

Comparison of Academic Misconduct Across Disciplines – Faculty and Student Perspectives

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Abstract Academic misconduct by students in higher education is a fact and is a challenge to the integrity of higher education and its reputation. Furthermore such misconduct is counterproductive to the ethics component of higher education. The purpose of this research is to explore, investigate and compile the anecdotal accounts of academic misconduct conducted by students in classes in higher education across disciplines. This research is a result of the combined efforts of faculty members representing the disciplines of humanities, arts, social sciences, business, languages, music, and various engineering fields. The goal is to bring to light the various methods and strategies that students use to cheat during exams, quizzes, term papers, etc. As a collaborative effort, the authors also investigate techniques faculty can use to prevent academic misconduct in both face-to-face and virtual classrooms. Student viewpoints are also presented as part of this study and are collected through an anonymous survey. Students get a chance to reveal what motivates them to cheat in exams, quizzes and other assessments. They also indicate some of the techniques their peers use in supervised (e.g. tests, quizzes, exams etc.) and un-supervised (e.g. homework, projects, lab reports, online environment etc.) assessments. The survey also reveals whether students are more likely to cheat in the major required courses or non-major elective courses etc. Some of the techniques that deter students from cheating are also discussed.

Keywords Academic Misconduct, Engineering Education, Cheating, Multi-Disciplinary

1. Introduction and Literature Review

Academic misconduct has long been a problem on college campuses in the United States. Studies across the nation have consistently shown that a majority of undergraduate students across various disciplines engage in some form of academic misconduct during their college career [1, 2, 3, and 4].

Various international studies suggest that academic misconduct is also extensive and prevalent outside of the U.S. In a New Zealand study, 90% of the students surveyed admitted to cheating [5]. A study of college students in Taiwan revealed a misconduct prevalence rate of 61.7% [6]. Almost all of the students surveyed in a Singapore study admitted to some form of cheating at least once [7]. Likewise, in Canada, the United Kingdom, and Australia, 53%, 60%, and 81%, respectively, of the college students surveyed admitted to engaging in some form of academic misconduct [8, 9, and 10].

Many researchers have studied academic dishonesty in its many aspects including prevalence [11, 12, 13, and 14]; motivations [15]; personal characteristics and attitudes of perpetrators [12, 16, and 17]; detection [14]; deterrence [15, and 18] and the correlation between academic dishonesty and the students' ethical behaviors going forward into their careers [19]. Many of these studies [11, 15, 16 and 17] have used surveys of students and/or faculty as the main source of data. Anyanwu [20] provides case studies that indicate that plagiarism may often be a result of students' failure to understand the rules of proper citation. Others concentrate on academic dishonesty in laboratory setting [13] or in test taking [11, 16, and 17] or consider a wide range of forms of academic dishonesty in the aggregate [15].

Some studies [15] have shown that the prevalence of cheating is consistent across majors, but Harding [11, 16 and 17] cites studies that show higher prevalence among engineering students and McCabe [20] found higher prevalence among graduate business students. Finelli [15] discusses the importance of ethics in engineering education and Nonis [19] shows that academic dishonesty carries over into unethical behaviors in the workplace. McCabe [8, 21, 22 and 23] draws a similar conclusion about graduate business studies.

Lambert et al [15] performed multivariate regression analyses on survey results for 850 students looking at 21 factors that might influence frequency of cheating, considering 20 different forms of academic dishonesty. They found that only five of the factors correlated significantly. College level and frequency of cheating in high school

correlated at the $p \leq 0.001$ level and membership in a fraternity or sorority and two factors relating to beliefs about justification for cheating each correlate at the $p \leq 0.05$ level.

Given that unethical behavior of engineers can have unusually large consequences to society as well as employers, that unethical academic practices are prevalent among all students [15] and maybe especially among engineering students [11, 16 17 and 24] and that unethical behaviors in school correlate with unethical behaviors in the workplace [19], we in engineering education should be especially concerned about academic dishonesty.

2. Faculty Anecdotal Accounts

The following are a few examples of misconduct that the authors have experienced in their classes. Some of the corresponding remedial techniques are also highlighted.

2.1. Copying Someone's Work in a Test

Students have sat next to their friends or colleagues during tests and quizzes. One student knew the answer to a given question, and wrote it down and put it in front of them or to a side and then ignored that sheet of paper by not looking at it. The student sitting next to them or behind them then viewed the work done by the first student and copied the material. This is common in quantitative courses where students are asked to solve problems.

