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# Cheating in the Digital Age: Do students cheat more in online courses?

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## Abstract

With the assistance of the Internet and related technologies, students today have many more ways to be academically dishonest than students a generation ago. With more and more Internet based course offerings, the concern is whether cheating will increase as students work and take tests away from the eyes of instructors. While the research on academic dishonesty in general is quite extensive, there is very limited research on student cheating in online courses. This study of 635 undergraduate and graduate students at a medium sized university focused on student cheating behaviors in both types of classes (on-line and face to face), by examining cheating behavior and perceptions of whether on-line or traditional face-to-face classes experienced greater cheating behaviors.

## Introduction

Across most college campuses today, students may choose how they want a course delivered, in that they may choose the traditional face-to-face (live) classes or classes delivered to their computers via the Internet (on-line). University administrators often view the on-line course as a way to increase enrollment by reaching students far from campus that would otherwise attend a college closer to home. Students often prefer online courses for the freedom it provides in being able to do coursework around their own schedules and in reducing the cost of travel.

With the rise of this new method of course delivery, some researchers have raised concerns about academic dishonesty. While many studies have been completed related to cheating in live classes, only a few studies have been conducted on cheating in on-line courses (Grijalva, Nowell, & Kerkvliet, 2006; Lanier, 2006; Stuber-McEwen, Wiseley, & Hoggatt, 2009; Szabo & Underwood, 2003; Underwood & Szabo, 2006). This study intends to expand the body of research on academic dishonesty regarding on-line courses and compare cheating in live courses with those online. Further, the study will examine students' self-reporting of cheating, but also self-reporting of specific dishonest behaviors that some students may not perceive as cheating, such as receiving answers to a test or quiz from someone who has already taken it.

## Factors that Influence Cheating Behavior

To understand why students cheat, one must first examine the underlying psychological theories concerning moral reasoning. Kohlberg (1971) proposed a six stage theory of moral reasoning divided into three levels of moral development. During level one (Preconventional Moral Reasoning), moral judgments are based on personal needs and cultural rules. At level two (Conventional Moral Reasoning), ethical judgments are based on the expectations of one's family, society, or nation regardless of the perceived consequences. During the last level (Postconventional Moral Reasoning), a person's moral values or principles are defined and have validity beyond those held by any individual person or group. Kohlberg's theory applies to student cheating behavior because a student may cheat to gain a personal need as noted in the preconventional level.

Research has shown that gender may play a role in making ethical decisions. Borkowski and Ugras (1992) found that females expressed greater ethical positions than males when examining and evaluating ethical behaviors. Similarly, Shepard and Hartenian (1991) and Yu Niiya, Ballantyne, North, and Crocker (2008) found that

females, more so than males, chose an ethical orientation. Ruegger and King (1992) found that age and gender have an impact on business students' development. Their findings suggest that gender is a significant factor related to ethical conduct. Females tend to be more ethical than males in the perception of business ethical situations. Humbarger and DeVaney (2005) not only concluded that female students are more ethical, but also that ethical values increase with a student's age. Stevenson (1999) reported similar conclusions to Humbarger and DeVaney (2005) in that Stevenson (1999) noted females reported significantly higher cognitive moral judgment scores than males.

While gender may play a role, research indicates that other external factors may affect student ethical behavior. Students who participated in sports were less ethical than students who did not participate in sports. Stevenson (1999) reported similar conclusions as discussed by Humbarger and DeVaney (2005). Stevenson (1999) noted that females reported significantly higher moral judgment behavior than males. Competitive athletics seem to have a negative effect on the moral reasoning and moral development of athletes. Student athletes who participated in team sports had significantly lower moral behavior when compared to non-athletes or individual sport athletes (Stevenson, 1999).

### **Cheating on College Campuses**

In today's world, student cheating is viewed as a significant factor in the college classroom (Michaels & Miethe, 1989; Whitley, 1998). There have been several studies about cheating in the college classroom (Sheard, Markham, & Dick, 2003; Roberts, Anderson, & Yanish, 1997; and Robinson, Amburgey, Swank, & Faulkner, 2004) and also on the use of electronic devices and the Internet (Chapman, Davis, Toy, & Wright, 2004; Grijalva et al., 2006). Cheating has been considered a serious problem on college campuses for over 100 years (Anderson, 1998), and now, with the advance of word processors and the Internet, cheating has entered the digital age. Students today are now part of the "copy and paste" generation in which dishonest behavior is only a mouse click away.

