

Plagiarism in first-year engineering education: a snapshot of student attitudes and abilities

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***Abstract:** This paper investigates student attitudes and abilities regarding the growing issue of plagiarism in higher education. The study examined a group of first-year engineering students. These students either matriculated directly from high school or were newly arrived international students and were therefore not likely to be familiar with the Australian university system. Student abilities to recognise plagiarism were examined through a series of writing samples and their attitudes pertaining to plagiarism were also investigated through interviews and surveys. The results revealed that there was little difference between the international and first-year Australian students' abilities to detect plagiarism. Skill deficiencies and language issues, representing potentially significant disadvantage with respect to academic writing, were evident however when international students were asked to correct plagiarised material. Differences in attitudes to plagiarism between international and Australian students were also apparent. In addition to writing skill development, providing students with a clearer understanding of plagiarism and a sense of the negative impact of plagiarism on various stakeholders would appear to be an essential component of future plagiarism prevention strategy.*

Introduction

In the current competitive climate of Australian higher education, many universities are working to increase international student intake in order to reap the accompanying educational, cultural and economic benefits that this provides (Stappenbelt & Barrett-Lennard, 2008). These increasing numbers of international students are accompanied by a greater cultural diversity and range of educational backgrounds within this cohort. In light of these cultural, linguistic and educational differences, plagiarism in students who come from a non-English speaking background (NESB) and international students has been raised repeatedly as a pressing academic concern (Deckert, 1993; Song-Turner, 2008; Rodan, 2008).

Plagiarism, broadly defined as “passing off someone else’s work, whether intentionally or unintentionally, as your own for your own benefit” (Carroll, 2002) is on the increase in higher education. The growth in information technology and accessibility has provided much material to fuel the observed increase in the incidence of plagiarism as discussed in Childs (2001), McCabe (2001), Maslen (2003) and Furedi (2003). Current research indicates that plagiarism in English language universities is approaching epidemic proportions (Emerson, Rees & MacKay, 2005). Fulwood (2003) and Graham, Monday, O’Brien, & Steffan (1994) report tertiary education student cheating rates during their studies (including plagiarism) of 80% and 90% respectively.

The investigation by Tedford (2003) reported that more than 75% of high school students admitted to engaging in serious cheating including plagiarising using the internet as their source. These are of course the students who will form our higher education cohort in subsequent years. The behavioural issues associated with students’ plagiarising are complex and have been examined in numerous prior studies such as those described in McGowan (2005), Marsden, Carroll and Neill (2005) and Park

(2003). A strong correlation has been demonstrated between the severity of academic dishonesty of students and unethical behaviour once they enter the workforce (Nonis & Swift, 2001). It is essential therefore, in producing future leaders in the community, that efforts to foster academic integrity in higher education institutions are strongly encouraged.

Widespread plagiarism amongst students in higher education may also have long-term detrimental effect on teaching staff. The article by Williams (2007) discusses the sense of betrayal, disappointment and subsequent mistrust and cynicism resulting from repeated exposure of staff to cases of plagiarism. The potential of this erosion of the relationship between teacher and student, with potential consequent effects on the quality of education, should not be underestimated.

The present investigation follows a case study (Stappenbelt, Rowles and May, 2009) where a group of thirteen students were caught plagiarising in a postgraduate mechanical engineering course. The group consisted of mostly international students and a few domestic students who were recent immigrants to Australia. All students in this group were from non-English speaking backgrounds (NESB). Individually and as a group, these students defended their academic misconduct by adopting a cultural ignorance defence similar to that discussed in Song-Turner (2008). The argument put forth by the students and supported by some staff was that the cultures and the universities from which these students had obtained their undergraduate degrees did not instil in them the need to avoid plagiarising and did not prepare them adequately with the requisite skills to achieve this. This case study highlighted the need to move beyond a punitive approach, as discussed in Price (2002), and to understand student behaviour so that we may usefully contribute to student learning. The present investigation aims to contribute to this understanding particularly with regard to the influence of student cultural background and cultural familiarity on their attitudes and abilities to avoid plagiarising.