Remedy:

- Space students out from each other
- Ask all students to protect their work
- Ensure the professor walks around the class

2.2. Using Cellular Devices during a Test

Students who know an answer to a question have text messaged the answer to their friends in the class. Some students have taken a picture of the exam sheet and texted it to their friends who are not in the room taking the test. That friend then solved the problems and texted back a picture of the solution. Additionally, students have used a phone to store answers or access answers on the web.

Remedy

- Ask all students to put away their cell phones and other electronic devices during tests and exams [25]
- Have a policy in the syllabus about the use of electronic devices during class, tests and exams [26]

2.3. Using Crib Notes

Students have used crib notes during an exam. These crib notes are printed in a variety of places, not only on slips of paper. For example, students have worn a baseball hat during the exam with notes or answers pre-written on the boards of the hats or students have made notes on a body part, clothing, sneakers, calculators, or calculator covers.

Remedy

- Have a policy in the syllabus that no hats are permitted during exams or quizzes
- Ask students to remove their hats and place them on teacher's desk or in a zippered backpack
- Ask students to store calculator covers in a zippered bag and inspect calculator for writing
- Ensure the professor walks around the class and looks for crib notes
- If a student is caught with crib notes, take up the exam and provide an F as a deterrent

2.4. Using Copies of Previous Exams

Students have obtained copies of tests taken by students from another section of the course and used these tests as a resource to obtain solutions for specific test questions. Students have placed the past copy underneath the class exam and "peaked" at it while taking the test.

Remedy

- Change and update the exam questions for every section of the course is taught
- Ask students to return the exam copies
- Do not return tests to students, but go over test solutions with them to ensure they get the necessary feedback and remediation
- Create a bank of tests that will be offered without repetition over 4 consecutive semesters.
- If the course is offered in the fall and spring of each year. This would require that the test copies would have to be maintained over a two year period.
- Explain to students that distributing old exams is a form of misconduct (Student that provided the exam may not understand the complexity and seriousness)

2.5. Misusing Calculators

Calculators have been used in a variety of ways. For example, students have stored test material, such as formulas and definitions, in a programmable calculator, and then refer to the material during an exam. Also students have archived material in a calculator, so that even after the instructor clears the RAM, the material is still accessible.

Remedy

- Do not allow programmable calculators to be used during exams.
- Clear RAM and archived data from programmable calculators.

2.6. Exchanging Answers with another Student Using Verbal Discussion

Students have whispered answers to one another during an exam. Also, a translator has been involved in this form of misconduct. A group of students from another country attended a college for a year to take classes. The students sat in a group together. Translators were allowed when students

were taking exams if needed.

A few problems were observed during exams.

- Students tried to speak to each other and also
- Tried to use their cell phones, saying ‘the translator was on the cell.
- Students also said they needed to share each other’s translator because out of the group there was only one or two.

Remedy

- Create three (or more) different exams to give out to the entire class so that no one sitting around each other has the same exam
- Space students out so that they cannot see each other’s work or speak to each other
- Look at the translator device to make sure it is indeed a translator and not a cell phone or something else
- Clearly mention in the syllabus that anyone caught cheating will receive a zero on the exam and be asked to leave
- Mention in the syllabus that all exams (if applicable) are closed note, book, and no talking or cell phones are allowed in the class
- University policy training on academic dishonesty should be available to professors so they are made aware of the steps needed to follow the academic dishonesty policy
- Professors use ‘Turn It In’ or similar system through an LMS to check for plagiarism

2.7. Taking a test and Cheating at a Supervised Exam Facility

A student taking a test at the ATTIC (Advising, Tutoring, Testing, International Center), took a picture of a problem and texted it to a student tutor asking him for help. The tutor at the time was in lab, saw the question and started solving the question for the student. To double check if he has the correct answer, he shows the problem to an instructor. The instructor immediately recognizes the question as being on one of his tests, and soon it dawns on him that it is on the test that a student was taking that day at the ATTIC!

Remedy

- Revise or review of test taking rules at the test centers to ensure cellular devices are not misused
- Ensure students are monitored during testing in the facility as they would be in class

2.8. Cheating on Homework

Cheating is common in homework, even though students are told that identical answers will not be graded and marked incorrect. To get past this problem, students have changed the answers minimally. Sometimes there is not much an instructor can do about it. Also, going on internet and cutting and pasting answers is something commonly seen in assignments. Even with handwritten assignments, students have cheated. For example, one semester an instructor noticed that the handwriting on a homework assignment

dramatically changed after the first two pages because the student cheated. Additionally, students have emailed one another a homework assignment; changed their names and the professor’s name (Dr. vs. Prof.) and submitted the homework through LMS (Learning Management System) dropbox as their own.

