

AUTHOR:

P.D. Chrysler-Fox¹
A.Thomas²

AFFILIATION:

¹Lecturer, Department of Industrial Psychology and People Management, University of Johannesburg

²Professor, Department of Industrial Psychology and People Management, University of Johannesburg

CORRESPONDENCE TO:

Pharny Chrysler-Fox

EMAIL:

pharnyc@uj.ac.za

POSTAL ADDRESS:

PO Box 524, Auckland Park, 2006

DATES:

Published: 20 Nov 2017

HOW TO CITE THIS ARTICLE:

Chrysler-Fox, P.D. & Thomas, A., 2017. Managing plagiarism of South African Honours students: Does an intervention have any effect?. KOERS — Bulletin for Christian Scholarship, 82(1). Available at: <https://doi.org/10.19108/KOERS.82.1.2305>

COPYRIGHT:

© 2017. The Author(s).
Published under the Creative

Managing plagiarism of South African Honours students: Does an intervention have any effect?

Abstract

The aim of the study was to investigate whether an intervention to address post-graduate student plagiarism in an Honours programme in Human Resource Management at a South African university had an impact one year later. In a quasi-experimental design, the sample comprised 34 students in a control group and 70 students in two intervention groups. Student essays were examined for different types of plagiarism at two different times and compared by means of Wilcoxon Signed-Rank and Kruskal-Wallis tests. Findings indicate that students who were exposed to both parts of an intervention evidenced less plagiarism in their essays one year later than those who were exposed to only one part of the intervention or no intervention at all.

Keywords: Turnitin™; citation behaviour; writing strategies; paraphrasing; patchwriting.

Opsomming

Die doel van die studie was om vas te stel of 'n intervensie om plagiaat van nagraadse studente in 'n Honneursprogram in Menslike Hulpbronbestuur aan 'n Suid-Afrikaanse universiteit aan te spreek, 'n impak een jaar later het. Die steekproef van 'n kwasi-eksperimentele ontwerp het uit 34 studente in 'n kontrolegroep en 70 studente in twee intervensiegroepe bestaan. Opstelle van studente op twee verskillende tye geskryf is ondersoek vir verskillende tipes plagiaat wat met Wilcoxon Signed-Rank en Kruskal-Wallis toetse vergelyk was. Bevindinge dui daarop dat studente wat blootgestel is aan beide dele van 'n intervensie 'n jaar later minder plagiaat in hulle opstelle getoon as diegene wat blootgestel was aan net een deel van die intervensie of glad nie blootgestel aan die intervensie nie.

Sleutelwoorde: Turnitin™; aanhalinggedrag; skryfstrategieë; parafrasering; 'patchwriting'.

1. Introduction

Internationally, plagiarism is a growing problem in universities (Eret & Gokmenoglu, 2010:3303) as students tend to rely on technology for more advanced plagiarism strategies (Glassman, Sorensen, Habousha, Minuti & Schwartz, 2011:337). Students have become sophisticated in the manner in which they plagiarise (Fearn, 2011:1), a phenomenon that could be related to the ease of accessing the work of others through the Internet (Walker, 2010:42). Yet Walker (2010:41) maintains that information on student plagiarism is less than comprehensive. This calls for universities to address student plagiarism as a means of preventing the devaluation of the work of honest students, upholding academic scholarship and the rigour associated with it (Jabulani, 2014:1), and protecting academic integrity and the reputation of universities (Choo & Paull, 2013:283). Accordingly, universities have focused mainly on strategies that ensure compliance with academic rules of attribution, supported by policies on plagiarism, and on invoking sanctions for non-compliance (Drinan & Bertram Gallant, 2008:130-132).

Student plagiarism is a relatively unexplored field outside Europe and North America (Tekleab & Rocha, 2010:676; Imran & Nordin, 2013:103). Previous studies have addressed the perceptions of students about plagiarism (*cf.* Szabo & Underwood, 2004:180;

Shi, 2006:264). Turnitin™ reports have been used to provide formative feedback in experiential learning and as a means of developing academic writing skills (Walker, 2010:44; Rolfe, 2011:702). Recent studies that examined interventions using Turnitin™ originality reports to identify similarity of content in student work have primarily adopted once-off measures of assessment (*cf.* Batane, 2010:1; Youmans, 2011:749).

The research problem that the study sought to answer was how detectable plagiarism in honours level assignments can be reduced. The objective of this study was to investigate whether an intervention to address student plagiarism in a Human Resource Honours programme at a South African university had an impact one year later. The first sub-objective focussed on understanding whether a targeted pedagogical intervention resulted in a decrease in plagiarism within groups based on student essay assignments one year post-intervention. The second sub-objective sought to explore whether differences in the types of plagiarism exist between the control and intervention groups.

The Honours programme in Human Resource Management lays the foundation for the later Master's programme for which students may qualify to enrol. The escalating amounts of plagiarism detected in post-graduate work (Honours and Master's levels) by the researchers provided a major stimulus for this project.

Unless focused and ongoing pedagogical interventions address academic writing skills at different levels of complexity, students and educationists may continue to wrestle with plagiarism and unoriginal thought, and thus fail to protect the core values of academic integrity, sustain academic scholarship, and produce innovative thinkers who apply original thought in complex contexts.

2. Literature review

To contextualise the study, the reasons why students plagiarise are first discussed, followed by a review of the different types of plagiarism and a discussion of previous interventions conducted to address plagiarism.

2.1 *Reasons for student plagiarism*

Researchers have advanced a number of reasons to explain why students plagiarise. Devlin and Gray (2007:181) reported that within their Australian student sample, those who plagiarised evidenced poor academic skills together with a poor understanding of the nature of plagiarism. Fazel and Kowkabi (2013:88) note that student plagiarists lack awareness of appropriate academic citation practices and evidence confusion in distinguishing between what material to cite and that which constitutes common knowledge. Insley (2011:184) advances the view that those who unknowingly plagiarise generally are unclear about paraphrasing and appropriate citation practices. In a study of 141 first-year South African university students, Ellery (2008:611) reported on the association between poor academic writing skills and writing practices learned at school prior to entering university. However, she found that a portion of her student sample plagiarised due to poor time management and the attendant need to take 'short-cuts'.

In a study of Australian university students, Curtis and Popal (2011:30) reported a lesser incidence of plagiarism among those students who achieved higher grades than those evidencing lower grades, as well as less plagiarism in the work of those students who appreciated the seriousness of the problem than in the work of those who did not. This study also highlighted that when students were competitive and imposed pressure on themselves to achieve high grades, the incidence of plagiarism was lower than that of students evidencing the opposite behaviours. Similarly, Maxwell, Curtis and Vardanega (2008:25), in their sample of local students and Asian international students at two Australian

universities, noted that as the perceived seriousness of plagiarism and the understanding of it decreased, so there was a corresponding rise in recorded plagiarism.

