British Journal of Educational Technology *Vol 34 No 4 2003* 467–477

Academic offences and e-learning: individual propensities in cheating

Jean Underwood and Attila Szabo

Jean Underwood is Professor in the Division of Psychology and Attila Szabo Reader in Sport and Exercise Psychology in the School of Science at the Nottingham Trent University. Address for correspondence: Jean Underwood, Division of Psychology, The Nottingham Trent University, Burton Street, Nottingham NG1 4BU. Email: {jean.underwood;attila.szabo}@ntu.ac.uk

Abstract

It has been argued that the use of Information and Communications Technologies has made academic dishonesty easier but this does not necessarily mean that it is more prevalent. The study presented here investigated the attitudes to, and extent of, self-reported involvement in Internet supported dishonest academic practices. Multiple linear regression analyses showed that Internet experience, acceptability of cheating and assessment of risk predicted an individual student's acceptance of acts such as plagiarism as a legitimate way to achieve academic goals. There was a complex interrelationship among gender, frequency of Internet usage, and maturity of students. Academic offences tended to be more acceptable to males, but also to active Internet users, who were often female: that is females who joined the Internet culture were more prone to plagiarise than their non-active peers. New undergraduates were more likely to err than students in later years of their degree. These results show that there are a number of interrelated factors impacting on individuals' willingness to commit academic offences. The final discussion of this paper both recognises that Internet supported academic offences occur and briefly outlines some technical and non-technical responses that should be considered by faculty to ameliorate this problem.

Introduction

It has been argued that Information and Communications Technologies, specifically the Internet and the World Wide Web (WWW), have made academic dishonesty easier by allowing the surreptitious copying of other people's work, but has the level of plagiarism in our universities really increased? As activities become easier they do not necessarily become more frequent. If such an increase can be detected does it matter? A cynic might say that the students are exhibiting real world marketable skills. Ryan provides a cogent response to the cynics:

Published by Blackwell Publishing Ltd., 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA.

"Often lost in the discussion of plagiarism is the interest of the students who don't cheat. They do legitimate research and write their own papers. They work harder (and learn more) than the plagiarists, yet their grades may suffer when their papers are judged and graded against papers that are superior but stolen material. Students have a right to expect fairness in the classroom. When teachers turn a blind eye to plagiarism, it undermines that right and denigrates grades, degrees, and even institutions." (Ryan, 1998, p.1)

The study presented here investigates the extent of involvement of UK students in academic dishonesty practices, questioning the conditions under which academic dishonesty occurs and also why some students are more prone to this type of behaviour than others.

Academic dishonesty

The nature and scale of the problem

The offence of academic dishonesty typically includes acts of plagiarism, using concealed notes to cheat on tests, exchanging work with other students, buying essays or, in some extreme and notorious cases, asking others to sit examinations for you. In this paper we focus largely, but not exclusively, on individual students' responses to the issue of plagiarism, that is taking someone else's ideas and claiming personal authorship. Although this can be achieved by copying information from books, encyclopedias and periodicals without clearly referencing the source (Stebelman, 1998), it increasingly includes extracting information from electronic sources particularly those linked via the Internet.

Malouff and Sims, (1996) argue that academic dishonesty, plagiarism, or cheating is a major problem in the evaluative educational system with, according to Moon (1999), approximately 60% of US and UK higher education students confessing to some sort of malpractice. Much of the initial work on academic dishonesty has been conducted in the US. McCabe's (1999) longitudinal study of 7000 undergraduate students in 1990, 1992, and 1995 showed that 80% of respondents admitted to cheating at least once during their college career. Results also indicated that at 31 small to medium sized colleges between 1990 and 1995, the proportion of students admitting inappropriate collaboration on work increased from 30 to 38%. Over a longer time-frame data from 9 medium-to-large US universities showed that the proportion of students admitting such inappropriate behaviour increased from 11% in 1963 to 49% in 1993 (McCabe, 1999).

The problem is not confined to Higher Education. In McCabe's 2001 study of some 4,500 US schools, 74% of students admitted to serious test cheating; 72% admitted to serious cheating on written work; 97% admitted to copying homework or to test copying; 30% admitted to repetitive, serious cheating on tests/exams; 15% had obtained a term paper form the Internet; 52% had copied a few sentences from a website without citing the source. Interestingly, 90% of the students using the Internet to plagiarise had also plagiarised from written sources.