Remedy

- Ask students to hand write the homework and as a policy, do not accept typed answers
- Scrutinize homework carefully for various forms of cheating
- Use ‘Turn It In’ in the LMS dropbox which targets plagiarism at a success rate of 97%, notifying the professor that students were “up” to something.
- Reinforce that the university has an academic honor code in place and that syllabus strictly details and enforces no collaboration, plagiarism, or cheating and that all work must represent the student’s original work.

2.9. Exiting the Classroom during an Assessment to Obtain Answers

Students have exited the classroom during an exam to obtain answers from fellow student or resource, such as textbook, LMS, or the web.

Remedy

- Only allow students to leave the room if it is an emergency
- Do not allow multiple students to be out of the room simultaneously
- Require that student leaves cellphone with professor before exiting the room
- Hide everything in LMS just in case students are trying to look at information online while taking exam

2.10. Exchanging Answers with another Student Using Nonverbal Signals

Students have used hand gestures to exchange answers during an exam.

Remedy

- Space students out as far as possible
- Ensure the professors monitor students closely during assessments

In addition to the ideas obtained from the professors, in this study, the student’s views on cheating are analyzed. A third person survey was created to learn about student cheating trends, motivations and behaviors.

3. Student Survey

An anonymous survey was given to students in all undergraduate and graduate programs at Southern Polytechnic State University in the fall of 2013. Respondents included students from various disciplines and years. The

idea was to obtain data that could be compared across disciplines and year in college. The survey was written in a third person voice so students did not feel that they were disclosing their personal information. Institutional Review Board (IRB) approval was obtained for this research to ensure that no personal information was revealed and no individual was harmed by publishing these data. Since the survey was anonymous and was written in a third person voice, it was expected that students provided accurate information. Questions from the survey are listed in Table 1.

Table 1. Student Survey Question

What are some of the techniques that students use to cheat in supervised assessments (e.g. tests, quizzes, exams etc.)?
What are some of the techniques that students use to cheat in un-supervised assessments (e.g. homework, projects, lab reports, online environment etc.)?
What do you think motivates students to cheat in courses?
Do you think students cheat more in required non-major courses than the major courses?
Are students more likely to cheat in classes if they perceive that cheating is prevalent in a class?
Are students more likely to cheat in elective versus required course?
What are the characteristics of a professor/class that keeps students from cheating?
What do you think deters students from cheating in courses?
Do you think more students cheat in high-value assessments than in low value assessments?
Is cheating less likely in a course where the instructor is perceived to have high ethical values of their own?

A total of 233 responses were received. 16%, 19%, 24%, 37% and 5% of the responses received were from freshmen, sophomore, juniors, seniors and graduate students respectively. Additionally, 7%, 9%, 3%, and 82% of the responses received were from the schools of architecture, arts and sciences, computing and engineering and engineering technology respectively. These numbers are somewhat representative of the student population

distribution at Southern Polytechnic State University, but with computing being under-represented.

4. Results

4.1. Techniques Used to Cheat During Supervised Assessments (Survey Question 1)

Survey respondents were asked to list some of the techniques that students use to cheat during supervised assessments, including tests, quizzes, and exams. A summary of the responses is presented in Table 2 and Figure 1. 28% of respondents either did not respond to this question or were unaware of any technique. The remainder of the respondents reported is aware of one or more techniques.

The two most common techniques reported overall, and amongst sophomores, juniors, seniors, and graduate students, were using unauthorized cellular devices and using prohibited crib notes. Various forms of misconduct related to cellular devices were reported and included using a search engine to locate information on the web and using text and picture messaging to send, receive, or store answers. Additionally, all responses involving crib notes were aggregated. These included notes written on paper, desks, soda bottles, articles of clothing, and students' bodies.

Two other frequently reported techniques included copying answers from another student and using pre-programmed calculators. In fact, freshmen reported copying answers from another student and using prohibited crib notes most often. Pertaining to pre-programmed calculators, the high prevalence of responses is likely related to the survey respondent population, which consists of a large number of undergraduate STEM majors. None of the graduate students surveyed reported the use of a pre-programmed calculator as a known cheating technique.