In addition, access to electronic sources and an associated inability by students to differentiate between what is freely available on the Internet and what needs to be referenced, compounds poor academic writing (Hannabuss, 2001:314). Gross (2011:436) notes that current students of the Internet generation interpret acceptable acquisition of knowledge within the context of their understanding of unrestricted, free knowledge, the right to the ownership of knowledge by all, and the strong social networks to which they belong.

Fazel and Kowkabi (2013:86) stress that the context of the academic environment contributes to plagiarism by students whose first language is not English where, in addition to seeking out ideas and sources, students, also, are required to formulate and express thoughts and ideas in a foreign or second language. Walker (2010:57) adds that international students, in addition to experiencing language difficulties, simultaneously have to adapt to new cultures and thus may not understand the importance of attribution of work. Stappenbelt (2012:24) reported that foreign students studying at an Australian university often did not understand the importance accorded to plagiarism detection and punishment documented in university academic conduct policies. Walker (2010:49), too, found higher rates of plagiarism in the work of international students compared to that of local students, especially with regard to verbatim plagiarism, outright copying of material, and extensive plagiarism.

Particularly with international students, or students whose first language is not English, Duff (2010:176) reports a lack of writer-identity on the part of students who doubt their ability to communicate effectively. Similarly, Jabulani (2014:5), after content-analysing 150 essays of post-graduate students at a South African university where English was not their first language, found problems in attribution where the voices of the original authors were appropriated in the essays.

2.2 *Types of plagiarism*

While no universal definition of plagiarism exists (Fazel & Kowkabi, 2013:86), generally, plagiarism is regarded as the act of utilising the work of others without correct attribution and an act that provides plagiarists with the benefits associated with presenting someone else's work as one's own, whether intentionally or unintentionally (Carroll, 2002:10). This broad concept houses a variety of associated practices such as recycling past work, purchasing materials over the Internet, sloppy referencing and paraphrasing, and copying entire works or sections of the works of others (Evans, 2006:88).

Pecorari (2008:4) calls intentional plagiarism "prototypical plagiarism", while Shi (2012:134) labels intentional misuse of the works of others as "textual borrowing". Self-plagiarism of previously submitted work, now passed off as new and original work, has been called "language reuse" (Flowerdew & Li, 2007:440) or "recycling" (Halupa, 2014:121).

Given this broad definition, it is important to gain a more nuanced appreciation of the various types of plagiarism that can occur if a targeted intervention is to be considered to address this problem.

2.2.1 *Minor plagiarism*

At one end of the continuum, minor plagiarism, sometimes unintentional, is characterised by missing quotation marks although the source is cited (Price & Price, 2005:423). It lacks conventional signals i.e. quotation marks and citation(s) (Pecorari, 2008:61; Walker, 2010:103; Colquitt, 2012:749) as well as page numbers (Colquitt, 2012:749), where the copied text is presented as original (Walker, 2010:46). The Committee on Publication Ethics (2013:1) and Wager (2014:35) view minor plagiarism as text copied from

other sources with acknowledgement of the author(s). For the measurement framework used in this study, 'minor' plagiarism was regarded as the inclusion of a citation that accompanied copied text.

2.2.2 Major plagiarism

At the other end of the continuum, major plagiarism includes the outright, intentional or unintentional plagiarism involving a lack of referencing, the lack of acknowledgment of sources or the omission of quotation marks (Price & Price, 2005:423). It also includes buying or copying whole documents without acknowledgment (Park, 2003:475). Major plagiarism is regarded by the Committee on Publication Ethics (2013:1) and Wager (2014:35) as text copied from other sources without any citation. 'Major' plagiarism in this study was regarded as the lack of a citation in instances of copied text.

2.2.3 Inadequate paraphrasing applying to both minor and major plagiarism

Attempts to paraphrase the work of other authors is called "patchwriting" (Howard, 1995:788), "pastiche" (Edlund, 2004: para. 10) or "close copying" (Wager, 2014:41). Howard (1995:788) defines patchwriting as "copying from a source text and then deleting some words, altering grammatical structures, or plugging in one-for-one synonym-substitutes". Walker (2010:46) notes plagiarism to be "sham plagiarism" when a source is cited correctly but direct words are paraphrased too closely to the original words or "purloining plagiarism" that involves using the work of another with or without his or her knowledge and consent.

2.3 Interventions to address plagiarism

Greater focus on plagiarism detection has emerged in the past years, with the use of software programmes such as Turnitin™. Walker (2010:43) suggests that such programmes do not constitute a comprehensive deterrent to plagiarism as faculty use their own judgments when evaluating the generated originality reports. Similarly, Singh and Bennington (2012:116) suggest that subjective judgments are made, based on a faculty member's own practices of writing and paraphrasing. Thus, plagiarism detection programmes may better serve student learning and instructor teaching than they do as a mechanism for policing work (Price & Price, 2005:428).

Others who advocate a more developmental approach to preventing student plagiarism propose the establishment of institutional integrity strategies and honour codes (McCabe, 2005:10) and open discussions with students about moral and ethical issues (Ellery, 2008:607). Some writers support pedagogical strategies involving education about the importance of academic integrity (Curtis & Popal, 2011:30), experiential learning (Risque, O'Dwyer & Ledwith, 2013:34), interactive engagement with electronic-source material (Ellery, 2008:615), on-line mastery tests to develop awareness of academic protocols and referencing requirements (Curtis, Gouldthorp, Thomas, O'Brien & Correia, 2013:282), and on-going communication with students about the necessity to use peer-refereed journal articles (Price & Price, 2005:423).

When considering teaching and learning as tools to address plagiarism prevention, Walker (2010:54) reports a reduction in sham plagiarism once such plagiarism is challenged by faculty. Fazel and Kowkabi (2013:88) stress that plagiarism can be reduced by alternating assessment complexity and assessment requirements each year, along with the provision of feedback to students about authentic referencing, and the use of small segments of work to illustrate and evaluate good practice on an on-going basis. However, Drinan and Bertram Gallant (2008:134) are somewhat sceptical about whether pedagogical interventions will be accepted and adopted without problems because such interventions demand changes in the way teaching is effected and assessments set.

Faculty members have an important role to play in developing strategies to reduce the occurrence of student plagiarism (Choo & Paull, 2013:284). It is not sufficient to simply appeal to a sense of student morality or to implore students to practise correct attribution of sources. Rather, education must be interactive and practical in its instruction of expectations in academic writing (Vardi, 2012:927).