Methodology

The present investigation aimed to examine the influence of cultural background and cultural familiarity on engineering student attitudes and abilities to avoid plagiarising. This was accomplished by examining two sub-groups within this cohort; First-year Australian students (n=339) and newly arrived international students from non-English speaking backgrounds (NESB) (n=92). Both groups were relatively unfamiliar with the academic culture within an Australian university.

Students were asked to complete a questionnaire (see Stappenbelt, Rowles & May (2009) for the full survey) requesting information regarding their attitudes to plagiarism before commencing their studies at university and after studying at the university for at least half a semester. The survey was administered during tutorial classes and 20 to 30 minutes was allocated for students to complete the task. The response rates for the Australian and international student groups were 62% and 70% respectively. Student perceptions regarding the effect of their plagiarism on various parties involved were also examined through the following seven statements adapted from the study by Deckert (1993) investigating the perspectives of ESL students attending the Hong Kong Baptist College:

1. When I plagiarise, I'm unfair to myself because I'm not being myself. Rather, I'm pretending to be better than I am, and that makes me feel uncomfortable
2. When I plagiarise, I'm unfair to the university because the educational goals of the university can never be reached if students just copy information
3. When I plagiarise, I'm unfair to myself because the teacher might recognise what I did and punish or embarrass me in front of other students
4. When I plagiarise, I'm unfair to the writer of the original passage because I'm taking the credit that he/she really deserves for the words and ideas
5. When I plagiarise, I'm unfair to my classmates because most of them worked harder by writing in their own words, but I mainly copied and yet get the same or even better grade

6. When I plagiarise, I'm unfair to myself because I'm not learning much when I just copy another person's writing
7. When I plagiarise, I'm unfair to my teacher because he/she is trying to teach me to write well, but I'm not cooperating

The student responses to these statements were captured on a five point scale ranging from 'strongly disagree' to 'strongly agree'. The objects of the unfairness expressed in each statement cover the university, the teacher, classmates, the author of the plagiarised material and the student themselves. Three different reasons for unfairness were explored in looking at the effect of plagiarism on the student involved: the negative effect on self-image, the possibility of shame associated with punishment and the decreased educational value of the task to the student.

In addition, the questionnaire contained a short exercise testing each student's ability to recognise cases of plagiarism (section four of the questionnaire) and to rate the level of plagiarism present. The exercise contained six writing samples drawing on an excerpt from a newspaper article. Students had to rate the level of plagiarism as 'none', 'some' or 'much'. At the conclusion of this section of the questionnaire, the students were to provide an indication which sample they believed was the worst case of plagiarism from the samples provided.

Attitudes to plagiarism were also investigated by an adjective selection exercise. Twenty adjectives were presented and students were to select three that best represented students who had committed plagiarism. This part of the questionnaire administered was also adapted from the study by Deckert (1993).

Results and discussion

The Australian first-year engineering student group generally reported some prior educational exposure to the concepts related to plagiarism and the need to reference secondary sources (see Table 1). A common belief however, was that they had not developed sufficient writing skills that they could draw upon to avoid plagiarising. As a group, Australian students entering the engineering degree directly from high school, generally understood the severity of failing to acknowledge sources properly in the university academic environment and entered their studies with an ethical sense that plagiarism is unacceptable.

Table 1 –Engineering students' prior understanding and instruction regarding plagiarism; First year Australian and International (shaded)

Item	Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
1	In my studies prior to coming to University I was taught about plagiarism	2.8%	26.8%	12.6%	41.1%	38.5%	26.8%	36.4%	3.6%	9.8%	1.8%
2	In my studies prior to coming to University I was taught about referencing	2.1%	30.4%	7.0%	42.9%	32.9%	23.2%	46.9%	1.8%	11.2%	1.8%
3	In my studies prior to coming to University I was taught other skills to avoid plagiarism	6.3%	41.1%	30.8%	33.9%	35.7%	21.4%	21.7%	3.6%	5.6%	0.0%
4	Before commencing my studies at University I understood that engaging in plagiarism would result in academic misconduct penalties	0.0%	0.0%	11.9%	17.9%	30.1%	62.5%	44.1%	16.1%	14.0%	3.6%
5	Before commencing my studies at University, I believed that it was wrong to plagiarise	2.8%	1.8%	13.3%	7.1%	32.2%	41.1%	41.3%	48.2%	10.5%	1.8%