As the McCabe data show academic dishonesty is a significant problem and is on the increase. The causes of such academic dishonesty lie first in the fact that students recognise that our education system is competitive (Doolan and Barker, 2001). Alongside this stimulus to succeed there have been structural changes in Higher Education here in the UK that facilitates academic dishonesty. Ashworth, Bannister and Thorne (1997) point out that greater access to Higher Education has resulted in a larger and less homogeneous student population. This has lead to a decline in both the lecturer-student ratio and contact time just when more such support is needed as increasing numbers of less well endowed students enter the system.

If we ask, has the Internet exacerbated the problem of malpractice, we find some measure of disagreement within the research community. Some argue that this academic dishonesty is an ingrained part of the system. For example, Vigue (1997), discussing the US system, points out that there has always been the filing cabinet at the fraternity house where students can swop assignments and the back of the *Rolling Stone* has long advertised readymade assignments. Connors (1996), on the other hand, argues that the Internet has made access to information and to pre-written essays very easy and also anonymous. The Internet has changed the dynamics of dishonest academic practice; access is no longer for the knowing few but is there for the majority.

The changes briefly outlined here, an increasingly competitive educational system, a diminution of policing with the decline in staff student ratios, less homogeneous student intakes, and finally, the ease of access to materials via the Internet, provide a fertile environment encouraging dubious academic practices. This is the context in which Austin and Brown (1999) cogently argue that ensuring academic honesty in this technology-rich environment is a critical issue for Higher Education.

How do we cheat electronically?

There are a variety of ways students can use Information and Communications Technologies inappropriately while completing class assignments. Word processing facilitates allow easy abstraction of material by cutting and pasting of information from electronic media, simple hand-held scanners extend the range of data that can be captured and the use of Internet information unavailable in traditional sources makes documenting academic dishonesty more difficult for staff. Electronic communication facilitates the exchange of work across institutions. Students may use research papers purchased or downloaded from web sites such as http://www.schoolsucks.com. Many of these term paper sites offer papers at no charge. "The Evil House of Cheat" (http://www.cheathouse.com) claims more than one million hits. The owner of "A1 Termpaper" reported sales of 1000 to 2000 papers in the company's first year of operation and the company now offers 20,000 pre-written papers (Hickman, 1998). The "School Sucks" web site receives 40,000 "hits" each day (Quittner, 1997). These companies will also write customized papers for a fee.

There are several additional creative approaches to academic dishonesty. Students may ask for assistance from others through electronic discussion groups and then cut and

paste the answers provided into their work without acknowledging that assistance was received (Benning, 1998; Berls, 1998). Passively lurking and extracting ideas from others without contributing to the discussion is a concern raised by UK psychology students (Walker, 2001). Essays typed and stored in campus computer labs can be downloaded by knowledgeable students and used as their own. The range of dishonest practice is limited only by students' abilities to use technology creatively.

Individual differences and academic dishonesty?

Whilst the personality of students committing academic offences may be quite complex, previous research suggests there are common characteristics. Kelly and Worrell (1978) have found that students committing such offences are often of lower ability than their peers, and are thus under great academic pressure to keep up with more able students. Davis, Grover, Becker, and Mcgregor (1992) have shown a positive relationship between the need for social approval and the frequency of mal-behaviour, due to a desire to be seen as successful. They also note a negative association between internal locus of control and frequency of malpractice. Strong moral values and positive work ethics are inversely associated with academic dishonesty of the students according to Eisenberger and Shank, (1985). Gender may be a mediating factor in the willingness to commit acts such as plagiarism. Tibbetts (1999), in a scenario-based survey of 598 university students, has found significant sex differences in cheating intentions. The effects of morals and grades are more pronounced in predicting women's cheating intentions, whereas men are more affected by prior cheating and perceived pleasure of getting away with things. Davis *et al* (1992) report that males cheat more frequently than females and are more frequent users of the Internet, and as a result they are more vulnerable to the temptation of Internet misuse.