3. Method

A quasi-experiment post-test only non-equivalent group design (Mark & Reichardt, 2009:188-191) was adopted to evaluate the effectiveness of the plagiarism intervention. In an attempt to address limitations associated with this design, such as maturation which poses a challenge to internal validity (Mark & Reichardt, 2009:184), two intervention groups were included alongside the control group. An unobtrusive approach was employed where direct contact with participants is eliminated (Payne & Payne, 2004:230). This strategy aimed to prevent selection bias that could cause interaction effects, as well as to address participant effects such as bias associated with social desirability responses (Mouton, 1998:89), or non-response (Fink, 2005:85) which could result in uninterpretable findings (Mark & Reichardt, 2009:188). Students were unaware of the unobtrusive study and thus not harmed in any way. Ethical clearance and permission to conduct the study were granted by the university at which the study was undertaken.

3.1 Population and sample

Three static cohorts of students enrolled in a two-year part-time Honours programme in Human Resource Management at a South African public comprehensive university during the period 2012 to 2014 ($N = 141$) comprised the non-random sample. For inclusion in the study and to avoid the effects of attrition, students had to be enrolled for the first time (i.e. not be repeating the subject) and had to complete both essays required in two subjects one year apart. Thirty-seven students did not meet these criteria and thus were not included in the study. As no intervention had been instituted during 2012, students in this group comprised a control group – Group 1 ($n = 34$). The 2013 and 2014 students (the intervention groups), comprised Group 2 ($n = 33$) and Group 3 ($n = 37$) respectively. The sample consisted predominantly of women (67.6% in Group 1; 81.8% in Group 2, and 78.4% in Group 3), as well as students where English was their second language (64.7% in Group 1; 75.8% in Group 2, and 78.4% in Group 3). Students in Group 1 were older ($M = 27.21$, $SD = 8.39$) compared to students in Group 2 ($M = 25.58$, $SD = 6.94$) and in Group 3 ($M = 25.89$, $SD = 4.97$). A series of Chi-square tests revealed no statistically significant differences between the groups.

3.2 Intervention

The purpose of the intervention was to address student plagiarism one-year later. The processes and materials used for the two-part intervention are displayed in Figure 1.

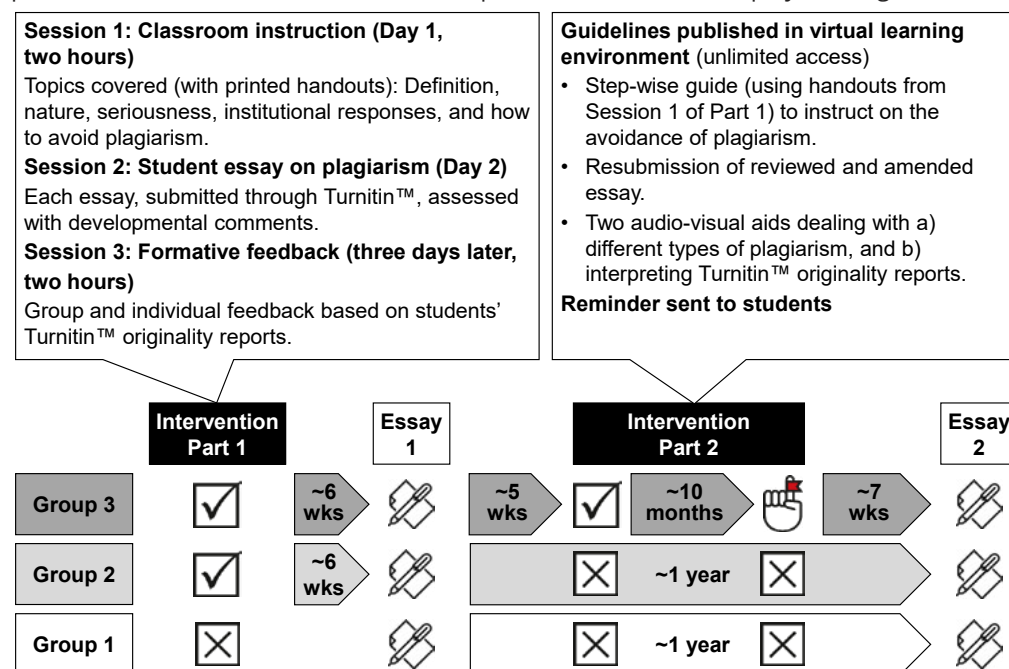


Figure 1: The process and materials used for the intervention

Source: Compiled by the authors

The first part of the intervention (Sessions 1–3), introduced in 2013 as part of a week-long orientation programme, was facilitated by the second author who specialises in the study of plagiarism. Students in Group 1 did not receive the intervention as it had not yet been introduced; students in both Groups 2 and 3 were exposed to Part 1 of the intervention with students in Group 3 being exposed to Part 2 of the intervention that was introduced in 2014. Two similar essays (approximately 15 pages with at least 15 references) for each group (sourced from two different subjects), submitted through Turnitin™, were used to assess plagiarism one year later. These essays, prepared out-of-class, required students to integrate theory to solve an organisational challenge of their own choice.

3.3 Measures

Detectable types of plagiarism were measured according to the six measures summarised in Table 1. All measures were exhaustive and mutually exclusive as recommended by Krippendorff (2013:155).

Table 1: Types of detectable plagiarism examined in this study

Citation behaviour		
Citation(s) provided	No citation provided	Copying strategies from source text
Reproduction 'Minor'	Reproduction 'Major'	Text copied verbatim without quotation marks
Alteration 'Minor'	Alteration 'Major'	Substantial portions of text copied with limited alteration
Blend 'Minor'	Blend 'Major'	Additional words or phrases added to copied text

Source: Compiled by the authors

Copying strategies from source text were measured as 'Reproduction', 'Alteration' and 'Blend'. Alteration and Blend represent Howard's (1995:788) "patchwriting", but in this study

they were treated as two distinct types of patchwriting strategies. Each type of plagiarism was further classified according to students' citation behaviour. Citation transgressions were regarded as 'minor' where citations were provided and 'major' where citations were excluded from copied text (Committee on Publication Ethics, 2013:1; Wager, 2014:35). Self-plagiarism, as a measure, was excluded from the analysis as an initial inspection revealed no transgressions of this nature.

3.4 Data collection

The Turnitin™ originality reports where words and sentences, similar to other texts, are highlighted, were coded for types of plagiarism. Non-significant string texts (for example common phrases and industry-specific terminology), tables of content, figures and tables, and lists of references were excluded. Bullet points within sentences were coded as part of a sentence whereas standalone bullets were coded as separate sentences.

