (2015) emphasise that this percentage requires careful interpretation of each match, its prominence frequently leads students and occasionally staff to seek an "ideal" number (see for example Macquarie University, 2015). As a result, students are encouraged to focus on the number of matches rather than the quality of their academic integrity.

Against this approach, others are investigating its potential to support academic literacy and to reduce anxiety as students learn about and strive to meet academic integrity requirements (Dahl, 2007; Gannon-Leary, Trayhurn & Home, 2009; Walker, 2010). In asking students to produce work with academic integrity, institutions require that all assessment pieces are the result of the student's own efforts for their courses (Pyer, cited in Flint, Clegg, & Macdonald, 2006). Students must acknowledge the ideas, words, data, images or any other type of intellectual material developed by others that they draw on (ANU, 2015). This means adopting appropriate citation practices, specifically techniques of quoting, paraphrasing and summarising. In this paper, we discuss the challenges students face in using Turnitin to meet these requirements, and take a productive view of students as apprentice scholars (McGowan, 2005) who seek to follow the rules rather than cheat. We test whether our literacy approach can reduce students' anxiety and in so doing encourage students to use Turnitin as a constructive educational tool.

Further, our study is concerned with how students develop academic integrity through appropriate citation practices. As Ken Hyland (1999) states, the citation practices of quoting, paraphrasing, and summarising are integral to the practice of persuasion and developing academic voice. To appreciate the role Turnitin plays in developing these practices, rather than examining the mechanics of referencing systems, we focus on students' learning in these three areas: quoting; paraphrasing and summarising others' work appropriately. These areas are key components of scholarly writing that Turnitin frequently identifies. Paraphrasing, in particular, is a technique that students find difficult to master. It is also the area where interpreting Turnitin's text matches is fraught with uncertainty as to what constitutes appropriate paraphrasing. Not surprisingly then, it is over these matches that students express the most anxiety. It is important to note that our study is not concerned with issues of collusion or intentional plagiarism, as none of our participants committed intentional plagiarism.

Our study contributes to emerging literature on best practice around using Turnitin to build students' confidence in writing with integrity. It does this in two distinct ways. Firstly, much literature to date tends to focus on Turnitin and academic literacy in discipline-driven courses (Batane, 2010; Perry, 2010; Thompsett & Ahluwalia, 2010; Walker, 2010). While this enables academic staff to create and evaluate discipline-specific resources, it leaves a significant gap in the area of non-discipline-specific academic language and learning (ALL) resources. This gap is especially problematic given that ALL practitioners are at the coalface when it comes to supporting students to develop sound academic writing skills that demonstrate academic integrity. The students we see encompass those most at risk of misunderstanding what constitutes academic integrity, as studies have found that not only international students, but students of all programs and levels use poor academic integrity practices to simply reduce the Turnitin similarity percentage (Walker, 2010; Batane, 2010; Perry, 2010; Thompsett & Ahluwalia, 2010). Further, ALL practitioners can support academic staff in interpreting Turnitin's originality reports. In assuming this critical role, it is vital to develop and evaluate constructively aligned teaching learning activities (TLAs) that cater to students of all disciplines and programs. This study tests the effectiveness of our teaching materials on appropriate citation practices and Turnitin in assisting students to develop sound academic practices.

Secondly, while much of the literature focuses on whether Turnitin reduces rates of plagiarism, few studies address Turnitin's potential to assist students to strengthen their authorial voice. Developing 'voice' in academic writing 'requires a sense of one's identity within the discourse community' (Northedge cited in Hutchings, 2014, p. 315). Academic writing then, as Hyland suggests (2002), is deeply connected to writer identity. When students write and draw on the ideas and words of others, it is important that they not only acknowledge this but that they also distinguish their voice from those of others. Establishing writer identity and authority is intrinsic

cally linked to the principle of academic integrity – students learn to appropriately employ and acknowledge the work of others using disciplinary sanctioned citation practices. While there is a wealth of literature that confirms the view that citation practices enhance students' authorial voice (see Elander et al. 2010; Hutchings, 2014), only a few studies explore the link between Turnitin and authorial identity have been published (Ballantine & Larres, 2012; Biggam & McCann, 2010; Penketh & Beaumont, 2014).

Studies on the connection between Turnitin and authorial identity suggest that for students, Turnitin's text matches may be able to help identify where they are overly reliant on other authors' words and ideas. For instance, if a student's work has a high proportion of quoting and insufficient paraphrasing, this is an indicator that their authorial voice may not be clear (Ballantine & Larres, 2012). Based on qualitative student attitude data, Penketh and Beaumont (2014) attest that Turnitin offers the potential to act as a "change artefact" to improve students' writing.

However, the literature remains largely silent on how to evaluate the quality of authorial voice in connection with Turnitin. Biggam and McCann's (2010) study on whether Turnitin can improve the quality of honours students' dissertations is the closest study so far on this issue. Biggam and McCann's measure of improvement is to compare the number of text matches with students' final grades. They assert that despite decreasing similarity percentages over a year-long use of Turnitin for five honours dissertation drafts, "student use of Turnitin did not significantly enhance the quality of their writing" (p. 44). While the study correlates student voice to the students' grades and amounts of text matches, no analysis is provided of the qualities that might help to improve authorial voice. Similar to studies that simply quantify the number of matches, Biggam and McCann generalise the data into percentage of matches, instances of academic misconduct, and neutral instances, without analysing examples of authorial voice in relation to qualities such as argument, stance, or assertiveness.

Our study approaches the question of whether Turnitin can assist transitioning students across different disciplines to develop authorial voice. In order to approach this question, we look at three stages in which this authorial development takes place, and evaluate the effectiveness of teaching resources from a central academic skills unit that caters to students of all disciplines and levels. The first stage involves investigating whether our TLAs and resources build student confidence in using Turnitin. The second stage is whether students are learning appropriate citation practices, and here we adopt a more detailed analytical method than previous studies. By analysing the different types of matches that Turnitin identifies, we can determine the areas in which students require most assistance in order to enhance their authorial voice. Since paraphrasing is the area where authorial identity is most difficult yet crucial to assert, we examine Turnitin's potential to identify issues with students' paraphrasing practices that, with correction, can lead to improvement in students' authorial voice. In the third and final stage, we examine the outcomes of this assistance by looking at instances of change in students' argumentative language.

