Perceptions of Computing Students on Academic Dishonesty

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1 Introduction

Academic dishonesty has become increasingly prevalent among university students for several reasons. The most predominant reason is to perform well in class [23]. According to Naghdipour & Emeagwali [18] and Fuller et al. [8], students hope that having good grades will give them an advantage in the job market. Academic dishonesty can be described as a use of unauthorized assistance in academic work to deceive the instructor or any other person assigned to evaluate a student's academic performance. For this study, the paper will specifically examine computing students and whether they consider sharing code using online resources, such as Stack Overflow, GitHub, or CodePen, to be academic dishonesty. While the use of these resources may be regarded as academic dishonesty, they are widely used in the computer industry and by hobbyists, which makes it difficult for students to distinguish between acceptable use and academic dishonesty. The research question addressed in this paper is "Do computing students consider that using code from online resources can constitute academic dishonesty?"

In order to answer the research question, we must first understand what academic dishonesty entails. Academic dishonesty comes in multiple forms, including but not limited to receiving or giving assistance during academic evaluation; plagiarism, in which a student uses material from a source without properly acknowledging the source; and "paying services for fully completed homework assignments" [6]. Academic dishonesty is prevalent in many institutions, with a dishonesty rate of up to 70% in some institutions [19]. In an age where learning is inextricably linked with technology, academic dishonesty has become more prevalent. A study on the frequency of academic dishonesty indicated that as

early as the 1940s, 23% of students participating in an exam were found to be cheating [9]. However, recent studies show that incidences of cheating have become more widespread, with up to two-thirds of students perceiving cheating to be acceptable [11]. The use of technology in education increases the likelihood of academic dishonesty. For instance, in e-learning, where the learner and the instructor are not physically in the same location, the opportunity for the student to engage in acts of academic dishonesty increases due to a lack of direct supervision or control [1].

Particularly in computing courses, students are almost entirely reliant on technology for their education. The academic environment also dictates what students may consider as dishonesty. For instance, in the technology workforce it is common for programmers to collaborate on a project [24]. Collaborating and sharing code using online tools such as GitHub are considered ordinary and commonplace in workplace projects [9]. Some would argue that because education is geared towards the marketplace, activities that are commonplace and acceptable in the workplace, such as code sharing, should also be acceptable in the academic setting. The increasing competitiveness of the job market has resulted in marketplace practices being adopted in education. As a result, there is a thin line between acceptable practices and academic dishonesty among computing students [26]. While many computing students recognize that activities such as cheating on standardized tests are academic dishonesty, students and some lecturers do not think of getting additional support or taking code from code-sharing websites as academic dishonesty because these practices are acceptable in the workplace [3, 17].

According to Sulir [26], code in computer systems is broadly repeatable: different programmers can develop similar applications using code that has been created before. To reduce the effort of developing computer applications, there is a broad acceptance of the sharing of open-source code, which different developers can access to build applications. Leading software companies such as Microsoft have libraries that allow application developers to reuse existing code to perform certain functions. For instance, a developer creating an application using object-oriented programming does not have to write code for every object, but can use code that has already been created and only write new code for procedures that determine how the objects interact [26]. Even open-source code typically comes with licenses that specify how it can be used, and there is a great deal of other code that cannot be copied without breaking laws. However, collaboration within a corporation is usually acceptable, and is seen as a standard approach to ease the development of other applications with similar features. With these activities so accepted in the workplace, they are often not considered as cheating by computing students [9].

Furthermore, there is a great deal of variation among computing educators as to what they consider acceptable; therefore it is recommended that they explicitly explain to students how they define academic dishonesty in their computing courses [25].

2 Literature Review

2.1 Definition of Academic Dishonesty

Academic dishonesty involves contributing to or committing dishonest acts by individuals engaged in learning, research, and teaching, and can take the form of plagiarism, cheating, sabotage, collusion, or fabrication [22]. Perhaps the most common forms are plagiarism, the unacknowledged reuse of externally sourced material, and collusion, unauthorised collaboration between students. Academic dishonesty applies not just to students but to everyone involved in the academic environment, including professors and teaching assistants [2]. Academic dishonesty harms the student and the educational background and impairs the profession's reputation, the academic program, and the institution [5]. Arguably an essential consequence of academic dishonesty is its effect on a student's learning. High-level thinking skills such as critical thinking and problem-solving require practice and application. A student who copies and pastes work from the internet or from other students is no longer engaged in solving the problem in question in a manner that aids in developing these skills [25]. Similarly, a student completing a group project without contributing appropriately to the work will fail to develop the crucial attendant teamwork and collaborative skills, and is also guilty of academic dishonesty [25].