The study presented here investigated the extent of willing involvement of UK students in dishonest academic practices related to the Internet. The study sought to identify individual characteristics which would predict the likelihood of any one or group of students committing such offences. Key characteristics investigated included Internet use and experience and also gender as these has proved important in pervious studies. Additionally individual student's perceptions of the level of peer malpractice and tutor response to such malpractice were considered potential influencing factors on students' behaviour.

Method

Participants

An opportunity sample of 291 typical UK undergraduates from the Science Faculty of a large university took part in this study. Sample characteristics are shown in Table 1. Recruitment was from seven different classes across the Faculty. Details of participants' sex were requested but details of academic year were recovered from the testing situation. Of the 291 participants 13 students failed to disclose the key biographical detail, that is their sex.

Table 1: Participants by sex and university degree year

	Males	*Females*
Year one	70 (60.3%)	46 (39.7%)
Year two	60 (67.4%)	29 (32.6%)
Year three	23 (31.5%)	50 (68.5%)
Total* (minus 13 with incomplete data)	153 (55%)	125 (45%)

N.B.: % refer to distribution of males and females in each year group and in the overall sample.

The questionnaire

A twelve-item questionnaire was specifically designed for this study. The initial three questions provided a baseline measure of general familiarity and activity concerning the Internet; that is students' self-assessed level of Internet familiarity, general usage and academic usage.

There were five questions which dealt with factors that might influence a student's decision to use the Internet plageristically. Two of these questions examined the culture of academic dishonesty; who is doing it and how acceptable is it to behave in this way? The first question assessed students' perceptions of the frequency and level of cheating among their peers and set a social context in which cheating could thrive or not. Coupled with this we sought to assess the level of guilt the individual would feel if they cheated, and this set a personal moral context in which again cheating could thrive or not.

The level of social acceptance of an action then was a key factor but we also asked students to assess the level of risk that they were being exposed to if they should behave in a reprehensible way. Students assessed their tutors' abilities to police Internet-based fraudulent practices and their willingness to do so, as a partial indication of students' perceptions of the risk they are undertaking if they cheat. A third question completed our survey of risk by asking students to report their perceptions of the relative costs and benefits of plagiarism.

Finally there were four questions that directly questioned students' experience of, or willingness to, take certain courses of actions. The first was a simple self-report measure of whether the student had or had not illegitimately copied from web-held materials. Specifically the students were asked to indicate how often they used the copy and paste functions to extract information from the web and embed it in their assignments without proper referencing of the source. Secondly students indicated whether such an action would be acceptable if it would prevent failure of a module. The third question investigated the nature of the conditions under which such an action would be acceptable. Finally we asked whether the student would tell anyone if they had conducted such an act.

Depending on the detail of answer required, respondents indicated their agreement using 3, 4 or 5 point Likert scale. Most items had the same polarity with a high score indicating either strong agreement or maximum activity, depending on the nature of the question. Reverse polarity, either strong disagreement or reluctance to take part in an activity, was the case for one question only. This was the question related to the conditions under which the students would resort to academic malpractice. Here a score of 1 indicated that the student would resort to unacceptable academic behaviour as a normally practice while a score of 5 meant the student rejected this course of action at all times.

Procedure

All data were collected at the start of a lecture. After the host lecturer had introduced the researcher (author 2) to the students, the latter informed all students that the questionnaire was anonymous and that their participation in the survey was voluntary. It was stressed that under no circumstances would effort be made to identify a student. The questionnaires were distributed and collected by the researcher. The whole procedure, including the completion of the questionnaires, took no longer than 10 minutes in each classroom.

Results

The baseline questions showed that the students were sufficiently skilled to engage in plagiaristic acts should they wish to. Only 6% of students had no familiarity with Internet while over 50% could at least search, copy, and save files from the Internet. There was a clear and consistent trend of increasing experience and Internet use as students moved through their university course. Correlational analyses showed level of familiarity ($r = 0.18$, $p < 0.01$), Internet use ($r = 0.31$, $p < 0.01$), and use for assignments ($r = 0.37$, $p < 0.01$) all increased with academic year of the student. Table 2 presents the means and standard deviations across years and the three baseline questions. Nearly three-quarters of the students used the Internet once a week or more. Approximately 70% of third year undergraduates indicated activity levels of more than once a week compared to 45% for second years and 28% for year one. When frequency of use for assignment completion was investigated the differences between finalists (Year

Table 2: Means and standard deviations for responses across years for the three baseline questions

	Familiarity		*Internet Use*		*Internet Use for Assignments*	
	Mean	*S.D*	*Mean*	*S.D*	*Mean*	*S.D*
Year 1	2.45	0.83	3.75	1.05	2.7	0.97
Year 2	2.53	0.81	4.02	1.08	2.42	0.9
Year 3	2.78	0.64	4.51	0.85	3.99	0.96

3) and students in Years 2 and 1 became even more apparent. Overall only 10% of the students were frequent users (more than once a week) but that this figure included 36.8% of the third year students.