Table 2. Reported Academic Misconduct Techniques Used on Supervised Assessments

Technique	Students reporting knowledge of technique					
	All	Freshman	Sophomore	Junior	Senior	Graduate
Using unauthorized cellular devices	41% (95)	38% (13)	48% (21)	35% (18)	48% (39)	30% (3)
Using prohibited crib notes	38% (88)	50% (17)	52% (23)	29% (15)	31% (25)	60% (6)
Copying from another student	21% (48)	50% (17)	16% (7)	15% (8)	16% (13)	20% (2)
Using pre-programmed calculators	12% (28)	9% (3)	7% (3)	21% (11)	12% (10)	0% (0)
Exchanging answers with another student using verbal discussion	5% (12)	12% (4)	7% (3)	0% (0)	4% (3)	20% (2)
Gaining unauthorized access to assessment	5% (11)	3% (1)	2% (1)	0% (0)	10% (8)	10% (1)
Exiting the classroom during an assessment to	3% (6)	0% (0)	0% (0)	4% (2)	5% (4)	0% (0)
Exchanging answers with another student using nonverbal signals	3% (6)	9% (3)	0% (0)	0% (0)	1% (1)	10% (1)

sites, and copying from solution manuals found in library or online. A word cloud generated for responses placed under this category is shown below in Figure 3.

- c) Collaboration: These were responses that reflected: a true collaboration, not just copying off each other, and included discussion, teamwork, ‘instructor said you can work in groups’, sharing, using each other’s work, asking friends for help in same class, and forming study groups. It was difficult to gauge the differences and accurately categorize some responses between plagiarism and collaboration. When does a collaboration and group study become plagiarism? Do all students in a team work equally? Some of the responses clearly made the distinction while some did not. Responses that had ‘call a friend’ or ‘ask a friend’ were assumed to be plagiarism. A word cloud generated for responses placed under this category is shown in Figure 4.



Figure 4. Word Cloud of all Responses that Were Placed under “Collaboration”

- d) Buy / Pay: This category of responses included buying projects or paying someone to do the homework or project for the student. It also included fabricating data such as lab data. The word cloud shown in Figure 5 highlights the methods and words used to describe these methods.

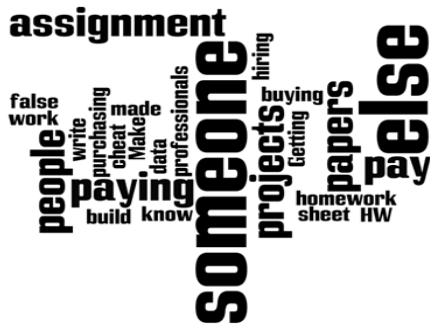


Figure 5. Word Cloud of Responses in the “Pay/Buy” Category

- e) Others: These responses included responses such as looked at notes, used the text book and highlighted methods that one would expect a student to use when doing unsupervised work. This is again visually highlighted in Figure 6.



Figure 6. Word Cloud of Responses in “Other” Category

The overall results indicating the modes of cheating are shown in Table 3.

Table 3. All Responses after Categorization were Analyzed and Tabulated

	All %
Internet	32
Plagiarism	36
Collaboration	17
Pay/buy	5
Using text/notes	10

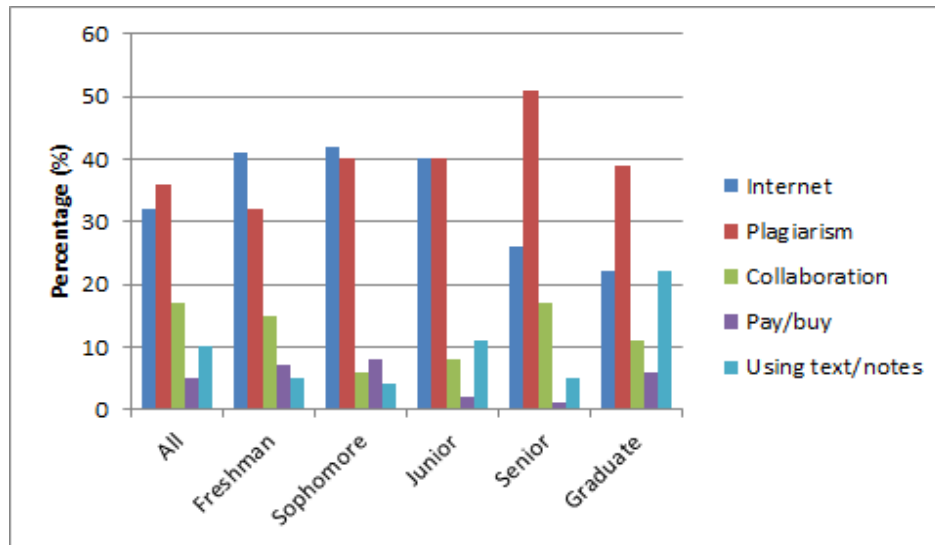
It is clear from Table 3 that plagiarism and using the internet are the most predominant methods used by students to cheat on unsupervised assignments. Using the same categories, responses were further sorted based on the year of study of the student. Responses were obtained for freshmen, sophomores, juniors, seniors and graduate students. Results of this analysis are presented in Table 4 and Figure 7.