With the advent of web-based assessments the opportunity to use illegitimate means to improve grades is a concern (Kennedy, K., Nowak, S., Raghuraman, R., Thomas, J. & Davis, S., 2000; Smith, Ferguson, & Caris, 2003). The perception that cheating occurs more often in on-line courses has been studied by King, Guyette, & Piotrowski (2009), in which they found that 73.8% of students surveyed felt that it was easier to cheat in an on-line class. The question remains however, do web-based assessments encourage a higher rate of student cheating than non-web-based assessments? There are some conflicting results among researchers who have studied this issue. A study by Grijalva and others (2006) found that there was no significant difference between cheating on regular paper assessments and web-based assessments. Grijalva and others' (2006) study of 796 students enrolled in undergraduate online courses found that approximately 3% of students admitted to cheating, which was similar to findings for students in traditional courses. Nevertheless, a study by Lanier (2006) of 1,262 college students found that student cheating in on-line courses was significantly higher than in live classes. Another study, by Stuber-McEwen and others (2009) had a conflicting finding, in that students cheated less in on-line classes.

The purpose of this study was to determine whether students cheat more using on-line courses than in traditional live classes, and what specific dishonest behaviors they use. The study examined the demographic factors of gender and academic class. Also, the study examined the relationship between the perception and reality of on-line cheating. The research questions were: 1) Do students cheat more in on-line courses than in live courses?; 2) Were gender and academic class significant for academic dishonesty related to on-line and live courses? and; 3) Is the perception of on-line cheating the same as the reality?

## **Method**

The study examined the level of academic dishonesty prevalent in both live and on-line courses. The data presented here were collected from a student response survey given to 635 undergraduate and graduate students attending a mid-sized university in Appalachia. The study used a quantitative design featuring a one-time survey to gauge level and type of academic dishonesty occurring in face-to-face and online courses.

## Sample

The sample consisted of 635 undergraduate and graduate students. Students were selected through petition of university faculty from across all academic areas. Electronic and print communications were sent to faculty asking for permission to give the instrument to their students, either as an electronic or paper survey. For faculty requesting a paper survey, a graduate student or one of the authors gave out and collected the instrument to insure student privacy. For electronic requests, students were given a secure web address to visit and complete the survey. Of the 635 participants, 451 identified themselves as female, 175 as male, and nine did not identify their gender.

## Instrument

The authors created and used the Academic Dishonesty Assessment (ADA), which contained a total of 44 yes/no and multiple choice statements and consisted of four parts. The instrument was designed to determine what specific dishonest behaviors students admitted to or knew of other students engaging in face-to-face and online courses. The first section of the instrument consisted of two demographic questions, gender and academic class. Section 2 consisted of 18 yes/no statements, covering nine topics related to academic dishonesty: If they had ever cheated, if they had been caught cheating, and seven specific types of cheating behavior. The seven specific behaviors were: submitting others' work as their own, getting answers during a test or quiz, receiving answers from someone who had already taken a test or quiz, using instant messaging during an assessment, copying other students' work without permission, knowingly plagiarizing from an article or book, and using a term paper writing service. For each topic one statement concerned their true behavior and a follow-up statement asked about their knowledge of other students' behavior. Section 3 consisted of the same set of statements, but for acts committed in online courses. In Section 4 students were asked to give their opinions on the percentage of students who cheat in traditional and online classes as well as whether they would be more likely to cheat in one type of course or the other. This section was used to gather data on whether the perception of cheating matched the results of the study.

## RESULTS

The survey instrument was given to 635 undergraduate and graduate students, of which 451 were female, 175 male, with 9 who did not identify their gender. The respondents were categorized by academic class: freshmen (107), sophomores (105), juniors (157), seniors (153), and graduate students (102). The students were from classes across several university colleges and schools.

The results of the survey are given in three parts: self-reported dishonest behaviors, knowledge of others' dishonest behaviors, and perceptions of cheating. Self-reported dishonest behaviors are statements concerning behavior of the survey respondent such as, "I have been caught cheating." Knowledge of others' dishonest behaviors deals with survey statements on other students behaviors such as, "I know of classmates who have been caught cheating." Finally, the last part detailed the results of students' perceptions of whether cheating is more likely in live or on-line courses.