Our findings indicate that Turnitin can be an effective and positive learning tool. This is based on an evaluation of 46 international Australia Awards scholarship students in a month long preparatory academic skills course. The students came from diverse backgrounds: they represented 17 different countries in Asia and the Pacific, and were undertaking a range of degrees at the ANU (Bachelor and Masters Coursework). Their ages varied: a small number were school leavers but the majority were mature-aged with a prior qualification and professional career. We surveyed their attitudes towards Turnitin and analysed their Turnitin originality reports from three scaffolded assignments to assess our teaching approach's effectiveness. Our study demonstrates best practice approaches and resources to reduce students' anxiety and assist them to learn about citation practices using Turnitin. However, while Turnitin can help develop students' authorial voice, students' abilities to paraphrase presents a concern. We therefore conclude that ongoing education is required to develop both staff and students' skills in interpreting Turnitin's text-matches. In this study the proverbial troubled water represents uncertainty about citation practices and authorial identity. We argue that with continued practice and support over time, using a combined digital and literacy approach to Turnitin can act as the bridge to move

students from anxiety and inexperience, towards producing work with academic integrity and strong authorial voice.

In response to the need for effective learning resources to support students in understanding how to use Turnitin to develop their voice with confidence and integrity, this study tests the efficacy of our resources and in so doing answers the questions:

1. To what extent can a literacy approach reduce students' anxiety about plagiarism?
2. To what extent can a literacy approach to Turnitin that uses active learning resources and scaffolded activities develop students' understanding of appropriate citation practices?
3. How can a literacy approach to Turnitin enhance students' authorial voice?

2. Methodology

To test the efficacy of our resources, we employed a mixed research methods approach to gathering data, drawing on both quantitative and qualitative data from three attitudinal surveys and analysis of three originality reports per student. While previous research examined students' attitudes and use of Turnitin to assist learning (Dahl, 2007; Gannon-Leary, Trayhurn, & Home, 2009; Walker, 2010), our research worked specifically with international students in an academic literacy context and combined their attitudinal data with data gathered from Turnitin originality reports. A series of scaffolded TLAs were aligned to the research questions which formed the learning objectives. Voluntary participants were surveyed at three points during the research period using two paper based and one online questionnaire. During the research period, we gathered statistical data from the participants' Turnitin originality reports which included analysis of the percentages as well as subjective interpretation of the types of matches in the report.

Participants were drawn from two groups of Australia Awards students undertaking an Introductory Academic Program (IAP) prior to commencing their studies. Group 1 commenced in January 2015 and Group 2 in June 2015. As noted earlier, our 46 participants came from 17 different Asian and Pacific countries, and were enrolled in various ANU Bachelor and Masters Coursework degrees. Most students were mature-aged, qualified professionals and a few were school leavers.

Initial TLAs were designed to address students' knowledge and anxiety around academic integrity and Turnitin. These included two workbook chapters containing explanations and activities that tested students on how to identify different types of text matches (Appendix B provides samples). The IAP presented workshops and associated TLAs around academic writing and developing authorial voice through argument and structure. Students completed three scaffolded assignments: a 500-word annotated bibliography, a 1500-word essay submitted as a draft then as a final paper. Each piece was submitted via Turnitin on the IAP Moodle site. The first two assignments allowed the students to submit several drafts and view multiple originality reports immediately. The final submission settings mirrored the default setting used across ANU. Students had only one submission option, but until the due date students could overwrite their upload within this option. This meant that prior to the due date students could revise their work and view different originality reports if they waited the mandatory 24 hours set by Turnitin.

The questionnaires addressed research questions one and two, gathering data on the extent to which our approach reduced students' anxiety about plagiarism. They comprised quantitative questions using a five point Likert scale and yes/no responses combined with a qualitative dimension using open-ended questions. The pre-course questionnaire was used to gather basic demographic data. Participants were subsequently surveyed at the end of the program then followed up in the final weeks of the semester. We surveyed several themes across the questionnaires including the students' levels of anxiety regarding academic integrity and Turnitin before and after the program and then at the end of the semester. The questionnaires also enabled us to test aspects of the students' understanding of academic integrity and how our teaching and resources assisted this understanding. Samples of the questionnaires are in Appendix 1. A summary of the questionnaire is outlined in Table 1.

Table 1. Questionnaires relating to research questions one and two.

Questionnaire	Timing	Themes
Pre course	On commencement	Understanding, knowledge, experience, anxiety
Post course	Last day of program	Understanding, anxiety
Follow-up	Week 11 of semester	Experience, anxiety, application

To measure the effectiveness of Turnitin in improving students' authorial voice as outlined in research question 3, the Turnitin originality reports from the three assessment tasks were analysed. Percentages from individual matches were collated and matches were categorised to identify if they might indicate poor academic practice. Miscellaneous matches included examples of combinations of technical terms or common phrases. Incorrect quoting may include omission of quotation marks, text not matching the original or missing citation. Table 2 outlines in detail the categorisation of the matches in the reports.

Table 2. Originality report analysis relating to question three.

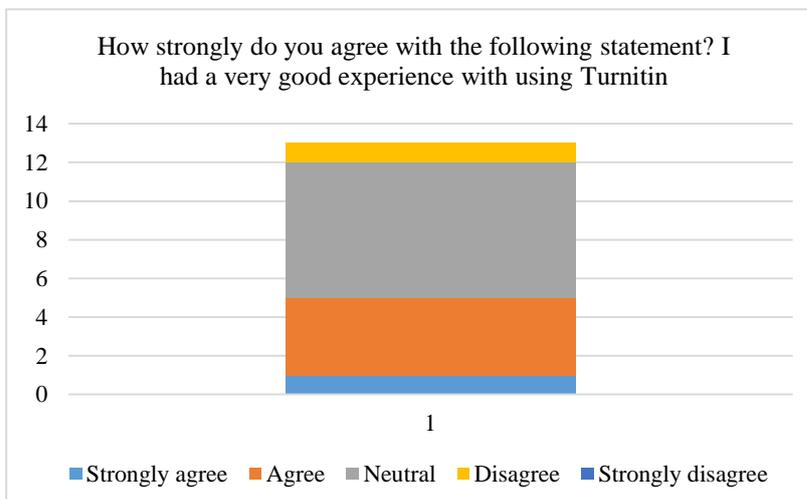
Type	Description	Category
Insufficient Paraphrasing	Phrasing matches too closely to an existing source	Poor academic practice
Misquote	Source text has not been quoted correctly	Poor academic practice
Referencing	In text or reference list entry has matched	Ignore
Quotes	Source text has been correctly quoted	Ignore
Miscellaneous	Text has matched but not related to poor academic practice.	Ignore

3. Results

Results from questionnaires and analysis of Turnitin's text matches of student work show that our teaching significantly reduced student anxiety, but that students require ongoing assistance with citation practices.