Some interesting trends are seen as a student progresses through university. The use of internet as a method to cheat on unsupervised assignments seems to predominate in freshman and sophomore years and significantly drops in senior and graduate years. The opposite trend is seen with plagiarism where the use of this method increases as the student moves through the years, peaking in the senior year. This trend may be explained by the increased pressure a senior feels in maintaining a good academic record as well as the pressure of upper level courses and senior projects. The increase in plagiarism may also be due to the senior being more aware of the availability of unauthorized resources such as previous projects/assignments. This trend can also be attributed to the fact that by the time a student gets to the senior level, they have made friends who are willing to help them cheat. They have also learned the techniques that work and those that do not. By this stage they know which techniques can get them caught and which ones are safe.

The use of textbook and notes as resources to do assignments shows an upward trend as the student progresses through college. However, very few seniors reported this as a method of cheating. Traditionally, using textbooks and notes is expected in homework and hence suggesting that as a method of cheating may be attributed to how one perceives or understands what constitutes cheating. Buying or paying to get an assignment done seems to decrease as the student progresses; however it seems to pick up in graduate years.

Table 4. Student Responses Categorized by the Year in College

%	All	Freshman	Sophomore	Junior	Senior	Graduate
Internet	32	41	42	40	26	22
Plagiarism	36	32	40	40	51	39
Collaboration	17	15	6	8	17	11
Pay/buy	5	7	8	2	1	6
Using text/notes	10	5	4	11	5	22

**Figure 7.** Student Modes of Cheating Based on Year in College

4.3. What Motivates Students to Cheat in Courses? (Survey Question 3)

The qualitative analysis of the responses to this question involved creating response categories based on themes observed in the responses, and then assigning responses to the relevant categories. Many responses were found to be relevant to more than one category and therefore were assigned to all relevant categories.

The analysis results are presented in Table 5 and Figure 8. The most frequent source of motivation for cheating suggested by students was the need to improve grades. The underlying reasons for requiring a grade improvement include: to pass the course; to obtain an A; and to meet GPA, scholarship, or financial aid requirements. Other sources of motivation that accumulated more than 5% of the responses (excluding the no response category) include: laziness; stress, fear of failing and pressure from various sources; poor organizational and time management skills; lack of preparation by the student; cheating being viewed as the easier path to being successful for a course; and the course being difficult.

Table 5. Qualitative Analysis of Student Responses to “What motivates students to cheat in courses?”

Response Category	Frequency (%)
Need to improve grades	71 (23.2)
Laziness	38 (12.4)
Stress, Fear, Pressure	28 (9.2)
Poor organizational and time management skills	26 (8.5)
Lack of preparation by students	24 (7.8)
I don't know or no response	20 (6.5)
Cheating is viewed as the easier way to be successful for the course	19 (6.2)
The course is difficult	19 (6.2)
Failing to understand what is being taught	13 (4.2)
The grade is more important than learning the material	9 (2.9)
Poor instruction and/or instructional materials	9 (2.9)
Course material and assessments are of little value in a work environment	8 (2.6)
Lack of integrity	6 (2)
A learning environment that does not discourage cheating	5 (1.6)
What is taught does not correlate well with assessments	4 (1.3)
Absenteeism	2 (0.7)
Too many things to commit to memory for assessments	2 (0.7)
Immaturity of student	1 (0.3)
Lack of foresight	1 (0.3)
Difficulty coping with demands of life	1 (0.3)
TOTAL	306 (100)