2.2 Online Learning and Academic Dishonesty

With the tremendous growth of online learning facilitated by the internet, there is a high opportunity for students to indulge in academic dishonesty. A leading reason for this is the limited or even non-existent contact between faculty and students. Notably, students who have frequent in-person interactions with professors tend to be honest with their academic projects [28]. However, the online learning setting hampers the ability of faculty to establish a strong rapport with learners. Therefore, students who are distant from their professors and from fellow students tend to engage in deceptive acts such as cheating or plagiarism. Online learning exacerbates the feelings of separation, which can drive the urge to engage in academic dishonesty [21]. Therefore, both professors and students perceive that academic dishonesty is more likely to occur in online learning than in face-to-face classrooms. In contrast, Peterson [21] suggests that online learning discourages academic dishonesty compared to the traditional learning environment. The reason for this finding is that cheating may be related to the extrinsic motivation that drives learners within conventional courses, but that online students are intrinsically motivated by their ability to learn independent of face-to-face classrooms, and this kind of motivation substantially reduces the desire to cheat.

2.3 Perceptions of Academic Dishonesty: Students

Previous studies reveal that some students perceive academic dishonesty, such as cheating, to be their normal behavior. Although academic dishonesty appears to be common among students, more investigation is required to distinguish between the forms of academic dishonesty that they find undesirable and those that they find permissible. Such investigation might help to explain the high rate of academic dishonesty, if students perceive forms of it to be acceptable. For example, Gillespie [9] notes that Davis, McGregor, and Gover's research [4] indicated that 90% of students in their study accepted that cheating is wrong. This 90% acceptance implies that students have a comprehensive understanding that cheating, as a form of academic dishonesty, is behavior that is unacceptable both socially and morally. However, although most students perceive academic dishonesty as wrong, many continue to participate in cheating [27]. Students believe that taking an exam on behalf of another student, obtaining answers before taking a test and taking the answers into an exam room, and copying assignments without the owner's knowledge are the most serious activities involved in academic dishonesty [1]. Also, students perceive plagiarism to be one of the most serious forms of academic dishonesty.

2.4 Perceptions of Academic Dishonesty: Faculty

Faculty tend to rank particular academically dishonest behaviors more severely than students. For instance, while 100% of faculty in one survey considered writing a project paper on behalf of another student to be cheating, only 94% of the students saw this as a form of cheating; and while 98% of faculty saw it as cheating to give test answers to a student who would be doing the test in a later session, only 87% of students shared that opinion [10]. However, even though faculty do not support academically dishonest behavior, they often tend to ignore it [14]. Faculty must play a proactive role in reducing academic dishonesty in universities. The faculty's perception of academic dishonesty causes academic dishonesty. As a result, professors should regard academic dishonesty as a serious offence, with stricter penalties in place for any actions related to it. This will form the basis for getting rid of academic dishonesty [12]. For instance, before undertaking their exams or assignments, faculty can assure students that any plagiarism will lead directly to a fail grade.

2.5 Causes of Academic Dishonesty

Academic dishonesty amongst students has two types of causes: intrinsic and extrinsic. Intrinsic factors include fear of failure and anxiety about achieving good scores. The extrinsic factors emerge most commonly when students becomes upset after being told about their unethical behavior by faculty. Students usually are under pressure to achieve good grades [1]. Therefore, if the opportunity of cheating presents itself, most students can rationalize taking the opportunity to improve their grades. [1]. Additionally, there is a disconnect

between what college students consider as cheating and the views of faculty as cheating. Parkes et al. attribute this to intergenerational differences [20]. Some students, for instance, perceive anything that can be found on the internet to be common knowledge, regardless of the source.

Consequently, students use the information without citing the sources. Students do not perceive this behavior to be wrong or dishonest. Peterson [21] notes that students at one university made copies of textbook test banks, and after failing as a consequence of using these materials, they appealed and defended their actions as utilizing materials that were publicly available. Additionally, the current student culture has normalized cheating and has changed ethical and moral thoughts around cheating. Indeed, it has been suggested that most students perceive cheating to be an indicator of creative intelligence [16].

2.6 Prevention of Academic Dishonesty

The prevention of academic dishonesty, which clearly depends upon how students and lecturers perceive various forms of academic dishonesty, can be facilitated by external and internal factors. For instance, academic fraud can emerge when learners fail to comprehend how to handle a task appropriately, such as citing sources and appropriately acknowledging material acquired from websites. On the other hand, learners can simply make irrational choices [22]. One external approach that can help prevent academic dishonesty is to emphasize student leadership, with students establishing committees and engaging in the disciplinary process. Also, personal confidence, desire to work and learn, guilt, and professional ethics can prevent academic dishonesty. On the other hand, some schools, including Lawrence University and the University of Minnesota, have installed systems of honor code in which students are held accountable for engaging in any form of academic dishonesty [7]. Lastly, the perception of cheating as dangerous and the desire for future knowledge both contribute to preventing academic dishonesty.

Defensive assignment-setting represents the other preventative strategy, and includes structuring the form of the assessment task to decrease the chance of inappropriate behavior. For example, portfolio assessments and unique or unusual assignments can be considered less prone to plagiarism [13]. Further defensive approaches involve questioning students, devising collaborative tasks, adopting authentic assessment tasks, and providing plagiarism feedback on an early draft [25]. While these techniques address certain aspects of the academic integrity challenge in computing, researchers argue that efforts that seek to adopt and/or implement universal academic integrity regulations in the computing environment miss some key components of the problem. The persistence of academic integrity matters surrounding computing students suggests that a new approach is required to solve this problem.