3.5 Data analysis

The absolute values of the measurements were normalised (to 10,000 words) to prevent the intervening effects of differences in the length of the essays (Biber, 2006:256; Petrić, 2012:106). Outliers were included in the analyses as the data were an accurate representation of the students in the groups (Hair, Black, Babin & Anderson 2014:65), but excluded from the presentation of the results. Shapiro-Wilk test results ($p < .05$) revealed that the assumption of normally distributed data has been violated and therefore non-parametric tests (considered significant at $p < .05$) were used. Log transformations did not improve the non-normal distribution of the data. Differences in the types of plagiarism between the essays for each group were assessed using Wilcoxon Signed-Rank tests. Differences between the three groups were examined using a series of Kruskal-Wallis tests with post-hoc Mann-Whitney tests (with Bonferroni corrections set at $p < .0167$ to control for Type I errors). Interpretation of effect sizes was based on Cohen's (1988:25) criteria. SPSS Version 23 (IBM Corp., 2015) was used for all tests.

Box-and-whisker plots with Tukey's (1977:39) whiskers, produced with R's ggplot2 (Wickham, 2009), were employed to display median and interquartile ranges (IQR) of the data. Maximum occurrences are reported in the results where both the median and IQR equal zero. Only statistically significant comparisons are reported and displayed on these plots.

4. Results

The first sub-objective of the study focussed on an understanding whether detectable plagiarism within groups based on student essay assignments decreased between the essays a year later. Comparisons between the groups were conducted in line with the second sub-objective, which was to explore differences between the control and intervention groups. The results of these tests for each type of plagiarism are discussed next by first considering the differences between the essays and then between the three groups.

4.1 Reproduction

Statistically significant results, revealing how students copied text verbatim without quotation marks (as well as where citations were provided ('minor' plagiarism) or excluded ('major' plagiarism)), are presented in Figure 2. Statistically significant differences are indicated by

solid lines (between essays) and dashed lines (between the groups). All comparisons are of medium effect size, unless indicated as of small effect (†).

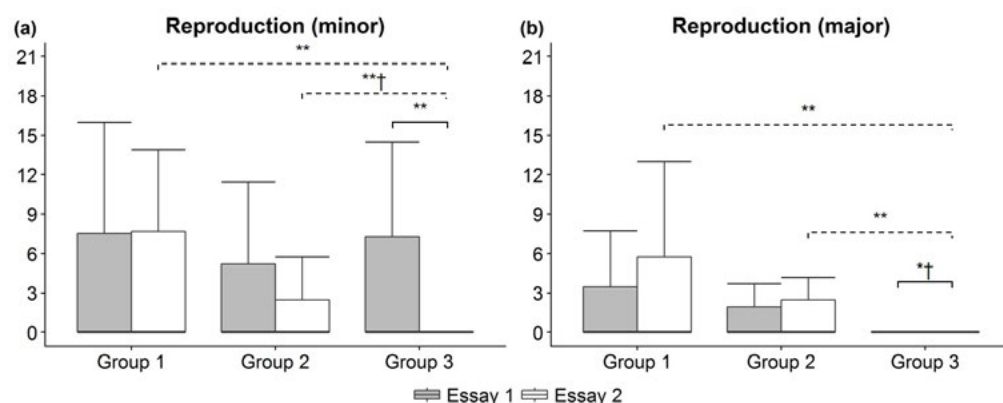


Figure 2: Reproduction (minor and major) in Essays 1 and 2 by students in each group.

* $p < .05$; ** $p < .001$.

4.1.1 Reproduction (minor)

Differences between essays: Only the essays of students in Group 3 (Figure 2a) displayed a statistically significant decrease from Essay 1 ($Mdn = 0.000$, $IQR = 10.871$) to Essay 2 (max. = 52.51 attributable to four outliers) ($z = -3.621$, $p < .001$, $r = -.42$). The essays of Group 1 (Essay 1: $Mdn = 0.000$; $IQR = 8.272$; Essay 2: $Mdn = 0.000$; $IQR = 9.033$) and Group 2 (Essay 1: $Mdn = 0.000$; $IQR = 5.842$; Essay 2: $Mdn = 0.000$; $IQR = 2.466$) revealed less Reproduction (minor) in Essay 1 compared to Essay 2, although the difference was not statistically significant.

Differences between groups: A statistically significant difference was evident between the groups in Essay 2 ($\chi^2(2, n = 104) = 11.410$, $p = .003$). Two statistically significant post-hoc test results indicated that students in Group 3 relied the least (max. = 52.51 attributable to four outliers) on Reproduction (minor) compared to students in Group 1 (Figure 2a) ($Mdn = 0.000$; $IQR = 9.030$) ($z = -3.213$, $p = .001$, $r = -.32$) or compared to students in Group 2 (Figure 2a) ($Mdn = 0.000$; $IQR = 2.466$) ($z = -2.834$, $p = .005$, $r = -.28$).

4.1.2 Reproduction (major)

Differences between essays: A statistically significant decrease was found in Group 3 (Figure 2b) between Essay 1 (max. = 96.20 due to eight outliers) and Essay 2 (max = 0.000) where no students transgressed ($z = -2.521$, $p = .012$, $r = -.29$). These results were similar to Group 3's use of Reproduction (minor).

Differences between groups: Statistically significant differences were only evident when considering Essay 2 ($\chi^2(2, n = 104) = 19.727$, $p < .001$). Two statistically significant differences were found among the groups. Students in Group 1 (Figure 2b) ($Mdn = 0.000$; $IQR = 5.985$) ($z = -4.291$, $p < .001$, $r = -.42$) relied more on Reproduction (major) compared to students in Group 3 (max = 0.000 where no students transgressed) who did not resort to this type of plagiarism in Essay 2. Students in Group 2 (Figure 2b) ($Mdn = 0.000$; $IQR = 2.466$) relied more on Reproduction (major) compared to students in Group 3 in Essay 2 ($z = -4.173$, $p < .001$, $r = -.41$).

4.2 Alteration

Statistically significant results revealed that students copied substantial portions of text with limited alteration (as well as where citations were provided ('minor' plagiarism) or excluded ('major' plagiarism)) are presented in Figure 3. Statistically significant differences

are indicated by solid lines (between essays) and dashed lines (between the groups). All comparisons are of medium effect size.

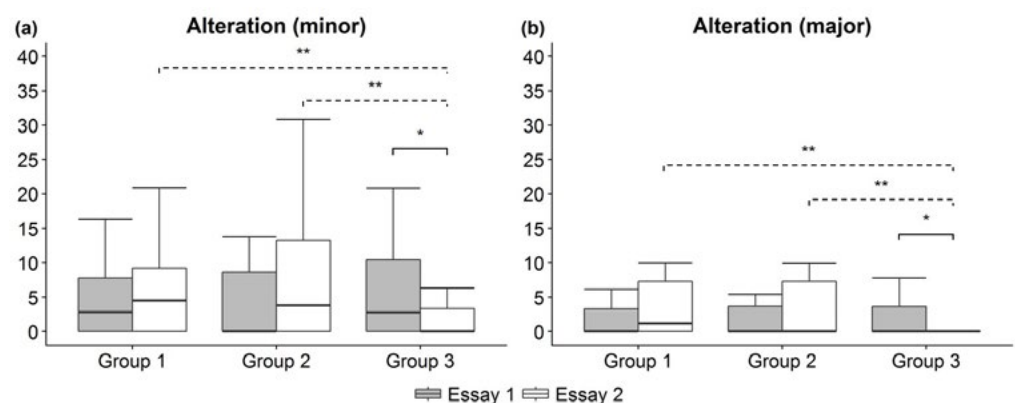


Figure 3: Alteration Types (minor and major) in Essays 1 and 2 by students in each group.