### Self-Reported Dishonest Behaviors

For responding students, 32.1% admitted to having cheated in a live class and 32.7% admitted to cheating in an on-line class at some point in their higher education coursework. Though slightly more students admitted to cheating in on-line courses related to the overall statements, for almost every individual survey statement, more students admitted to inappropriate behavior in face-to-face classes than in on-line courses. The only behaviors in which students had a higher rate of dishonesty in on-line courses was in obtaining answers from someone during a test or quiz (23.3% to 18.1%) and in using instant messaging during a test or quiz (4.2% to 3.0%). Interestingly, students reported they were more than twice as likely to have been caught cheating in a live class (4.9% to 2.1%). Table 1 shows the response rate percentages for both live and online classes, with the numbers in parentheses representing the actual number of "Yes" responses for that item.

Table 1

*Students Self-Reporting Dishonest Behaviors for Live and Online Courses.*

Survey Statement	Live classes Percentage	Online classes Percentage
I have cheated on an assignment, quiz, or a test.	32.1% (185)	32.7% (130)
I have been caught cheating.	4.9% (28)	2.1% (8)
I have submitted others' work as my own.	6.5% (37)	4.4% (17)
I have had someone give me answers during a class quiz or test.	18.1% (104)	23.3% (91)
I have received answers to a quiz or test from someone who has already taken it.	33.2% (193)	20.3% (78)
I have used instant messaging through a cell phone or handheld device during a quiz or exam.	3.0% (17)	4.2% (16)
I have copied another student's work without their permission and submitted it as my own.	4.2% (24)	1.8% (7)
I have knowingly copied passages from an article or book directly into a paper without citing it as someone else's work.	13.2% (75)	5.0% (19)
I have used a term paper writing service to complete an assignment.	5.3% (30)	2.1% (8)

To determine the significance of the differences in the means for live and online classes a paired samples t-test was performed, taking the results from each question in Section 2 with its corresponding question in Section 3. Six of the nine questions were found to have significant differences between the course types.

The most important finding from this analysis was that there were no significant differences in the students' admission of cheating for live (face to face) and on-line courses. All but one of the specific behaviors of academic dishonesty found to be significantly different were higher for live classes than on-line, with the receiving answers from someone during an online test or quiz significantly different with a higher mean for online classes. Table 2 showed the results of the paired samples t-test, with each statement given in a generic (non-specifying of class type) format for readability purposes.

Table 2

*Paired Samples T-Test of Dishonest Behaviors in Live and Online Courses.*

Survey Statement	df	M	t		p
I have cheated on an assignment, quiz, or a test.	389	.005	.208	.025	.835
I have been caught cheating.	384	-.026	-1.968	.013	.000**
I have submitted others' work as my own.	381	.055	2.347	.023	.019*
I have had someone give me answers during a class quiz or test.	381	-.149	-6.051	.025	.000**
I have received answers to a quiz or test from someone who has already taken it.	383	.016	1.502	.010	.134
I have used instant messaging through a cell phone or handheld device during a quiz or exam.	383	-.016	-1.607	.010	.109
I have copied another student's work without their permission and submitted it as my own.	380	-.024	-2.194	.011	.029*
I have knowingly copied passages from an article or book directly into a paper without citing it as someone else's work.	376	-.069	-4.889	.014	.000**
I have used a term paper writing service to complete an assignment.	377	-.032	-2.855	.011	.005**

A one-way analysis of variance (ANOVA) was performed on the survey statements in Sections 2 and 3 for gender. For self-reporting statements of academic dishonesty, two statements yielded significant results for on-line courses, of which the first statement was for students admitting to cheating in on-line courses:  $F(1, 392) = 8.419, p < .01$ . For this statement 37.8% of females responded "Yes" while only 20.8% of males answered in the affirmative. The second statement was on receiving answers from someone who has already taken a test or quiz:  $F(1, 386), p < .05$ . For this statement 22.8% of females and 16.0% of males answered positively. Table 3 shows the results for all self-reported behaviors.