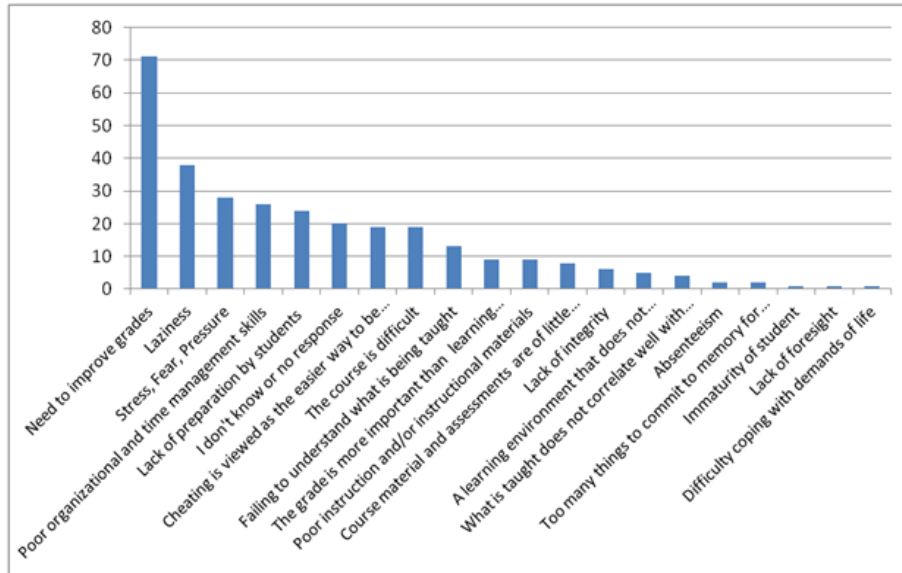


Figure 8. Bar Chart of Student Responses to “What motivates students to cheat in courses?”

5. Other Results

A few other open ended questions, qualitative questions and quantitative questions were asked in the survey. The corresponding results are shown in Figures 9-13.

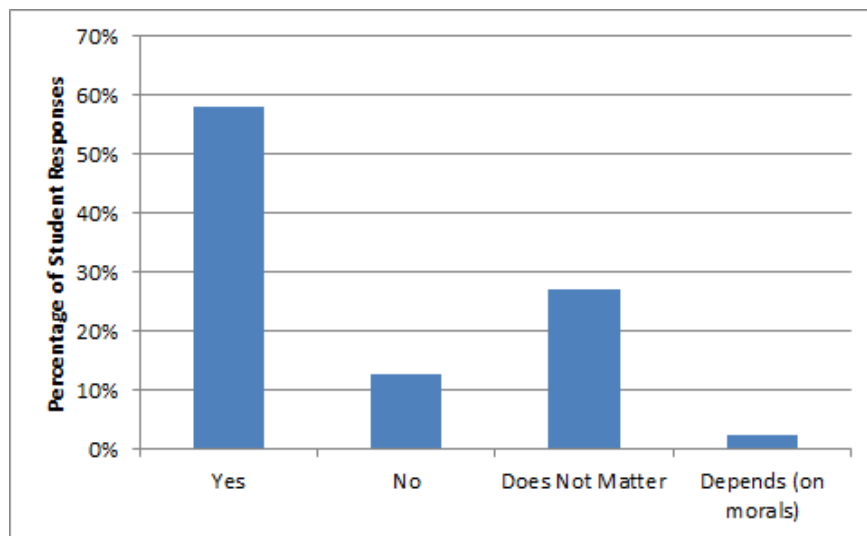


Figure 9. Student Responses on Whether Students More Likely to Cheat If They Perceive Cheating is Prevalent in Class

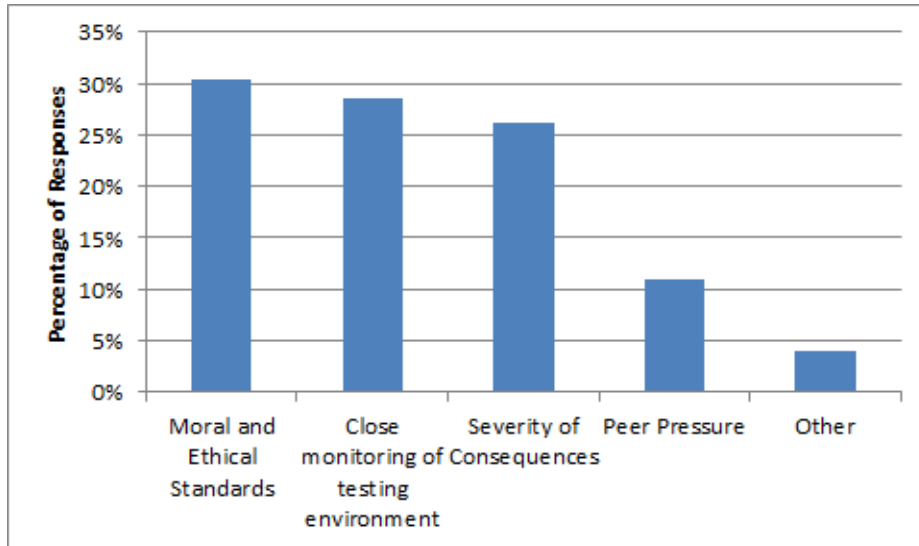


Figure 10. Student Responses to the Question of What Deters Students from Cheating