* $p < .01$; ** $p < .001$.

4.2.1 Alteration (minor)

Differences between essays: Alteration (minor) in the essays by students only in Group 3 (Figure 3a) decreased significantly from Essay 1 ($Mdn = 2.786$, $IQR = 10.617$) to Essay 2 ($Mdn = 0.000$, $IQR = 3.353$) ($z = -2.629$, $p = .009$, $r = -.31$).

Differences between groups: Statistically significant differences were evident in Essay 2 ($\chi^2(2, n = 104) = 11.410$, $p = .003$). Two statistically significant differences were found among the groups. Students in Group 3 relied the least on Alteration (minor) ($Mdn = 0.000$, $IQR = 3.353$) compared to students in Group 1 (Figure 3a) ($Mdn = 4.529$; $IQR = 9.505$) ($z = -3.040$, $p = .002$, $r = -.30$). Students in Group 3 also relied the least on Alteration (minor) compared to students in Group 2 (Figure 3a) ($Mdn = 3.777$; $IQR = 13.491$) ($z = -3.282$, $p = .001$, $r = -.32$).

4.2.2 Alteration (major)

Differences between essays: Results similar to Alteration (minor) were evident in the use of Alteration (major) by students in Group 3. One statistically significant decrease was found in Group 3 (Figure 3b) between Essay 1 ($Mdn = 0.000$; $IQR = 4.197$) and Essay 2 (max. = 9.524 due to four outliers) ($z = -2.629$, $p = .009$, $r = -.34$). The results for students in Group 3 are similar to that for their use of Alteration (major).

Differences between groups: A statistically significant difference between the groups was evident in Essay 2 ($\chi^2(2, n = 104) = 14.470$, $p = .003$). Two statistically significant differences were found among the groups. Students in Group 1 (Figure 3b) ($Mdn = 1.999$; $IQR = 7.508$) used more of Alteration (major) compared to students in Group 3 (max. = 9.524 due to four outliers) ($z = -3.688$, $p < .001$, $r = -.36$). Students in Group 2 (Figure 3b) ($Mdn = 0.000$; $IQR = 4.197$) used more Alteration (major) compared to students in Group 3 ($z = -3.201$, $p = .001$, $r = -.31$). Only outliers of students in Group 3 resorted to this type of plagiarism.

4.3 Blend

Statistically significant results relating to how students added additional words or phrases to copied text (as well as where citations were provided ('minor' plagiarism) or excluded ('major' plagiarism)) are presented in Figure 4. Statistically significant differences are indicated by solid lines (between essays) and dashed lines (between the groups). All comparisons are of small effect size, unless indicated as of medium effect ($\dagger$).

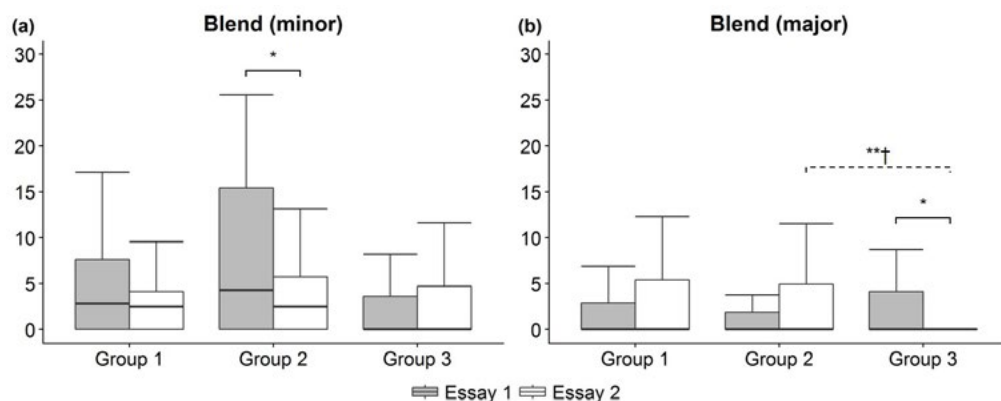


Figure 4: Blend (minor and major) in Essays 1 and 2 by students in each group.

* $p < .05$; ** $p < .001$.

4.3.1 Blend (minor)

Differences between essays: The use of Blend (minor) in the essays by students in Group 2 (Figure 4a) decreased significantly from Essay 1 ($Mdn = 15.865$, $IQR = 4.321$) to Essay 2 ($Mdn = 3.771$, $IQR = 13.471$) ($z = -2.170$, $p = .030$, $r = -.27$). This was the only statistically significant difference evidenced among the groups.

Differences between groups: No statistically significant differences were found between the student groups in the use of Blend (minor) in Essay 1 or Essay 2. The results imply that both parts of the intervention were not effective in addressing Blend (minor), which is associated with inadequate paraphrasing, in particular the reliance, mostly, on copied text.

4.3.2 Blend (major)

Differences between essays: A statistically significant decrease was found in between Essay 1 ($Mdn = 0.000$; $IQR = 4.485$) and Essay 2 (max. = 22.222 due to six outliers) ($z = -2.329$, $p = .020$, $r = -.27$) of Group 3 (Figure 4b).

Differences between groups: A statistically significant difference between the groups was found in Essay 2 ($\chi^2(2, n = 104) = 6.375$, $p = .041$). Only one statistically significant post-hoc result indicated that students in Group 2 (Figure 4b) ($Mdn = 0.000$; $IQR = 4.932$) used more of Blend (major) compared to students in Group 3 where only a few students (max. = 22.222 due to six outliers) resorted to Blend (major) ($z = -3.688$, $p < .001$, $r = -.36$).

5. Discussion and recommendations

Previous studies on student plagiarism have been undertaken mainly in Europe and North America (Imran & Nordin, 2013:103). This article provides a unique perspective on plagiarism in South Africa by analysing students' behaviour in the use of various types of plagiarism in their academic writing. The present study investigated whether an intervention to address post-graduate student plagiarism in a Human Resource Honours programme at a South African university had an impact one year later. The first sub-objective focussed on understanding whether a targeted pedagogical intervention resulted in a decrease in detectable plagiarism within groups based on student essays one year post-intervention. The second sub-objective sought to explore whether differences in the types of plagiarism existed between the control and intervention groups.