3.1. Student attitudes data

Prior to our course, most students had little or no experience with Turnitin. Only 13 of the 46 students had used Turnitin. Of these, some had had mixed experiences, but overall the response was neutral as shown in Figure 1.

**Figure 1.** Pre course questionnaire data, both groups (N = 13).

Further, students' prior exposure to Turnitin was often limited. For example, one student stated "I only used it 3 times so I don't think I have a really good experience/ mastering Turnitin." Even students who indicated a positive experience did not display a strong understanding of how to interpret text matches. One student wrote "I got in my past work very low score of plagiarism," which suggests they focused on the similarity percentage rather than looking at the types of matches.

From pre and post course questionnaires, we found that students were initially very concerned about academic integrity but that their anxiety diminished greatly (Figure 2).

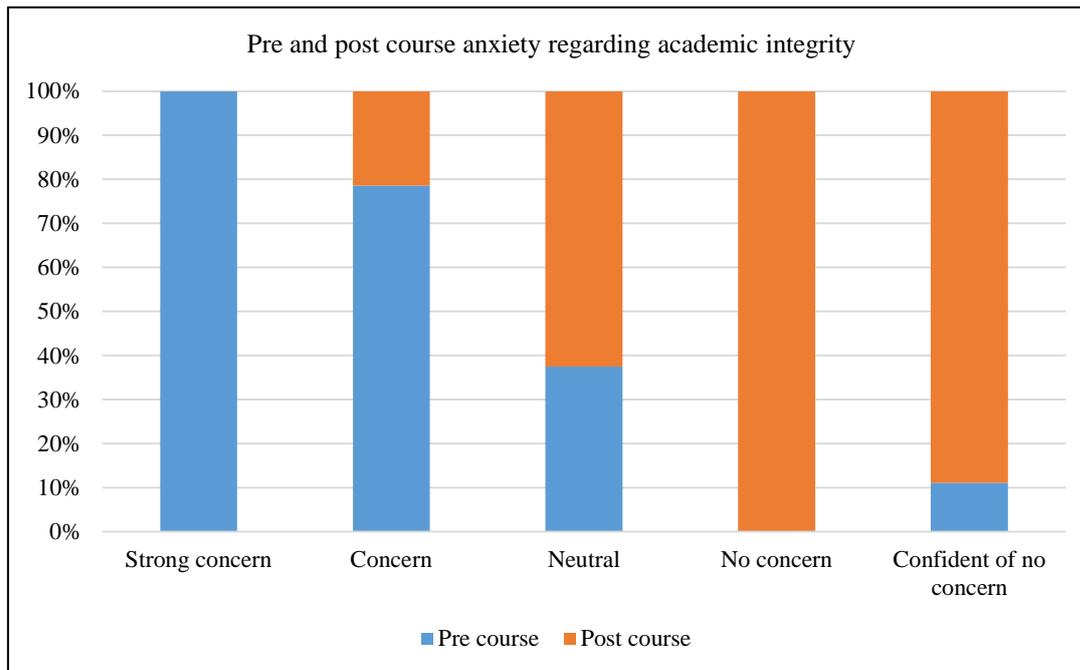


Figure 2. Level of anxiety about committing plagiarism pre- and post-course, both groups (N = 46).

These results indicate that students believed the IAP taught them appropriate citation practices and that their confidence rose in time for them to commence their degrees. At the end of their first semester of study, students remained confident in their ability to understand and write with academic integrity. In answer to the question "The IAP training on academic integrity was useful for developing skills necessary to successfully and confidently write with academic integrity," 73% of respondents strongly agreed, and 27% agreed.

Further to these encouraging results, it appears that many students began to see Turnitin as an assistive tool. The post course questionnaire (Figure 3) revealed a dramatic increase in students' positive experiences with Turnitin, as generally students agreed it helped them with academic integrity, and most believed it helped to improve their writing.

Most students understood the message that Turnitin can be used as a constructive and non-threatening tool. The majority commented that they found text matches useful so that they could improve paraphrasing. For instance, one student stated:

I am glad to see that Turnitin finds out unintentional plagiarism. For instance, while you go through various research articles, actually you may pick up several phrases and unknowingly write it down. Turnitin picks it up and saves you from plagiarism.

This comment shows that Turnitin can highlight to students where they have unintentionally plagiarised. Similarly, another student explains:

It gets me to think critically [*sic*] and use my own words so to avoid plagiarism. I use summary and paraphrase instead of direct quotes. This makes my reading to be a more effective reading. Turnitin allows resubmission, so that makes me to complete assignment before time to get feedback on the originality of my work and I can again resubmit.

Significantly, the student now sees citation practices as part of a holistic approach to study, in that they impact their note-taking and time management skills.