In contrast to this, the questionnaire revealed that the international student group believed they had not received adequate instruction regarding plagiarism and referencing prior to commencing their studies at an Australian university (see Table 1). Nor did these students feel that they had been taught the skills required to successfully avoid plagiarism in their work. The majority of international students commencing their studies reported a belief that it was wrong to plagiarise. This was incongruent however with the predominantly neutral response indicating that they did not believe that engaging in plagiarism would result in academic misconduct penalties. This result indicates that perhaps the severity of the academic misconduct associated with plagiarism was not fully understood by the international student group.

After at least half a semester of studies at university, involving some exposure to academic writing requirements, the associated university plagiarism policy and the use of plagiarism detection software, most of the students surveyed believed that they understood what constituted plagiarism (see Table 2). This perception was in agreement with their demonstrated abilities in the plagiarism recognition and rating exercise part of the questionnaire where the majority of students successfully recognised and rated most of the writing samples provided. The international student group demonstrated a dramatic rise in their belief that plagiarism was wrong. Despite these increases, neither group reported a high level of confidence in their ability to avoid unintentionally plagiarising.

Table 2 –Engineering students’ present understanding regarding plagiarism; First year Australian and International (shaded)

Item	Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
6	Currently, I believe that I understand what plagiarism is	2.8%	3.6%	10.5%	1.8%	13.3%	30.4%	51.7%	46.4%	21.7%	17.9%
7	Currently, I feel confident that I have the skills to avoid unintentionally plagiarising in future work	2.1%	10.7%	7.7%	25.0%	42.0%	42.9%	32.2%	16.1%	16.1%	5.4%
8	Currently, I believe it is wrong to plagiarise	2.8%	0.0%	5.6%	1.8%	37.8%	8.9%	39.2%	30.4%	14.7%	58.9%

By examining Table 3, it may be seen that the most common word that international students selected to describe students who plagiarise was ‘inexperienced’ followed closely by the adjective ‘unsure’. This aligns well with the argument that educational cultural deficits are responsible for their lack of understanding regarding plagiarism. It is interesting to note that few international students chose adjectives indicating deceitful or dishonest behaviour. Australian first-year students rated the adjective ‘dishonest’ highest with ‘unsure’, ‘uninformed’, ‘inexperienced’ and ‘careless’ also rating highly. The Australian student responses varied more widely than the international student response. This is perhaps an artefact of a limited English vocabulary however the overarching trend appears to be that international students perceive the act of plagiarism to be predominantly driven by a lack of knowledge rather than an act of dishonesty. Australian students also acknowledge this lack of understanding as a contributor, but also strongly advocate that the act is often intentionally dishonest.

In examining the attitudes regarding the influence of plagiarism on various stakeholders (see Table 4), the perceived negative impact of plagiarism on the university and on the original author of the work were ranked highest by international students in the present study. These students also felt that plagiarising was unfair to their classmates due to the academic advantage gained and to themselves by reducing the value of the academic work undertaken. The study by Deckert (1993) where all participants were of Chinese origin (n=170), is in general agreement with this result. This study however demonstrated a stronger egocentric perception of the object of unfairness by the students. The impact of plagiarism in reducing the educational value of an exercise to the student is discussed in the article by Murray (2006). Here it is suggested that raising awareness and providing more explicit explanation of the long-term educational value of assessments in a course of study is a useful tool to reduce the temptation to plagiarise.