From the findings related to the first sub-objective, it appears that students in Group 3 (those who received both Parts 1 and 2 of the intervention) plagiarised less in Essay 2, one year later, compared to Essay 1. For students in Group 3, it was found that all types of plagiarism (both Types A and B), except Blend (minor), decreased from Essay 1 to Essay 2.

Students in Group 2 who received Part 1 of the intervention only, evidenced less use of only Blend (minor) in Essay 2 compared to Essay 1. The essays of students in Group 1, i.e. those who were not exposed to any intervention, did not exhibit statistically significant differences in the use of different types of plagiarism. These findings indicate that a 'once-off' intervention may not have the desired effect compared to the inclusion of a second part, which acts as a reminder and provides additional material later in the curriculum. Part 2 had the desired effect of a decrease in plagiarism as evident in the behaviour of students in Group 3. The findings of this study do not support the findings of previous studies (cf. Batane, 2010:1; Dee & Jacob, 2012:397) that found that 'once-off' interventions, similar to receiving only Part 1 of this overall intervention, reduces plagiarism. In contrast, the use of Blend (major) by students in Group 3 decreased between Essays 1 and 2, indicating that they avoided major plagiarism in Essay 2.

The second sub-objective sought to explore differences between the groups to ascertain whether both intervention groups benefitted from the intervention. The results reveal that in Essay 2, students in Group 3 evidenced statistically significant lower incidences of Reproduction and Alteration (both Types A and B), as well as Blend (major) compared to students in Groups 1 and 2. The decrease in dependence on plagiarism by students in Group 3 could be attributed to exposure to Part 2 of the intervention presented after Essay 1 compared to students in the other intervention group (Group 2) who only displayed a significant decrease in the usage of Blend (minor). Students in the control group evidenced no significant differences in all six types of plagiarism between the essays.

Unanticipated findings were noted during the course of the study. Inadequate paraphrasing and minimal use of citations (evident in dispersion of data for Alteration and Blend, both minor and major) — skills associated with academic writing — seem to persist, in contrast to a mere reliance on Reproductions (minor and major). In fact, the results revealed that Reproduction (minor and major) and Alteration (minor and major) are different to those in Blend (minor and major). This observation supports the reports of Insley (2011:184) and Fazel and Kowkabi (2013:88) who attributed plagiarism to a lack of citation and paraphrasing practices. The evidence from this study (in the case of Groups 1 and 2 who did not receive Part 2 of the intervention) also supports the findings of Rolfe (2011:701) who noted a decrease in citation and referencing practices among the undergraduate students following an intervention using Turnitin™ formatively.

Three important issues emerge from this investigation. Firstly, poor referencing skills of students present a challenge and contribute to an increase in major plagiarism. Secondly, even though students may have an understanding of the consequences of plagiarism, students displayed difficulty in paraphrasing, evident from the reliance on Alteration as writing strategy compared to Reproduction and, in particular, Blend, where less text is copied and combined with original material. Thirdly, students in the three groups displayed different levels of preparedness in paraphrasing evident in the extent to which different types of plagiarism were used. This finding may reinforce the views of Ellery (2008:608) who indicates, that within a South African context, poor academic writing skills stem from writing practices learned at school.

5.1 Implications

The findings suggest that a 'once-off' intervention may not be successful and sustainable in addressing student plagiarism. It is important to integrate a targeted plagiarism intervention with a focussed academic writing intervention to address plagiarism, using Turnitin™ originality reports as one of the instructional tools in an experiential learning environment (Price & Price, 2005:428). Academics could also make use of a framework describing the different types of plagiarism alongside Turnitin™ originality reports, thereby helping students to interpret, understand and avoid plagiarism in written assignments. A further important consideration is to assess the students' level of writing skills and adapt

the design of interventions accordingly, especially focusing on continuous and formative feedback in addressing student plagiarism. In this regard, education targeting plagiarism must be interactive and practical (Vardi, 2012:927). Furthermore, faculty should focus on the design of their assessments to allow for continuous feedback on intertextual plagiarism practices by students, especially where material is sourced from the Internet.

5.2 Limitations

Four main limitations of the study are noted. The first limitation pertains to the examination of only detectable plagiarism. Only text highlighted by Turnitin™ originality reports was coded. Turnitin™ originality reports have been noted to contain errors in detecting plagiarism, as the database of Turnitin™ is continuously updated with new texts (Heckler, Rice & Bryan, 2013). In addition, the intervention relied on out-of-class assignments, and no authentic writing by students could be confirmed. Although strategies were put in place to ensure quality coding, human error may have introduced coding errors. Lastly, this study was undertaken at one university and, accordingly, together with the aforementioned limitations, findings serve as pointers for reflection and must only be generalised with caution.

5.3 Recommendations for future research

Suggestions for future research that could extend the value of the present study are noted. The intervention could be expanded into different departments at the university at which the study was undertaken and developed at other universities to verify the impact of Part 2 of the intervention. An in-depth understanding of the pedagogy underpinning the intervention and how to enrich the intervention could be undertaken. Following from this recommendation, greater emphasis on the differences between students whose home language is not English and how a curriculum can be enriched to accommodate these students could not only make a theoretical, but also a practical contribution to addressing plagiarism.

6. Conclusion

Plagiarism is a growing problem at universities, impacting university reputation (Choo & Paull, 2013:283). Addressing student plagiarism could result in students being disciplined with their resultant expulsion from the university or their failure in a particular programme. Academics may thus avoid addressing this issue as the managerial context could well lead to a subtle punishment for lack of student throughput. Given this constraint, it is important that interventions, introduced to address student plagiarism, have the desired effect. The present study has indicated that an intervention presented over time could be instrumental in addressing student plagiarism; the comprehensive nature of such an intervention needs further exploration. The present study makes several contributions to understanding academic writing by students. The findings indicate that the interaction effects between word count with the types of plagiarism need to be considered in studies assessing detectable plagiarism. Relying only on normalising the number of incidents of plagiarism may introduce bias. This investigation took a more nuanced measurement approach to detectable plagiarism, in contrast to relying on Turnitin™ similarity reports in understanding student plagiarism, highlighting issues pertaining to academic writing skills and the groups' level of preparedness.

Student plagiarism transgresses the basic ethical values of a university, particularly that of producing original knowledge for the development of society (Lewis, Duchac, & Beets, 2011:490). To address student plagiarism, a compendium of interrelated interventions and methodologies should be used. Such methodologies could include introducing programmes to develop academic writing skills, using software programmes such as Turnitin™ as developmental tools, embarking on interactive experiential learning strategies,

designing creative assessments to evaluate learning, providing didactic instruction on the nature of plagiarism and how to avoid it, and developing the discussion around academic ethics. However, such interventions are not enough. Student plagiarism does not exist in a vacuum. It exists within the context of the university in which such plagiarism is committed. In this regard, academics should serve as role models for students.