Table 3

*Analysis of Variance of Self-Reporting Behaviors for Gender.*

Survey Statement	df	M2	F	p
I have cheated on an assignment, quiz, or a test.				
Live classes	1	.247	1.130	.288
Online classes	1	1.827	8.419	.004**
I have been caught cheating.				
Live classes	1	.001	2.386	.123
Online classes	1	.067	.713	.399
I have submitted others' work as my own.				
Live classes	1	.003	.011	.915
Online classes	1	.989	1.580	.210
I have had someone give me answers during a class quiz or test.				
Live classes	1	.280	.023	.879
Online classes	1	.570	5.572	.019**
I have received answers to a quiz or test from someone who has already taken it.				
Live classes	1	.001	1.259	.262
Online classes	1	.041	3.499	.062
I have used instant messaging through a cell phone or handheld device during a quiz or exam.				
Live classes	1	.047	.025	.874
Online classes	1	.001	1.088	.298
I have copied another student's work without their permission and submitted it as my own.				
Live classes	1	.109	1.137	.287
Online classes	1	.015	.056	.813
I have knowingly copied passages from an article or book directly into a paper without citing it as someone else's work.				
Live classes	1	.330	2.900	.089
Online classes	1	.028	.610	.435
I have used a term paper writing service to complete an assignment.				
Live classes	1	.039	.817	.366
Online classes	1	.014	.643	.423

The survey data was analyzed for variance based on academic class standing of students. The ANOVA results for student self-reporting behaviors found that one statement yielded significant results for live classes and three statements were significant for on-line classes. Class was a significant factor for students who admitted to receiving answers from someone who had already taken a quiz or exam in both live ( $F(4, 574), p < .01$ ) and on-line ( $F(4, 378), p < .01$ ) courses. Other significant findings for academic class and on-line courses were admitting to cheating ( $F(4, 568), p < .01$ ) and receiving help during an on-line test or quiz ( $F(4, 566), p < .01$ ). Using the values of 1 for "Yes" and 2 for "No," Table 4 shows class means for the significant statements and Table 5 shows the ANOVA results for all survey statements on respondent behavior.

Table 4

*Class Means for Significant Statements*

Survey Statement	Freshman	Sophomore	Junior	Senior	Graduate
I have received answers to a quiz or test from someone who has already taken it. (Live class)	1.84	1.68	1.62	1.56	1.72
I have cheated on an assignment, quiz or a test. (Online class)	1.92	1.64	1.58	1.61	1.72
I have received answers to a quiz or test from someone who has already taken it. (Online class)	1.98	1.87	1.71	1.75	1.69
I have had someone give me answers during a class quiz or test. (Online class)	1.94	1.80	1.68	1.72	1.80

The results show that overall the highest means were for freshmen and graduate students, with sophomores, juniors, and seniors having lower mean scores, which would indicate they do not cheat as much as sophomores, juniors, and seniors.

Table 5

*Analysis of Variance of Self-Reporting Behaviors for Academic Class.*

Survey Statement	df	F	p
I have cheated on an assignment, quiz, or a test.	4	1.967	.098
Live classes	4	5.483	.000**
Online classes			
I have been caught cheating.	4	.566	.687
Live classes	4	.763	.550
Online classes			
I have submitted others' work as my own.	4	1.130	.341
Live classes	4	.887	.472
Online classes			
I have had someone give me answers during a class quiz or test.	4	1.680	.153
Live classes	4	3.796	.005**
Online classes			
I have received answers to a quiz or test from someone who has already taken it.	4	5.766	.000**
Live classes	4	4.540	.001**
Online classes			
I have used instant messaging through a cell phone or handheld device during a quiz or exam.	4	.930	.446
Live classes	4	.984	.416
Online classes			
I have copied another student's work without their permission and submitted it as my own.	4	1.225	.299
Live classes	4	.046	.996
Online classes			
I have knowingly copied passages from an article or book directly into a paper without citing it as someone else's work.			
Live classes	4	1.285	.275
Online classes	4	.186	.946
I have used a term paper writing service to complete an assignment.			
Live classes	4	.239	.916
Online classes	4	.992	.412

## Perception

In Section 4 of the survey instrument, students were asked their likelihood of engaging in academically dishonest behaviors in a live or online class. The results showed that students felt they were almost four times more likely to be dishonest in on-line classes than live classes (42.2% to 10.2%) and that their classmates were over five times more likely to cheat (61.0% to 11.5%). Table 6 shows the results of student perceptions of cheating.