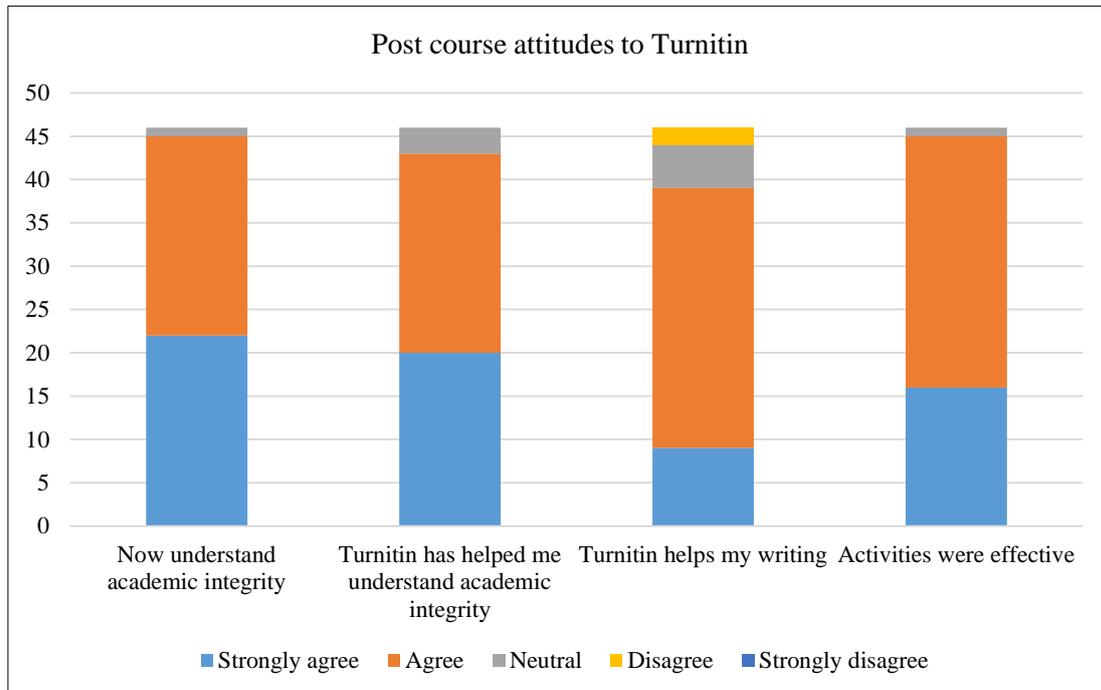


Figure 3. Post course attitudes data, both groups (N = 46).

While most responses indicated that students viewed Turnitin as a supportive mechanism, some barriers remained in students' understanding of how to interpret text matches. One barrier was the time it took students to learn how to use Turnitin, reflected in comments such as: "It involves too many steps to use it. Difficult to use." Others disliked the fact that Turnitin presents a numerical result that is mismatched with the need to interpret the individual text matches. Multiple statements reflected this, for example "It is too mathematic," "Sometimes I get confused the percentage of matching. It was good on not having that much percentage," and "We still need to analyse the result." This frustration confirms that Turnitin's similarity percentage can mislead students.

In the most concerning cases, two students indicated misunderstanding of Turnitin's potential. They viewed Turnitin simply as plagiarism detection software and did not understand that it could help them in multiple ways. One student did not like that it "show[s] referencing as plagiarism. It doesn't indicate if you are wrongly referencing," and the second remarked "Turnitin checked my reference list and included in its similarity why?" These responses show that students regard text matches as plagiarism, rather than simply matches. The reason that this is concerning is because these students might also interpret matches to quotes and technical terms as plagiarism, and may alter them unnecessarily. Another concern is that those students did not follow our teaching that Turnitin's matches can help to check bibliographies for misspelt names and titles. It should be emphasised that those were only two responses. Nonetheless, they underscore that students require ongoing support.

Largely, these questionnaires showed that our teaching and resources effectively reduced students' anxiety about plagiarism and Turnitin. In both groups' follow up questionnaire, 95% of

students reported that they had a positive experience with using Turnitin. Many responses show that students actively used Turnitin to check and improve their citation practices. For example, one student wrote “Was able to edit my drafts with the feedbacks from Turnitin before submission of final draft. As such, it helped minimized my chances of unintentionally plagiarizing.” This suggests that a constructive approach is of great value to students. However, similar to the post course survey, the follow-up survey reveals a lingering misunderstanding of the software with one complaint that “Sometimes the references matches and similarity increases....that makes me worried about plagiarism.” This again illustrates the need for supportive rather than punitive education about interpreting text matches.

3.2. Turnitin originality report data

Although the questionnaires suggest that most students felt they came to understand academic integrity, the Turnitin originality report data tells a different story. Instead of reductions in problems, the amount of insufficient paraphrasing and misquoting remained significant across the three assignments. There are two possible reasons for this. First, interpretation of Turnitin matches is difficult and students may not have understood their mistakes. Second, only a small proportion of students made use of the option to submit multiple drafts to check and revise their work. These results show that students need more assistance to interpret matches, and more emphasis needs to be placed on using Turnitin in a time productive way.

Another major result was that students as well as staff frequently had difficulty interpreting whether a match constituted insufficient paraphrasing. While items such as misquoting, quoting, references, and technical terms were easy to categorise, staff had differing views on how to interpret matches that could fit within a range of categories. If it were a small match, for instance, often it could be categorised as either insufficient paraphrasing or a neutral miscellaneous item. Figure 4 shows one such match which caused disagreement amongst the four staff who analysed it. This variety of interpretations of such matches indicates that matches need to be treated in the context of the student’s work and their position as an apprentice scholar. Likewise, students need to be equipped with the skills to understand and justify to potential critics their decision to keep such a match.

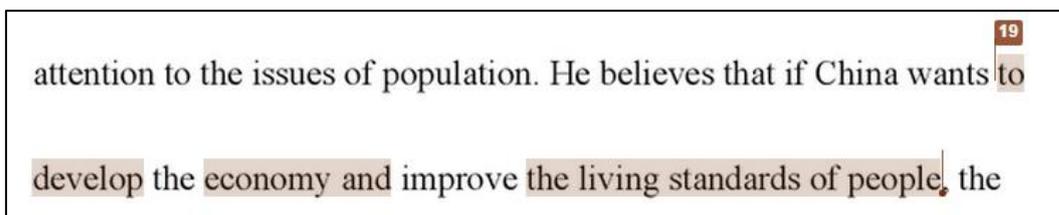


Figure 4. Example of a text match that was difficult to interpret.

Similarly, statements such as in Figure 5 display matches that on first glance may be concerning to the marker because of the amount highlighted and the lack of a citation. However, if the student had cited appropriately, it is debatable whether it constitutes sufficient or insufficient paraphrasing. On the one hand, the matches in phrasing are worrying. On the other hand, these are all common phrases to in relation fairly widely known facts, at least for an assumed literate readership interested in China, and using these would not constitute plagiarism.