There were no gender effects of Internet familiarity and use but there was a positive correlation between use of information from the Internet for assignments and gender ($r = 0.16$, $p < 0.01$) with female students (mean = 3.17; s.d. = 1.13) reporting more use than males (mean = 2.79; s.d. = 1.11).

The data show a number of additional gender effects concerning academic dishonesty. There was a negative correlation between gender and acceptance of plagiarism as a means of preventing personal failure of an assignment. Male students (mean = 1.95; s.d. = 0.83) were more likely than females (mean = 1.52; s.d. = 0.72) to accept such a course of action ($r = -0.28$, $p < 0.01$). One in every five students indicated that they would definitely resort to plagiarism to escape failing a module, and a further 34% of the respondents indicated that this was would be a probable course of action when under such pressure. Less than half of the sample (46%) indicated that they would rather face failure but this was heavily weighted towards males (68%) compared to females (39%). Third year students (9%) were less likely to cheat than first (22%) and second year (25%) students.

While fear of failure is important there are other factors that might encourage students to cheat such as an inability to cope with the level of work set, tedium of the work and time management problems. For some students, about 6.0% of the respondents, cheating appeared to be a way of life in that they would resort to plagiarism at any time. Less than 50% of the respondents indicated that cheating was unacceptable at any time. Gender differences were again apparent in the level of reluctance to commit such academically dishonest acts, however difficult the circumstances ($r = 0.21$, $p < 0.01$). While sixty per cent of females stated they would not commit a dishonest act under any circumstances, only 35% of males took this hard-line moral stance. However, if the figures for never plagiarising and only plagiarising under extreme conditions, that is imminent failure, are combined then the gender effect narrows with 75% of females and 65% of males showing a reluctance to cheat. This leaves a smaller, but none the less disturbing group of some 25% of females and 35% of males for whom cheating is the easy and acceptable option.

When assessing the risks of academic dishonesty, females are more cautious than males. Some 60% of the sample were unsure of the tutors' abilities to identify fraudulent behaviour. There was, however, a positive correlation between gender and the students' rating of their tutors' expertise in using the Internet ($r = 0.15$, $p < 0.05$). Females (mean = 2.32; s.d. = 0.57) assessed their tutors' abilities to identify fraudulent work more highly than male students (mean = 2.13; s.d. = 0.64). There was no gender or academic year differences in students' assessment of the willingness of tutors to act against students who had cheated. Again, the majority of the answers (60%) showed students were unable to assess whether tutors were willing to police fraud.

The longer students had been at university the more likely they were to suggest that peers were using the Internet inappropriately ($r = 0.28$, $p < 0.01$) but the third years were also more likely to indicate that they would feel guilty if they committed an act of plagiarism ($r = 0.16$, $p < 0.01$). There was also a positive correlation between gender and guilt ($r = 0.34$, $p < 0.01$) with females (mean = 2.72; s.d. = 0.61) predicting that they would experience guilt more than male students (mean = 2.21; s.d. = 0.83). However, while 62% of respondents indicated they would feel guilty about handing in a piece of plagiarised work, 18% thought that they would have no remorse about committing such an offence.

Multiple linear regression analyses were used to determine to what extent the measures of baseline experience, acceptability of cheating and assessment of risk predicted individual student's acceptance of "cheating". Three of the measures of cheating delivered a reliable regression model, but the models found different predictor variables to be associated with different activities. The most common form of plagiarism, that of copying material without acknowledging the source into an essay or an assignment, was predicted by how often students used the Internet to prepare their assignments (beta = 0.29; $t = 3.01$, $p < 0.005$). This model was able to account for 12% of the variance ($r^2 = 0.12$; $F_{12,167} = 1.82$, $p < 0.05$).