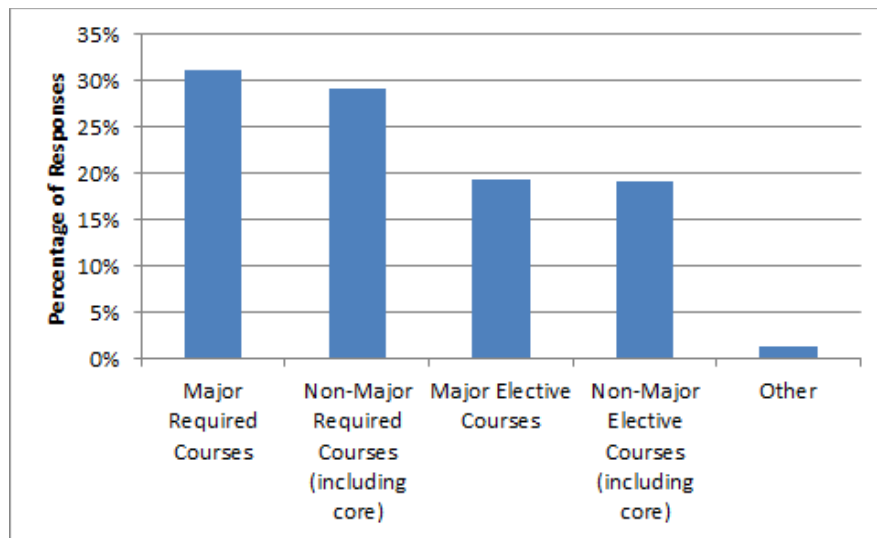


Figure 11. Student Responses for The Courses in Which Students are Most Likely to Cheat

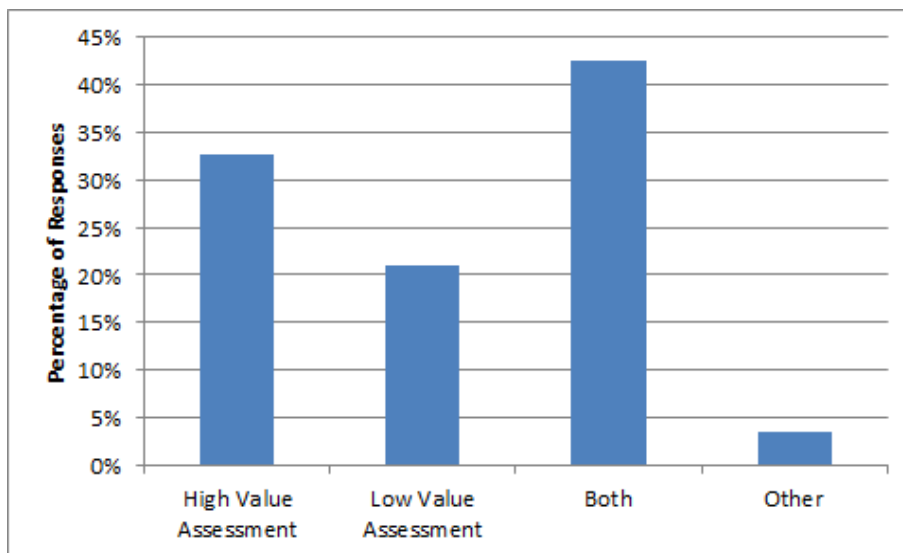


Figure 12. Student Likelihood of Cheating Depending on the Value of the Assessment