Table 3 – Adjectives describing students who commit plagiarism

Adjective	First-year Australian		International	
	Responses	Frequency	Responses	Frequency
weak	5	1.2%	4	2.4%
immature	11	2.6%	9	5.4%
inexperienced	45	10.6%	39	23.5%
uninformed	52	12.3%	17	10.2%
unsure	68	16.1%	34	20.5%
dishonest	79	18.7%	2	1.2%
naughty	2	0.5%	1	0.6%
dull	0	0.0%	0	0.0%
innocent	2	0.5%	0	0.0%
untruthful	13	3.1%	4	2.4%
awkward	0	0.0%	0	0.0%
careful	0	0.0%	0	0.0%
careless	44	10.4%	9	5.4%
accurate	1	0.2%	0	0.0%
deceitful	20	4.7%	3	1.8%
confused	31	7.3%	13	7.8%
stupid	20	4.7%	2	1.2%
hurried	12	2.8%	8	4.8%
lazy	13	3.1%	17	10.2%
foolish	5	1.2%	4	2.4%

Table 4 –Engineering students’ perceived effect of plagiarism on various parties; First year Australian and International (shaded)

Item	Object of unfairness	Reason for unfairness	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
9	Myself	Negative self-image	2.8%	3.6%	8.4%	14.3%	40.6%	55.4%	35.7%	19.6%	12.6%	7.1%
10	University	Educational goals not reached	5.6%	0.0%	9.1%	1.8%	47.6%	8.9%	30.8%	62.5%	7.0%	26.8%
11	Myself	Shame related to punishment	8.4%	1.8%	18.9%	21.4%	27.3%	60.7%	35.7%	12.5%	9.8%	3.6%
12	Original author	Taking credit for their work	1.4%	5.4%	3.5%	7.1%	25.9%	12.5%	57.3%	41.1%	11.9%	33.9%
13	Classmates	Academic advantage	3.5%	3.6%	8.4%	5.4%	16.8%	16.1%	56.6%	44.6%	14.7%	30.4%
14	Myself	Decreased educational value	2.8%	0.0%	4.2%	7.1%	16.1%	17.9%	59.4%	46.4%	17.5%	28.6%
15	Teacher	Decreased effectiveness of education effort	11.9%	1.8%	20.3%	32.1%	27.3%	44.6%	34.3%	17.9%	6.3%	3.6%

The perceived effect on the teacher in the present study was rated relatively low by both international and Australian student groups. Interestingly, the shame or embarrassment associated with punitive consequences was not regarded as a strong reason for the unfairness associated with committing plagiarism by international students. In fact, most international students rated their response to the corresponding statement as neutral. Deckert (1993) also reported this item as the least significant effect of plagiarism as perceived by the Chinese students involved in his study. Australian students

appeared less concerned with the lack of fairness concerning the university and more concerned with the effect on themselves and their classmates.

The students were in general agreement in their positive response to the survey question regarding the effectiveness of plagiarism software as a deterrent to plagiarising (see Table 5). Very few students responded that it was unreasonable for the university to use plagiarism detection software after informing students. This result is in general agreement with the study of Dahl (2007) in which only a small group of students opposed to the use of the software were identified. During the interviews in the present study, students commented that the present adoption of the plagiarism detection system in a learning, rather than punitive capacity greatly aided the widespread acceptance of the software.

Table 5 –Engineering students’ attitudes regarding the institutional use of plagiarism detection software; First year Australian and International (shaded)

Item	Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
16	It is reasonable for the university to use electronic plagiarism detection tools if students are informed before submission	2.8%	1.8%	9.8%	3.6%	36.4%	14.3%	47.6%	48.2%	3.5%	32.1%
17	Knowing that my submitted work will be run through an electronic plagiarism detection tool will deter me from plagiarising	1.4%	0.0%	2.1%	1.8%	8.4%	10.7%	71.3%	25.0%	16.8%	62.5%

Of most interest in the present case study were the results of the plagiarism recognition and rating exercise contained in the questionnaire administered (see Table 6). The former study by Deckert (1993) concluded that the ESL students in his study (n=170) had little ability to detect plagiarism and were unable to rate the level of plagiarism present in the writing samples. With the exception of writing sample F, the majority of international and Australian students in the present study correctly identified the presence and severity of plagiarism. The misuse of source material in writing sample F was somewhat deceptive. This writing sample contained a quote which was paraphrased from the original source. If the quoted section was not read carefully it may readily have been assumed to be a direct quotation. It is noteworthy that fewer Australian students made this error relative to the international students. Perhaps this is attributable to the Australian students’ familiarity with the English language. Most students in the present study were able to identify the most severe cases of plagiarism from the samples provided, with the majority correctly determining what could reasonably be judged as the worst case. Overall, the Australian students performed slightly better than the international students in this exercise. The difference however is small and does suggest that the ability to detect plagiarism is relatively uniform across the first-year engineering cohort.