Increasingly, however, both internationally and locally, reports of plagiarism by academics themselves are surfacing (Honig & Bedi, 2012:101; Thomas & De Bruin, 2015:1). It is suggested that the pressure for academics to publish in order to promote university rankings and subsidy income is largely responsible for this practice. Nevertheless, irrespective of the stimulus, plagiarism by academics sends out a strong message to students that the ethical values of the institution exist only on paper. Accordingly, the strategies introduced to address student plagiarism as noted above, are compromised from the start. Plagiarism by academics, thus, presents a bigger challenge to universities if an holistic strategy to minimise student plagiarism is to be considered. This challenge goes to the heart of addressing the organisational culture of universities where dilemmas such as accruing income at the expense of honest and original research are surfaced, explored and addressed. Until that time, many of the strategies to address student plagiarism will simply be exercises in futility.

7. Acknowledgements

We thank the anonymous reviewers for their helpful comments as well as Dr Richard Devey for the initial analysis of the data. We are also grateful to the institution for granting ethical clearance and permission to conduct this research, as well as the students who, indirectly, contributed to understanding student plagiarism. A modified version of this article was previously presented as a poster at the 2016 Higher Education Conference in Amsterdam.

7.1 Competing interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this paper.

7.2 Authors' contributions

Pharny Chrysler-Fox was responsible for the conceptualisation and data analysis of this study. Adèle Thomas developed and delivered the plagiarism intervention. The writing of the literature review, the data interpretation and conclusions and recommendations involved both authors.

8. List of references

- BATANE, T. 2010. Turning to Turnitin to fight plagiarism among university students. *Educational Technology & Society*, 13(2):1–12.
- BIBER, D. 2006. University language: A corpus-based study of spoken and written registers. Amsterdam: John Benjamins Publishing Company. <http://dx.doi.org/10.1075/scl.23>.
- CARROLL, J. 2002. A handbook for deterring plagiarism in higher education. Oxford: Oxford Brookes University.
- CHOO, T.E. & PAULL, M. 2013. Reducing the prevalence of plagiarism: A model for staff, students and universities. *Issues in Educational Research*, 23(2):283–298.
- COHEN, J. 1988. Statistical power analysis for the behavioral sciences. 2nd ed. Hillsdale, NJ: L. Erlbaum Associates.
- COLQUITT, J.A. 2012. From the editors: Plagiarism policies and screening at AMJ. *Academy of Management Journal*, 55(4):749–751. <http://dx.doi.org/10.5465/amj.2012.4004>.
- COMMITTEE ON PUBLICATION ETHICS. 2013. [http://publicationethics.org/files/plagiarism A.pdf](http://publicationethics.org/files/plagiarism%20A.pdf) Date of access: 28 Feb. 2017.
- CURTIS, G.J. & POPAL, R. 2011. An examination of factors related to plagiarism and a five-year follow-up of plagiarism at an Australian university. *International Journal for Educational Integrity*, 7(1):30–42.
- CURTIS, G.J., GOULDTHORP, B., THOMAS, E.F., O'BRIEN, G.M. & CORREIA, H.M. 2013. Online academic-integrity mastery training may improve students' awareness of, and attitudes toward, plagiarism. *Psychology Learning and Teaching*, 12(3):282–289. <http://dx.doi.org/10.2304/plat.2013.12.3.282>.
- DEE, T.S. & JACOB, B. A. 2012. Rational Ignorance in Education: A Field Experiment in Student Plagiarism. *Journal of Human Resources*, 47(2):397–434. <http://dx.doi.org/10.1353/jhr.2012.0012>.
- DEVLIN, M. & GRAY, K. 2007. In their own words: A qualitative study of the reasons Australian university students plagiarise. *Higher Education Research and Development*, 26(2):181–198. <http://dx.doi.org/10.1080/07294360701310805>.
- DRINAN, P.M. & BERTRAM GALLANT, T.B. 2008. Plagiarism and academic integrity systems. *Journal of Library Administration*, 47(3–4):125–140. <http://dx.doi.org/10.1080/01930820802186472>.
- DUFF, P.A. 2010. Language socialization into academic discourse communities. *Annual Review of Applied Linguistics*, 30:169–192. <http://dx.doi.org/10.1017/S0267190510000048>.
- EDLUND, J.R. 2004. What is "plagiarism" and why do people do it? http://www.ee.hawaii.edu/~dong/EE461/Writing/W1_Plagiarism_John_R.htm Date of access: 30 Dec. 2015
- ELLERY, K. 2008. An investigation into electronic-source plagiarism in a first-year essay assignment. *Assessment & Evaluation in Higher Education*, 33(6):607–617. <http://dx.doi.org/10.1080/02602930701772788>.
- ERET, E. & GOKMENOGLU, T. 2010. Plagiarism in higher education: A case study with prospective academicians. *Procedia Social and Behavioral Sciences*, 2(2):3303–3307. <http://dx.doi.org/10.1016/j.sbspro.2010.03.505>.
- EVANS, R. 2006. Evaluating an electronic plagiarism detection service. *Active Learning in Higher Education*, 7(1):87–99. <http://dx.doi.org/10.1177/1469787406061150>.
- FAZEL, I. & KOWKABI, N. 2013. Students' source misuse in language classrooms: Sharing experiences. *TESL Canada Journal*, 31(1):86–95.
- FEARN, H. 2011. Plagiarism software can be beaten by simple tech tricks. *Times Higher Education*: 2011, 20 January. <http://www.timeshighereducation.co.uk/414881.article> Date of access: 6 Feb. 2015
- FINK, A. (Ed.). 2005. Designing program evaluations. (*In* Evaluation fundamentals. 2nd ed. Thousand Oaks, CA: SAGE Publications, Inc. pp. 71–99.) <http://dx.doi.org/10.4135/9781412984140.n3>.
- FLOWERDEW, J. & LI, Y. 2007. Language re-use among Chinese apprentice scientists writing for publication. *Applied Linguistics*, 28(3):440–465. <http://dx.doi.org/10.1093/applin/amm031>.
- GLASSMAN, N.R., SORENSEN, K., HABOUSH, R.G., MINUTI, A. & SCHWARTZ, R. 2011. The plagiarism project. *Medical Reference Services Quarterly*, 30(4):337–348. <http://dx.doi.org/10.1080/02763869.2011.609030>.
- GROSS, E.R. 2011. Clashing values: Contemporary views about cheating and plagiarism compared to traditional beliefs and practices. *Education*, 132(2):435–440.