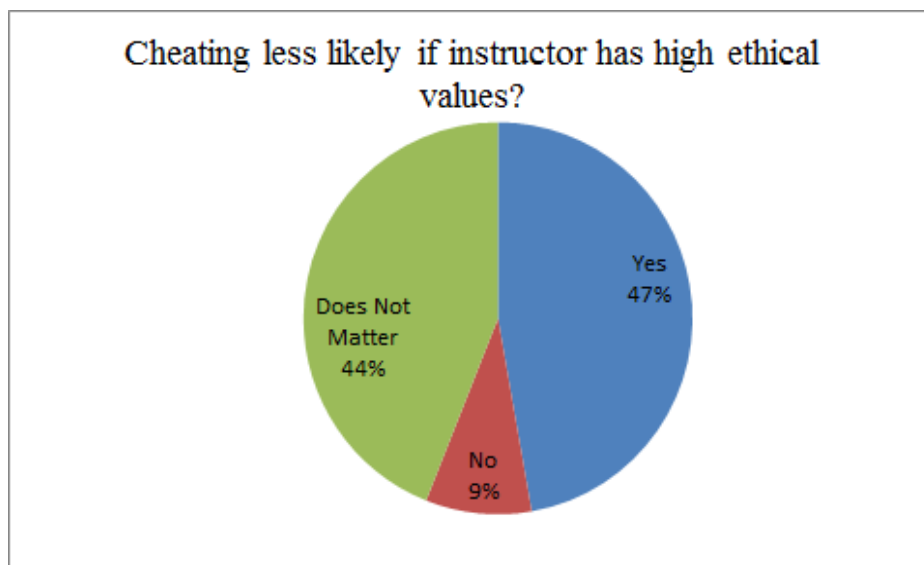


Figure 13. Student Responses to Whether Cheating Is Less Likely Where the Instructor is Perceived to Have High Ethical Values of Their own

As seen in Figure 9, when students perceive that cheating is prevalent in class, they are more likely to cheat. This stems from the fear that others might get ahead of them by cheating. While 58% of the students believe that the perception of the ease of cheating can lead to cheating, only 12% disagree with the statement and 27% suggest that cheating would occur regardless of the perception. As seen in Figure 10, the most important factor that deters students from cheating is moral and ethical standards. This is good news because it indicates that teaching good moral and ethical standards might be a better and more effective remedy compared to any other technique. Close monitoring of testing environment and severity of consequences also deters a large number of students. Surprisingly, peer pressure does not deter students from cheating. This might be indicative of the fact that students typically do not report seeing other students cheat. In terms of the type of courses where cheating is more prevalent, the data indicate that students are more likely to cheat in required courses (both major and non-major) compared to elective courses as shown in Figure 11. A student might be tempted to cheat in a required course because they do not have interest in the course. In the elective courses, the percentage is smaller because students choose to take those courses and are therefore naturally interested in learning the subject matter – which decreases the temptation to cheat. This indicates another possible remedy of restructuring the curriculum by creating flexibility and letting students choose their own path. One way to do this might be to have multiple course offerings and options. In terms of the value of the assessment, most students indicate that cheating occurs in both high and low value assessments as seen in Figure 12. Additionally, 47% of the students indicate that cheating is less likely to occur if the instructor is perceived to have high ethical values of their own, shown in Figure 13.

In the preliminary results, it is observed that students are more likely to cheat in high value assignments. The majority of the students indicate that the perception of the ethical values of the instructor does not determine the level of prevalence of cheating in a class. Most of the students indicate that high moral and ethical standards, close monitoring of testing environments and severity of the consequences deters them from cheating. A high percentage of the students tend to cheat in both major and non-major required classes.

An examination of the motivations for cheating by students reveals that improving grades in order to pass the course; obtain an A; or to meet GPA, scholarship, or financial aid requirements is the most frequent motivation cited by respondents (23.2%). This is consistent with the result reported by Lambert [15], which found that cheating to get a better grade to be a significant factor in their multivariate analysis. This finding may also point to an academic environment in which the rewards for cheating (e.g. passing the course, improving GPA, etc.) are not counterbalanced by the enforcement of appropriate penalties (e.g. failing the course, probation, etc.). 12.4% of respondents also suggested laziness as a source of motivation for cheating. This indicates student apathy towards course content, and may point to a need for professors to encourage student engagement and to highlight the relevance of what is being taught to the future careers of their students. With 9.2% of respondents citing “Stress, Fear, Pressure”, 8.5% of respondents citing “Poor organizational and time management skills”, and 7.5% citing “Lack of preparation by students,” it is apparent that student cheating may also be correlated to students not properly coping with the combined demands of school, work, family, etc. This will lead to increased levels of stress, fear and pressure. While such life-coping skills are often focused on in orientation courses, there may be a need for remediation and monitoring of students beyond their freshman year.

6. Discussions

7. Conclusions

Academic misconduct in the form of cheating in graded works is a fact on college campuses. The current study, as well as most of the literature on this topic, attempt to correlate reasons or factors that lead to this misconduct. Various remedy and mitigating suggestions are presented in this paper. Not all may be applicable to a given situation. The instructor, institutional policies as well as students' personal situations play roles in cases of academic misconduct. However the instructors and the school administration as a team may take steps to minimize the incentives for academic misconduct.

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