Table 6

*Student Perception of Cheating in Live and Online Classes.*

Survey Question	More likely – “live” (n= )	More likely – “online” (n= )	Neither (n= )	Don’t know (n= )
Looking at the statements from Sections 2 & 3, do you feel you are more likely to do those actions in a “live” or “online class”?	10.2% (63)	42.2% (261)	38.9% (241)	8.7% (54)
Looking at the statements from Sections 2 & 3, do you feel your classmates are more likely to do those actions in a “live” or “online class”?	11.5% (71)	61.0% (377)	8.9% (55)	18.6% (115)

## DISCUSSION

The focus of this study was on whether students cheat more in on-line or live courses, and, somewhat surprisingly, the results showed higher rates of academic dishonesty in live courses. One possible explanation is that classroom social interaction in live classes plays some part in whether students decide to cheat, which would agree with the findings of Stuber-McEwen et al (2009). Familiarity with fellow students may lessen moral objections to cheating as they work through assignments and assessments together over the course of a school term. The findings that students believe more classmates will cheat in on-line courses than traditional classes are similar to the findings of King et al (2009).

While the study showed that cheating in on-line courses is no more rampant than cheating in live classes, one type of academically dishonest behavior does merit discussion for on-line course developers. The data showed that students were significantly more likely to obtain answers from others during an on-line test or quiz. This ability to receive answers without the monitoring of a professor, presents problems for the standard lecture-based, test-driven course. Course developers should take extra precautions with regards to on-line tests or quizzes, either through having a test proctor, changing the type of assessment, or lowering the assessment’s value in relation to other course assignments. In the example of test proctors, there are some instances in which faculty require students to be on campus to take exams, in person at a set date and time, to insure the person taking the test is the student enrolled in the class. This approach can be cumbersome and may nullify the strength of online courses, which is the freedom to work on one’s own schedule at home.

A more effective way may be to change the assessment from objective measures (multiple choice and true-false) to more subjective (essays and research papers) that require more in-depth understanding of a topic and more personal expression. In the case of research papers and essays, faculty could use programs such as Turnitin.com to help catch plagiarism. The most significant limitation to changing the assessment type is for subjects that do not lend themselves to subjective assessments, such as mathematics and science, with their use of calculations to get an objective answer. Finally, the simplest method of all is to de-value the test or quiz compared to other assignments. While this does nothing to discourage or stop sharing of information, it does limit the effect on the student’s final grade.

The results on gender and academic class were mixed and, therefore, more difficult to garner conclusions. Females were significantly more likely in online courses to admit to cheating and to have someone give them answers during a test or quiz, but in all other self-reported behaviors, no significant difference existed for gender. It is difficult to determine from the data whether these differences accurately represented cheating

behavior or if females were more honest in their survey responses or more ethical in their estimates of what constitutes academically dishonest behavior. Academic class analysis showed significant differences for cheating and receiving assistance during tests and quizzes, but interestingly, the mean distributions were highest for freshmen and graduate students. One could make the case that freshmen who cheat may not survive the rigors of collegiate academia, leaving fewer dishonest students in the upper classes, but that does not explain the scores for graduate students.

These results have implications for both the college professor and university administrators. Students are already orientated to specific ethical behavior prior to entering college. Since the college environment, either on-line or in the traditional classroom, is not an idealized environment, it is important for educators to address the need of moral or ethical development within each major. The curriculum requirements for each academic major should involve a course in ethical behavior and moral development. This course should be three credit hours and examine the process related to ethical resolution. Every incoming first year student and transfer student should be required to complete a generalized ethics and moral development course. It is unfortunate that both males and females self-report that they would cheat. Given this behavior, professors and university administrators need to ensure that students who are caught cheating have to pay a consequence for such inappropriate behavior. The college experience should instill a prominent level of ethical behavior in all students. Such change should be proactive and the process of moral education should be driven by the need to help others. According to Kohlberg's (1984) research, education is one of the significant factors in increasing moral development.

### **Limitations and Future Research**

When designing a study on academic dishonesty, researchers should examine and address some of the limitations of this study. First, the surveyed population did not accurately reflect the male/female ratio of the university, as 72% of the respondents were female, when females represent only 62% of the student population at the university. Also, due to student privacy issues, the university's Institutional Review Board (IRB) would not allow the authors to ask for the academic major of the respondents, so it is unknown whether some academic majors had a disproportionately higher representation in the survey population. Finally, future researchers should attempt to evenly distribute respondents over the academic classes to improve statistical analysis.

As on-line courses continue to propagate through higher education more research should be completed on academic dishonesty. One possible research idea is the study of the disparity between actual cheating and the perception of dishonesty in on-line courses. Another possible topic is the quantity of cheating by students. This study did not request the respondents to quantify how often they cheated, so while the numbers of cheaters are the same, it would be important to know if those dishonest students cheated more often in one type of course or another. Finally, future research should be conducted into why graduate students and freshmen were more likely to have cheated.

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