The second model identified four significant predictors of whether or not a student would plagiarise work from the Internet in order to avoid failing a module. This model was able to account for 21% of the variance (R square = 0.21; $F_{12,167} = 3.75$, $p < 0.0001$). The significant predictors were the overall assessment of risk, the cost-benefit analysis, (beta = 0.17; $t = 2.30$, $p < 0.05$); the perceived level of cheating by peers (beta = 0.16; $t = 2.04$, $p < 0.05$), level of personal guilt (beta = –0.17; $t = -2.25$, $p < 0.05$) and the sex of the individual (beta = –0.18 = –2.40, $p < 0.05$).

The conditions under which committing an academically dishonest act would be acceptable was predicted by self-reported level of personal guilt (beta = –0.18; $t = 2.18$, $p < 0.03$). This model was able to account for 12% of the variance (R square = 0.12; $F_{12,167} = 1.86$, $p < 0.05$). The more guilty a student thought they would feel the less likely they would be to cheat and the more extreme the circumstances would have to be it they were to take this course of action.

The fourth model, although not significant (R square = 0.11; $F_{12,167} = 1.64$, n.s.), indicated again that the student's anticipated feelings of guilt was a significant predictor of whether or not the student's would tell others that they had cheated (beta = –0.18; $t = 2.18$, $p < 0.03$) in that high guilt levels predicted an unwillingness to tell others about such malpractice.

Discussion

This cohort of students was well versed in Internet use, with developing skills over the length of their course. Ninety-four percent of the sample was sufficiently skilled to use the Internet inappropriately and there was widespread acceptance of Internet plagia-

rism with one in every two students indicated that they would probably resort to plagiarism to escape failing a module. Multiple linear regression analyses showed that experience, acceptability of cheating and assessment of risk predicted individual student's acceptance of such acts as plagiarism as a legitimate way to achieve academic goals. The level of acceptance of such cheating reported here is in line with that found by Moon (1999). However, Underwood (2003) working with postgraduate teacher trainees found lower tolerance of such behaviour.

Significant gender and degree level effects were apparent but these were complex relationships. While males tended to be more willing to commit academic offences, simple cutting and pasting without referencing the source of the information was predicted by frequency of Internet use for coursework. Female students were more likely to use the Internet for work-related activities, however. It would appear that the simple female-good and male-bad perception of academically dishonest behaviour as presented by Davis *et al* (1992) is too simplistic. Our data are more in line with Tibbetts' (1999) study which showed that both males and females may commit offences but the stimulus for such behaviour may differ. A similar inconsistency appears in relation to years at university. Final year students were more likely to report that their peers were cheating, thus establishing a social context which would permit misbehaviour, but they themselves were less likely to argue that cheating was acceptable. By the third year of their degree, of course, these students had much to lose by cheating. They had committed two years or more to their academic endeavours. Also they could not reasonably claim naive misunderstanding of the system as newer undergraduates could. It is unsurprising therefore to find that many of these students seeing the costs and few of the benefits of cheating. Such a prognosis would fit with the lower tolerance of cheating for the post-graduates in Underwood's (2003) study.

Conclusions

This study supports the assertion that academic dishonesty in this technology-rich environment is a critical issue for Higher Education. In addition it shows that students are unsure whether staff are able or indeed willing to identify such behaviour. As cheating becomes easier the questions raised about faculty in the minds of students may result in a low assessment of risk, suggesting that increased Internet misuse should be anticipated. What can be done about this digital divide between experienced students and naive staff? Austin and Brown (1999) propose a number of non-technological solutions which include making students aware of plagiarism and developing strategies for identifying plagiarism including standard tests such as noting changes in syntax and style. There are also technical fixes such as checking CD-ROM/internet study aids that are available for the area, the use of online bookstores such as www.amazon.com to check the publication dates and relevance of sources, keyword searches of the Internet for possible sources used by students (Ryan, 1998; Stebelman, 1998). Finally we may pay for a service such as Essay Verification Engine (EVE). Staff need to continue to learn about new technological short cuts as they are developed and should incorporate this knowledge into assignment instructions.