It is with this awareness of the ambiguity in text match interpretation that we present the three assignments’ results. When considering the following three figures, it is important to remember that they cannot be entirely fairly compared because of their word length differences. The annotated bibliography was 500 words, and only had to refer to two texts. Draft essays were incomplete and students had not typically finished their reference list, whereas final essays were roughly 1500 words and had complete reference lists. It should be noted that the percentages on the figures are not taken from the similarity percentage, but are gathered from the amount of individual text matches. For example, in Figure 5, the green match that is numbered 17 would

count as one match. This enabled us to specify the different types of matches, rather than approximating Turnitin's percentages when the same source was used in multiple ways.

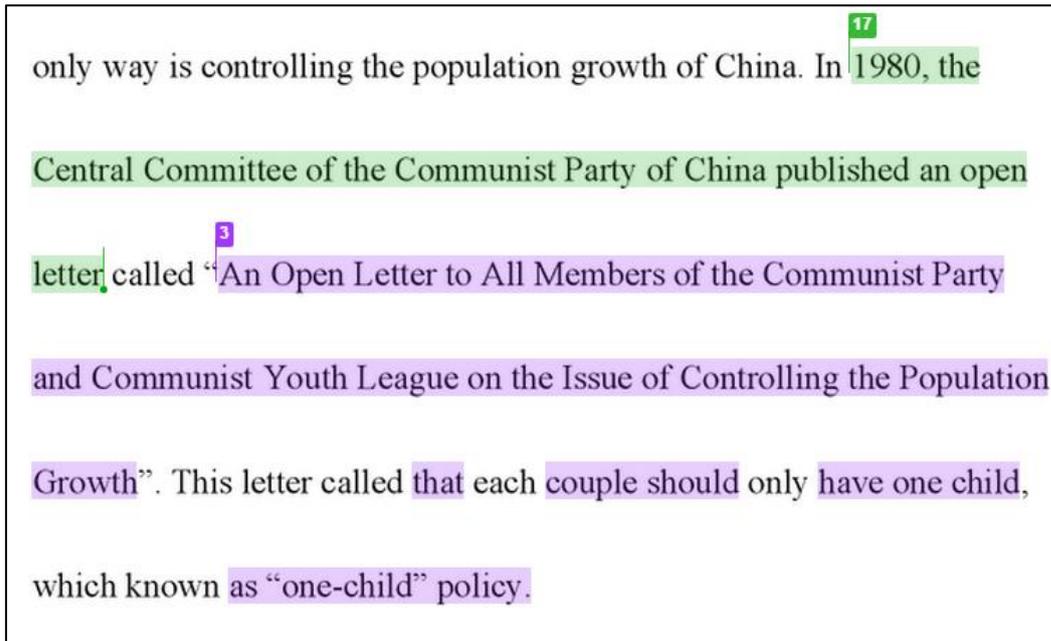


Figure 5. Example of text matches that are difficult to interpret.

Starting with the annotated bibliography (Figure 6), it is particularly important to note that insufficient paraphrasing was a major issue in students' writing. This issue with insufficient paraphrasing confirms expectations that students require support in learning how to cite and paraphrase appropriately. The large proportion of neutral items and references highlight that Turnitin's similarity percentage is not a measure of plagiarism.

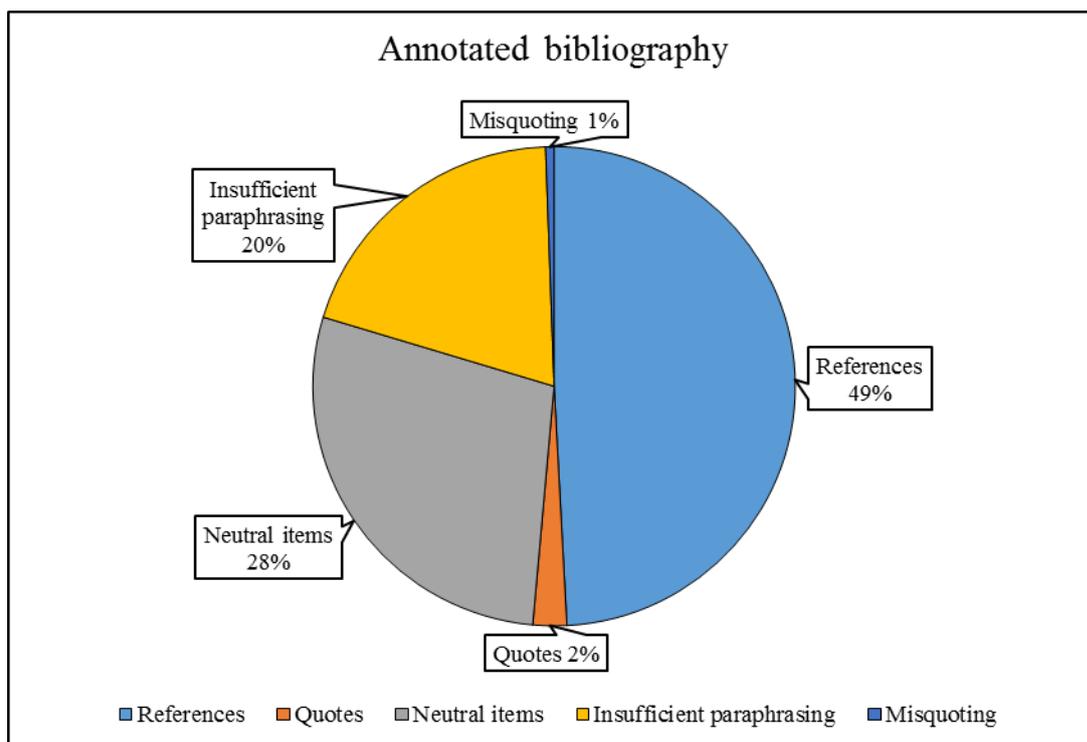


Figure 6. Turnitin originality report for the annotated bibliography (N = 43).