Generally the international students appear to possess most of the necessary skills and knowledge to detect plagiarism. What they did not appear to possess was a clear understanding of the university’s expectations with regard to this. In light of the relative numbers of international and Australian student cases of plagiarism that present each year, it appears that the skills related to the mechanics required to avoid plagiarising material are lacking in many of our international students. After familiarisation with the definition of plagiarism, international students were generally able to recognise plagiarised material. They were often not competent however at taking the source material and either paraphrasing or attributing this correctly. This was tested in the interviews with students whilst discussing the plagiarism in the writing samples provided in the questionnaire. Although the Australian student group also rated their confidence to avoid plagiarism relatively low, they were generally better equipped with the necessary technical skills to avoid plagiarising. Language issues for the international students were often cited during the interviews as a contributing factor.

Another contributing factor which became evident throughout the interviews conducted was that international students, under immense pressure faced with additional burdens such as economic hardship, cultural differences, housing difficulties and familial expectations, are not as careful or

thorough in avoiding plagiarism as is expected by the university. As Song-Turner (2008) stated of the students in her study: “Plagiarism was often used as a means of completing a task – moving on – submitting work – getting through rather than a deliberate and planned act of deception and poor behaviour”. This position is also consistent with the lack of dishonesty related adjectives the group selected to describe students who plagiarised.

Table 6 – Recognition and rating of plagiarism in samples of student work

Writing sample	Level of plagiarism/misuse	First-year Australian				International			
		No wrong use	Some wrong use	Much wrong use	Worst case	No wrong use	Some wrong use	Much wrong use	Worst case
A	Some plagiarism/misuse	42.7%	55.9%	1.4%	4.2%	48.2%	51.8%	0.0%	1.8%
B	Much plagiarism/misuse	5.6%	41.3%	53.1%	30.8%	10.7%	42.9%	46.4%	41.1%
C	Much plagiarism/misuse	2.1%	21.0%	76.9%	63.6%	7.1%	23.2%	69.6%	57.1%
D	No plagiarism/misuse	79.0%	20.3%	0.7%	0.0%	60.7%	39.3%	0.0%	0.0%
E	No plagiarism/misuse	73.4%	22.4%	4.2%	0.0%	71.4%	26.8%	1.8%	0.0%
F	Some plagiarism/misuse	25.2%	58.7%	16.1%	1.4%	73.2%	17.9%	8.9%	0.0%

Conclusions

It has been argued that cultural differences in attitudes, expectations and prior instruction place international students at a significant disadvantage with respect to academic writing. This is certainly the case put forward in the studies reported by Deckert (1993). Song-Turner (2008) concluded that skill deficiencies and language issues were the two leading issues in explaining the incidence of plagiarism with overseas students. The results from the present study do appear to concur with these conclusions. After some instruction regarding what constitutes plagiarism, international students generally appeared able to recognise plagiarised material. When asked to correct the plagiarised material, many lacked the requisite skills. The ability to recognise plagiarism is of course an essential stage in educating students to avoid plagiarism and hence in the development of an ethical academic culture. Both international and domestic students appeared to possess these abilities.

The additional issue identified that “the very definition of plagiarism was actually not very clear for the students” (Song-Turner, 2008) also appears to be a primary contributor. This was especially evident for the international student group however domestic students unfamiliar with the university academic culture also benefited greatly from time spent examining plagiarism in more detail. It was observed that the survey conducted in the present study initiated useful tutorial discussions regarding this topic. In addition to continued writing skill development, plagiarism discussions integrated into the ethics and professional codes of conduct material covered also proved beneficial in furthering student appreciation of the related issues. Giving the students a clearer understanding of plagiarism and a sense of the negative impact of plagiarism on various stakeholders would appear to be an essential component of future plagiarism prevention strategy.

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