- HAIR, J.F., BLACK, W.C., BABIN, B.J. & ANDERSON, R.E. 2014. Multivariate data analysis. 7th ed. Harlow, UK: Pearson Education Limited.
- HALUPA, C.M. 2014. Exploring student self-plagiarism. *International Journal of Higher Education*, 3(1):121–126. <http://dx.doi.org/10.5430/ijhe.v3n1p121>.
- HANNABUSS, S. 2001. Contested texts: Issues of plagiarism. *Library Management*, 22(6/7):311–318. DOI: 10.1108/EUM0000000005595.
- HECKLER, N.C., RICE, M. & BRYAN, C.H. 2013. Turnitin systems: A deterrent to plagiarism in college classrooms. *Journal of Research on Technology in Education*, 45(3):229–248.
- HONIG, B. & BEDI, A. 2012. The fox in the hen house: A critical examination of plagiarism among members of the academy of management. *Academy of Management Learning and Education*, 11(1):101–123. <https://doi.org/10.5465/amle.2010.0084>.
- HOWARD, R.M. 1995. Plagiarisms, academic death penalty. *College English*, 57(7):788–806.
- IBM CORP. 2015. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.
- IMRAN, A.M. & NORDIN, M.S. 2013. Predicting the underlying factors of academic dishonesty among undergraduate public universities: A path analysis approach. *Journal of Academic Ethics*, 11(2):103–120.
- INSLEY, R. 2011. Managing plagiarism: A preventative approach. *Business Communication Quarterly*, 74(2):183–187. <http://dx.doi.org/10.1177/1080569911404058>.
- JABULANI, S. 2014. An analysis of the language of attribution in university students' academic essays. *South African Journal of Education*, 34(3):1–10.
- KRIPPENDORFF, K. 2013. Content analysis: An introduction to its methodology. 3rd ed. Thousand Oaks, CA: SAGE Publications, Inc.
- LEWIS, B. R., DUCHAC, J. E. & BEETS, S.D. 2011. An academic publisher's response to plagiarism. *Journal of Business Ethics*, 102(3):489–506. <https://doi.org/10.1007/s10551-011-0827-8>.
- MARK, M.A. & REICHARDT, C.S. 2009. Quasi-experimentation. (In Bickman, L. & Rog, D.J., eds. The SAGE handbook of applied social research methods. Thousand Oaks, CA: SAGE Publications, Inc. p. 182–214.) <http://dx.doi.org/10.4135/9781483348858.n6>.
- MAXWELL, A., CURTIS, G.J. & VARDANEGA, L. 2008. Does culture influence understanding and perceived seriousness of plagiarism? *International Journal for Educational Integrity*, 4(2):25–40.
- MCCABE, D.L. 2005. Cheating among college and university students: A North American perspective. *International Journal for Educational Integrity* 1(1):1–11.
- MOUTON, J. 1998. Basic concepts research social sciences. Pretoria: Human Sciences Research Council
- PARK, C. 2003. In other (people's) words: Plagiarism by university students—literature and lessons. *Assessment & Evaluation in Higher Education*, 28(5):471–488. <http://dx.doi.org/10.1080/0260293032000120352>.
- PAYNE, G. & PAYNE, J. (Eds.). 2004. Unobtrusive methods and triangulation. (In Key concepts in social research. London: SAGE Publications Ltd. pp. 239–234.) <http://dx.doi.org/10.4135/9781849209397>
- PECORARI, D. 2008. Academic writing and plagiarism: A linguistic analysis. London, UK: Continuum International Publishing Group.
- PETRIĆ, B. 2012. Legitimate textual borrowing: Direct quotation in L2 student writing. *Journal of Second Language Writing*, 21(2):102–117. <http://dx.doi.org/10.1016/j.jslw.2012.03.005>.
- PRICE, J. & PRICE, R. 2005. Finding the true incidence rate of plagiarism. *International Education Journal*, 6(4):421–429.
- RISQUEZ, A., O'DWYER, M. & LEDWITH, A. 2013. Thou shalt not plagiarise: From self-reported views to recognition and avoidance of plagiarism. *Assessment & Evaluation in Higher Education*, 38(1):34–43. <http://dx.doi.org/10.1080/02602938.2011.596926>.
- ROLFE, V. 2011. Can Turnitin be used to provide instant formative feedback? *British Journal of Educational Technology*, 42(4):701–710. <http://dx.doi.org/10.1111/j.1467-8535.2010.01091.x>.
- SHI, L. 2006. Cultural backgrounds and textual appropriation. *Language Awareness*, 15(4):264–282. <http://dx.doi.org/10.2167/la406.0>.
- SHI, L. 2012. Rewriting and paraphrasing source texts in second language writing. *Journal of Second Language Writing*, 21(2):134–148. <http://dx.doi.org/10.1016/j.jslw.2012.03.003>.

- SINGH, H. & BENNINGTON, A.J. 2012. Faculty on the frontline: Predicting faculty intentions to address college student plagiarism. *Academy of Educational Leadership Journal*, 16(4):115–128.
- STAPPENBELT, B. 2012. Plagiarism in mechanical engineering education: A comparative study of international and domestic students. *International Journal of Mechanical Engineering Education*, 40(1):24–41. <http://dx.doi.org/10.7227/IJMEE.40.1.6>.
- SZABO, A. & UNDERWOOD, J. 2004. Cybercheats: Is information and communication technology fuelling academic dishonesty? *Active Learning in Higher Education*, 5(2):180–199. <http://dx.doi.org/10.1177/1469787404043815>.
- TEKLEAB, A.G. & ROCHA, M.F. 2010. Cheating by economics and business undergraduate students: An exploratory international assessment. *Higher Education*, 59(6):663–701.
- THOMAS, A. & DE BRUIN, G. P. (2015). Plagiarism in South African management journals. *South African Journal of Science*, 111(1/2):1–3. <https://doi.org/10.17159/sajs.2015/20140017>.
- TUKEY, J.W. 1977. Exploratory data analysis. Reading, MA: Addison-Wesley.
- VARDI, I. 2012. Developing students' referencing skills: A matter of plagiarism, punishment and morality or of learning to write critically? *Higher Education Research & Development*, 31(6):921–930. <http://dx.doi.org/10.1080/07294360.2012.673120>.
- WAGER, E. 2014. Defining and responding to plagiarism. *Learned Publishing*, 27(1):33–42. <http://dx.doi.org/10.1087/20140105>.
- WALKER, J. 2010. Measuring plagiarism: Researching what students do, not what they say they do. *Studies in Higher Education*, 35(1):41–59. <http://dx.doi.org/10.1080/03075070902912994>.
- WICKHAM, H. 2009. ggplot2: Elegant graphics for data analysis. New York, NY: Springer-Verlag.
- YOUMANS, R.J. 2011. Does the adoption of plagiarism-detection software in higher education reduce plagiarism? *Studies in Higher Education*, 36(7):749–761. <http://dx.doi.org/10.1080/03075079.2010.523457>.