The results from the draft (Figure 7) and the final essay (Figure 8) demonstrate that insufficient paraphrasing and misquoting remained significant in students' work. These figures indicate that students need more education in the technical aspects of quoting (for instance, using ellipses when removing words, using the same spelling as the source text, ensuring that all words match the original). It also indicates that students need more guidance and practice around the difficult act of paraphrasing.

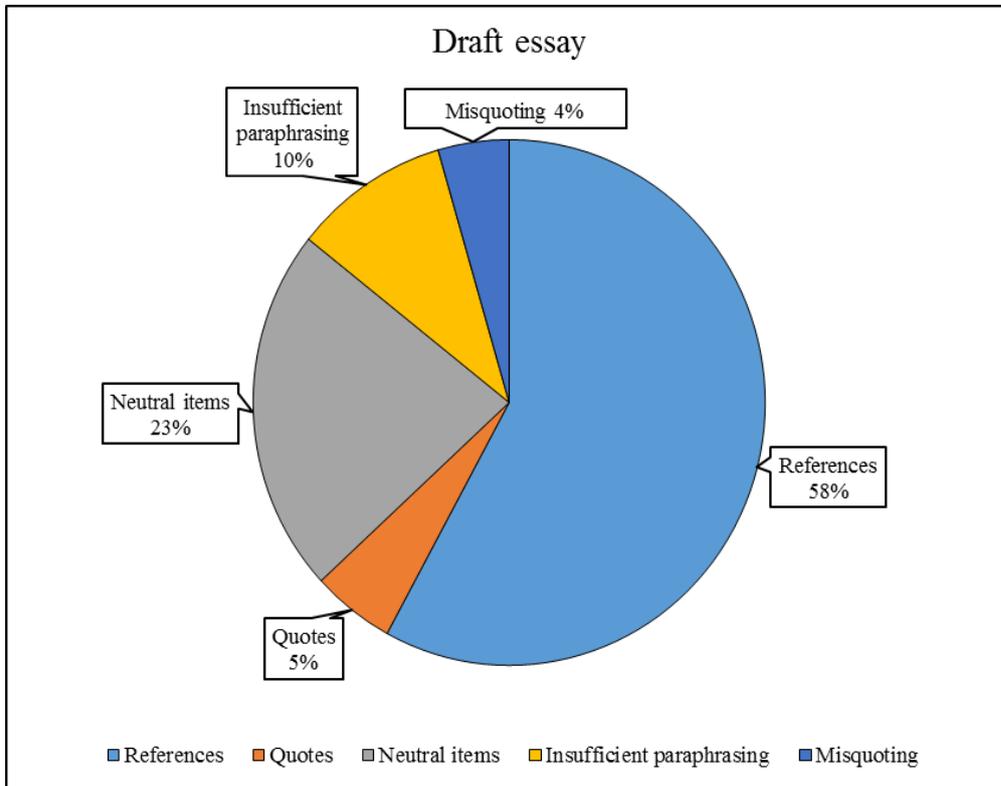


Figure 7. Turnitin originality report for the draft essay (N = 43).

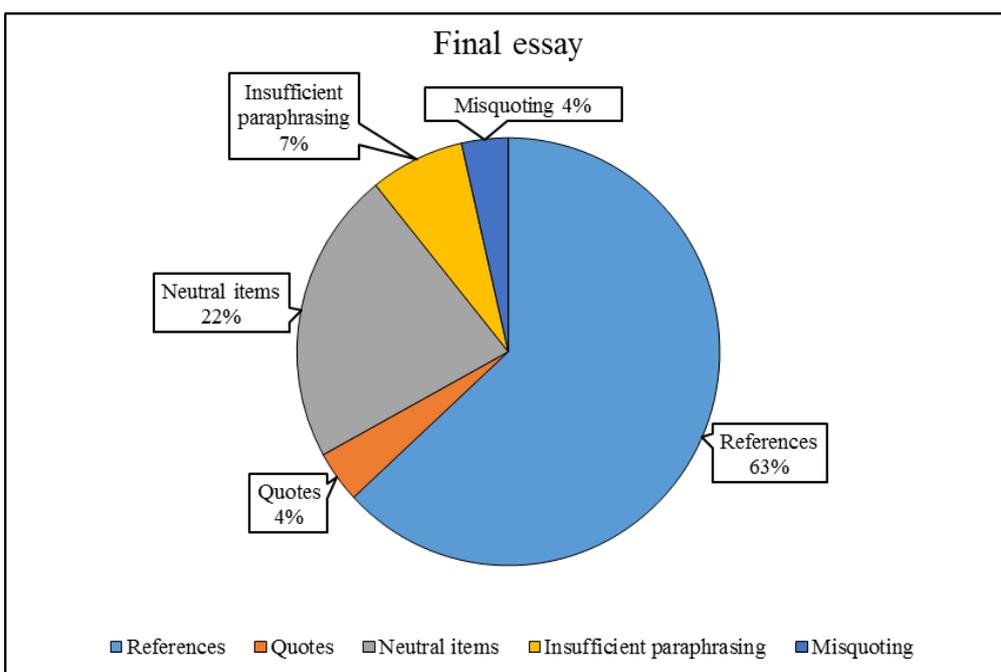


Figure 8. Turnitin originality report for the final essay (N = 43).

Although it would be satisfying if select students had recurrent problems with insufficient paraphrasing and misquoting, the distribution of students who had such problems was actually broad. In the draft essay, 60% of students had counts of insufficient paraphrasing and/or misquoting. In the final, the same was true of 58% of students. Between both assignments, only 12 of the 43 students had no counts of either insufficient paraphrasing or misquoting. This shows that only 28% of students appeared to have mastered skills in correct paraphrasing and quoting despite the high levels of confidence at the course's end. Viewed from another angle, however, this illustrates the subjective nature of text match interpretation especially regarding paraphrasing, and the need for a dialogue between staff and students about what constitutes sufficient paraphrasing. In sum, although students' confidence was boosted during the course, students required more support and education, in particular around quoting and paraphrasing.

4. Discussion

Our mixed findings show that while Turnitin can be used to increase understanding of academic integrity and reduce anxiety, students need ongoing support to develop their authorial voice and both students and staff need to be skilled in consistent interpretation of Turnitin's text matches.