On a more positive note this study, supported by Underwood (2003), suggests that students can, and do, come to understand that dishonest academic behavior is unacceptable and involvement rates decline over the length of a course. Staff must work to accelerate this positive outlook of the majority of finalist and post-graduate students while remaining aware of the hardcore, some 30% of students, for whom cheating is an acceptable indeed often-preferred option.

There is one final question we need to pose, as faculty and arbiters of academic good practice; that is, is our work squeaky-clean? Roberts and Sapio (1998) suggest that many copyright holders consider new technology to be a threat to their livelihoods, as they are the ultimate copying machine for both students and staff. The answer to this question is almost certainly yes to some degree but as Roig (1999) points out that fuzzy boundary which we all step over at times is exactly the boundary many of our students have difficulty identifying.

Acknowledgement
We would like to express our thanks to Gayle Dillon who completed the data analyses.

References

Ashworth P, Bannister P and Thorne P (1997) Guilty in whose eyes? University students' perceptions of cheating and plagiarism in academic work and assessment *Studies in Higher Education* **22**, 187–203.

Austin M J and Brown L D (1999) Internet plagiarism: developing strategies to curb student academic honesty *The Internet and Higher Education* **2**, 21–33.

Benning V (1998) High-tech cheating hits the campus: computers make it easy for college students to break rules *The Washington Post* A01.

Berls J (1998) Teachers turn copycat to nab computer-powered plagiarists; Internet, CD-ROM references make cheating easier, some say *Chicago Tribune* 7.

Connors M (1996) Cybercheating: the Internet could become the newest battleground in academic fraud *The Muse* Available at http://ursu.uregina.ca/_carillon/Sept12.96/feature/ feature1.html, site visited November 1998.

Davis S F, Grover C A, Becker A H and Mcgregor L N (1992) Academic dishonesty: prevalence, determinants, techniques, and punishments *Teaching of Psychology*, **19**, 16–20.

Doolan M and Baker T (2001) *An online discussion forum to support group assignments: exploring the problem of ownership* Paper presented at the CAL'01 conference, University of Warwick, April.

Eisenberger R and Schank D M (1985) Personal work ethic and effort training affect cheating *Journal of Personality and Social Psychology* **49**, 520–528.

Hickman J (1998) Cybercheats: term-paper shopping online *The New Republic* **218**, 14–16.

McCabe D L (1999) *CAI research* available at http://www.academicintegrity.org/cai_research.asp site visited January 2003.

—— (2001) *Students cheating in American high schools* Available at http://www.academicintegrity.org/hs01.asp site visited January 2003.

Malouff J M and Sims R L (1996) Applying an employee-motivation model to prevent student plagiarism *Journal of Education for Business* **72**, 58–61.

Moon J (1999) How to... stop students from cheating *The Times Higher Education Supplement* September 3, 1999.

Quittner J (1997) The great term-paper flap *Time* **22**, Available at http://cgi.pathfinder.com/time/ magazine /notebook_tech.the_great_ter.htm, site visited January 2003.
Pew Internet and American Life Project by the American Institutes for Research Washington; August 14, 2002, Available at http://www.pewinternet.org/reports/toc.asp?Report=67) site visited January 2003.
Roberts R and Sapio B (1998) Structural analysis using signed evaluations; distance learning into the new millennium *Futures* **30**, 323–343.
Roig M (1999) When college students' attempts at paraphrasing become instances of potential plagiarism *Psychological Reports* **84**, 973–982.
Ryan J (1998) Student plagiarism in an online world *PRISM Online* Available at http://www.asee.org/prism/december student_plagiarism_in_an_online.htm, site visited January 2003.
Stebelman S (1998) Cybercheating: dishonesty goes digital *ASAP* **8**, 4.
Tibbetts S G (1999) Differences between women and men regarding decisions to commit test cheating *Research in Higher Education* **40**, 323–342
Underwood J D M (2003) Student attitudes towards socially acceptable and unacceptable group working practices *British Journal of Psychology* In press.
Vigue D (1997) Educators fighting a web of deceit *The Boston Globe* Available at http://www.computernewsdaily.com/147_052797_130001_8138.html, site visited January 2003.
Walker A (2001) British psychology students' perceptions of group-work and peer assessment *Psychology, Learning and Teaching* **1**, 28–36.