4.1. Reducing students' anxiety about plagiarism

Answering our first research question, we found that a literacy approach can greatly reduce students' anxiety, but that their concern about academic integrity remained significant after a semester of study. The fact that students felt significantly more confident about writing with academic integrity is promising because it fosters an environment of trust rather than distrust (Penketh & Beaumont, 2014). Prior to the course, 83% of students stated that they were concerned about plagiarising whereas after the course, 98% of the respondents claimed that they now understood academic integrity, and 65% reported that they were no longer concerned about plagiarism. After their first semester, 95% reported a positive experience using Turnitin over the semester, and 88% said that they had used Turnitin to assist them to reference appropriately. This demonstrates that our teaching approach had significant efficacy in reducing students' anxiety.

This confidence is particularly interesting in light of the mismatch between students' confidence and their skills in using Turnitin to develop appropriate citation practices. Although most students reported increased understanding of academic integrity principles, 63% expressed ongoing concern about using Turnitin. To some extent these findings contrast with Dahl's (2007) conclusion that students could be divided into two camps: those who understand academic integrity and are therefore confident in using Turnitin and those who lack confidence and dislike using Turnitin. Our students could not be so clearly differentiated. Instead, we found that while almost all students reported positive experiences with Turnitin, 72% of the students' work revealed ongoing concern and confusion about appropriate citation practices. We therefore recommend that students require training in consistent interpretation of text matches.

4.2. The benefits of a scaffolded and individualised approach to developing students' understanding of academic integrity

Results from the originality reports confirm that students take time to learn citation practices and that even a month-long course is not sufficient to resolve every difficulty in understanding how to quote and paraphrase. As a result, we argue that students require ongoing literacy support to learn appropriate citation practices. These findings can also be attributed to issues with a decrease in attention to detail as students rushed to complete their final essay, consistent with Walker's (2010) findings. These factors indicate that students require training that incorporates both support for learning citation practices, and education around time management and viewing originality reports in time to submit revised, polished work.

A limitation of this study is its relatively short time frame, which could be a contributing factor to the students' remaining issues with insufficient paraphrasing and misquoting. We tested three assignments over four weeks, and for many students the Western conventions of academic in-

tegrity were entirely new. It could be worthwhile to analyse the students' coursework over a semester to determine whether there was improvement as they became more familiar with their disciplines' language and citation practices. Further, a larger sample size may show different results. However, even in larger studies that take place over a semester or more, the results warn that students require further education to eradicate plagiarism (Batane, 2010; Betts et al., 2012; Walker, 2010). Our findings are therefore consistent with the literature, and suggest that future research could determine the reasons for students having enduring issues with insufficient paraphrasing and misquoting.

One possible explanation for the enduring citation issues IAP students had is that few consulted their originality reports more than once, especially for the second assignment. For two assignments – the annotated bibliography and the essay draft – students were able to upload up to four drafts and one final version. Across both groups, the most notable uptake for this was in the first assignment, the annotated bibliography, where 61% of students uploaded at least one draft and the final version. There was a noticeable drop when it came to the essay draft; only 33% uploaded more than one version. This does not necessarily mean that students who only submitted one draft did not read their originality report, as they may have been satisfied with the report. Nonetheless, given the high proportion of mistakes in students' work, the lack of revision is concerning. To address this problem, we recommend that students be encouraged to check multiple originality reports.

The low uptake of Turnitin reports could also be due to students' poor time management, lack of incentive, or simply that students found the originality report unhelpful. The last explanation, however, can be discounted as 97% of students in the post course questionnaire said that Turnitin helped them to apply academic integrity principles. The more plausible reason is that students' time management was under pressure – most had moved to Australia within the past month and had to contend with finding accommodation, enrolment procedures, and homesickness. Further, given that it was not a requirement for students to submit more than one version, it is unsurprising then that students did not make better use of originality reports. To encourage more students to check their originality reports, one solution is to set low stakes scaffolded tasks that require students to revise a draft based on their originality report. What is clear is that educators need to emphasise the value of checking originality reports and revising the draft accordingly.

In terms of the efficacy of our resources, while our TLAs provided an overview of the issues that Turnitin could identify, it was our individual consultations that assisted students most. In class discussions of academic integrity, students asked a range of questions, mostly around issues of recycling and paraphrasing. Our exercises illustrated the differences between sufficient and insufficient paraphrasing, yet students required ongoing practice to master this technique. In our two, half-hour individual consultations, students were able to discuss their own text matches with an adviser, who was then able to suggest ways to correctly paraphrase and quote, and techniques to strengthen students' arguments. Many students expressed a wish for more support like this in their course evaluation. Again, the provision of low stakes assignments wherein students review originality reports and alter their drafts would assist in this regard, as would further activities around interpreting matches.

4.3. Confidence building: Enhancing students' authorial voice

Consistent with the literature, we found mixed results when it came to utilising Turnitin to enhance students' authorial voice. Indeed, significant amounts of insufficient paraphrasing suggest that students neither fully understood nor focused on citation practices in their work. Yet when the draft and final essays were compared, there were frequent instances of students' authorial voice that emerged in place of text that Turnitin had previously matched with another source. In the draft essay, students consistently placed a fact or another author's idea in a paragraph's topic sentence, but in the final essay this was replaced with a stronger argument statement. For example, in one student's essay the draft topic sentence read "In developing countries, about 43 percent of women at their reproductive age suffer from anemia [*sic*] which 'places women at higher risk of death during delivery and the period following childbirth' (Ransom & Elder, 2003)."

This sentence focuses solely on another author's idea and is largely descriptive. In contrast, after further lessons on argument and essay writing, the student replaced that sentence with one that is argumentative: "Women should be prioritized [rather] than men in terms of food consumption." By inserting "should be", the student shifted emphasis to their own voice. The student then employed Ransom and Elder's work as evidence to support their line of argument. These types of changes were common, and demonstrate Turnitin's value not only in learning how to write with academic integrity, but also how it can be used constructively to teach students where they need to foreground their authorial voice.

5. Conclusion

Our study opens up multiple issues for debate and study. Foremost is the question of how to resource and encourage a productive approach so that students and staff can exploit Turnitin's ability to assist with citation practices and authorial voice. Another issue is how to ensure a consistent approach to interpreting text matches, since staff often experience similar difficulty to students in interpreting whether or not a text match indicates plagiarism. What is clear is that more communication between ALL and discipline-specific staff as to how to interpret matches would contribute to best practice advice and resources. Based on our findings, we make five recommendations for educators to consider pursuing:

1. ALL staff use Turnitin to enhance education around authorial voice in exemplar resources, workshops and individual consultations.
2. Embed Turnitin within ALL teaching. This could be integrated with teaching study skills such as note-taking and time management so that students understand Turnitin's time constraints and learn how to plan their work in ways that assist academic integrity development.
3. Provide ongoing support, mainly advice and active learning resources so that at all program levels students can learn and practise citation practices.
4. Discipline-specific educators set low-stakes scaffolded activities that require students to interpret an originality report and submit a revised assignment. This would enable students to learn how to use an originality report to improve citation practices.
5. Organise training and education for both staff and students on how to interpret matches. This would involve continued discussion and acknowledgement that interpretation will often be context-specific and dependent on disciplinary cultures.

Our research demonstrates that a literacy approach to Turnitin can provide educators with a bridge that supports students' learning of appropriate citation practices and development of authorial voice. It is also possible to establish a positive and constructive connection between software such as Turnitin and students' development of writing. Future research could go further to examine ways to evaluate authorial voice in relation to Turnitin's text matches. Continuing to build and strengthen this bridge will enable educators to provide a supportive rather than alienating learning experience for our increasingly diverse students.

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Appendix A. Survey questions

A.1. Pre course survey questions:

1. What was the country of your previous study?
2. What did you study (name of program)?
3. What level was your previous study?
4. What do you understand the term academic integrity to mean?
5. In your previous studies were you taught how to write with academic integrity?
6. How strongly do you agree with the following statement?
7. I am really concerned about accidentally plagiarising, Please explain your answer.
8. Have you used the text-matching tool, Turnitin before?
9. Why did you use Turnitin?
10. Were you given any instructions from your institution on how to use Turnitin?
11. How strongly do you agree with the following statement? I had a very good experience with using Turnitin. Please explain your answer.
12. If you have not used Turnitin before but have heard about it, what do you know about the text-matching tool?

A.2. Post course survey questions:

1. How strongly do you agree with the following statements?
 - a) I now fully understand what it means to research and write with academic integrity.
 - b) Turnitin has helped me to understand how to apply academic integrity principles to my work.
 - c) Turnitin has helped me to improve my writing and referencing skills.
 - d) The activities we did in class around academic integrity and Turnitin were effective in showing me how to write with academic integrity.
 - e) I am no longer concerned about accidentally plagiarising.
2. What did you like most about using Turnitin as a learning tool?
3. What did you like least about using Turnitin?
4. Do you still have any concerns about using Turnitin?
5. Do you have any suggestions for improving the way academic integrity is taught?

A.3. Follow up survey questions:

1. During the first semester of your program at the ANU, did you use Turnitin?
2. If you used Turnitin, did you use it to help you to reference appropriately?
3. Did your lecturer/s give you any instructions or assistance on how to use Turnitin?
4. What concerns, if any, did you have about using Turnitin for your assignments?
5. Was your overall experience with using Turnitin during the semester a positive one? Explain your answer.
6. How strongly do you agree with the following statements?
 - a. The IAP training on Turnitin was useful for developing skills necessary to successfully and confidently write with academic integrity.

- b. The IAP training on academic integrity was useful for developing skills necessary to successfully and confidently write with academic integrity.
- 7. Now that you have completed a semester of study at the ANU, what further training in the IAP would have helped you to understand how to use Turnitin?
- 8. Now that you have completed a semester of study at the ANU, what further training in the IAP would have helped you to apply the principles of academic integrity to your writing?

Appendix B. Learning activity sample

B.1. Example of an explanation of how to use Turnitin to identify insufficient paraphrasing:

Below is another attempt at paraphrasing the same text. This time the text is almost identical to the original and there is no reference. The writer could choose to turn this into a direct quote with a reference or more carefully paraphrase the writing.

attributes. The results for wine were not as significant.

It appears that the more consumers think that local apple attributes are better, the more they are willing to pay for those apples.

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f determinants of WTP for distance of transportation indicates that perceiving local food attributes as superior compared to food that traveled longer distances affects consumers' WTP positively. The more consumers think that local apple attributes are superior, the more they are willing to pay for local apples. Results for wine are not significant. Thus, the direct comparison of apples versus wine is suggestive of a

In this example the writer has largely attempted to paraphrase and has included the author's names and a reference. Turnitin has picked up a very close match with the original. Again, the writer now has an opportunity to rephrase the sentence into their own words.

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B.2. Example of a TLA:

Exercise 5.3

Have a look at the samples from a Turnitin originality report below. The report highlights where the text matches the original source. What would the author need to do to show academic integrity?

Examples from a Turnitin originality report	What would the author need to do to show academic integrity?
<p>Apples are widely known to have great health benefits. Many beneficial health effects are thought to result from eating apples; however, two forms of allergies are seen to various proteins found in the fruit. These allergies include...</p>	

<p><i>Mean Girls</i> is a film in which a number of characters are shown eating apples. While the film ⁷remains a relevant pop-cultural reference point and a go-to source of shorthand for female and human dynamics, the representations of the characters' diets are overlooked in many analyses (Angelo 2014).</p>	
<p>According to some authors, ⁸detailed "knowledge of the polyphenol profile and contents in different apple cultivators is necessary in order to make an evaluation of apples' potential beneficial health effects" (Ceymann et al. 2012, p.128). We can ascertain the...</p>	
<p>Apples are widely known to have great health benefits. As one author states, ⁹"There has been a growing appreciation and understanding of the link between fruit and vegetable consumption and improved health" (Hyson 2011, p.408). This can be seen in the case...</p>	
<p>It is largely recognised that in Western countries such as Scotland, Australia, and Portugal, apples make up a large proportion of the fruits that people eat (Ceymann et al. 2011, p.1774).</p>	

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