3 Methodology

The authors designed an online survey to investigate the perceptions of computing students on the prevalence of academic dishonesty. The survey was circulated among students in 15 different undergraduate computer science courses at a mid-sized North American institution to determine their understanding of academic dishonesty. The survey was conducted using Qualtrics, where it was distributed via online Zoom lecture chats and posted to each course's learning management system for students to complete. The survey was voluntary and anonymous, with $50 gift cards raffled off to three random participants as incentives. The survey was open for three weeks in the middle of an academic term.

The survey first asked participants to rate fifteen scenarios about collaboration and help seeking in CS classes: since different classes have different standards, students were asked what computer science class they had taken mot recently, and were asked to consider that class while rating. The participants rated the scenarios on a scale of academic honesty from 0 ('completely acceptable and allowed') to 100 ('unacceptable academic dishonesty') with the midpoint (50) being labeled 'I don't know, could go either way?'. The scenarios were selected to cover a variety of components (homework, exams, guided lab activities) and collaborations (looking things up online, looking at a fellow student's solution) which are common in university computer science courses. To better understand why a participant might select a particular rating, each of the sliders was followed by an open ended text box for comments or explanations.

At the end of the survey the participants were asked their gender identity and their age range.

A total of 160 students participated in the survey out of the 801 students that were contacted (20% participation). This is a fairly normal response rate for surveys at our institution. Participants were free to skip questions which they were unsure about and so different questions can have different numbers of responses; the total number of responses per question is indicated in the results.

The responses were downloaded in a spreadsheet and empty responses removed. For each scenario, the average and standard deviation were calculated, and the text responses were reviewed for patterns and insights into participant interpretation of the scenario which might threaten validity. For brevity, a selection of the scenario responses are represented with a graph.

4 Results

From the numerical values that participants provided for each scenarios, we calculated the average and the standard deviation (see Table 1). The average for each scenario can be interpreted as how dishonest each behavior was found by participants, and the standard deviation shows how much variation there was in participants' answers. Each question was optional, so the total number of responses varied slightly (between 146 and 159). Each scenario had a field where

participants could add additional context for their answers; these comments were examined for responses which did not provide a numerical rating. Fourteen were variations on 'depends', three were 'I don't know', one was 'Not applicable to the class' and one was 'not best practices but acceptable'. One response for scenario 'M' indicated that the professor might consider it dishonesty however they did not see a problem.

There is insufficient space in this work for histograms of the response to all the scenarios, but a few representative ones are provided below.

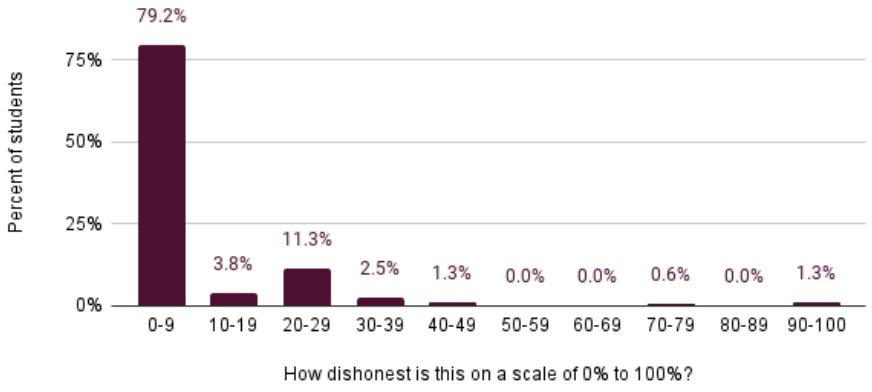

Figure 1: (Scenario A) A student does their lab alongside their notes so that they can reference them when they get confused

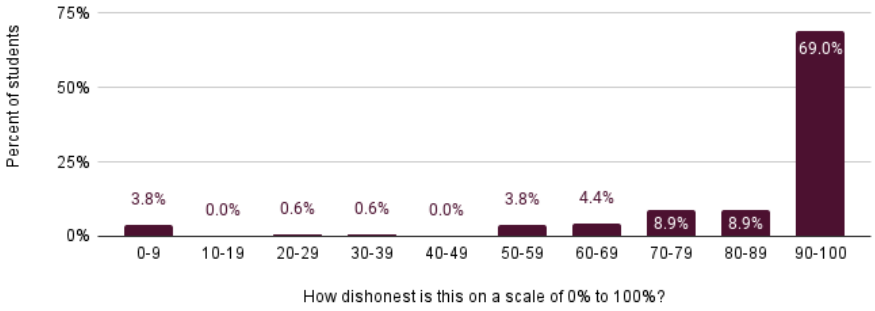

Figure 2: (Scenario E) A student is taking a closed-note test and writes a few concepts and reminders on their hand for the test.

Students provided 400 text responses in the open-ended comment boxes. Figure 5 is a word cloud that gives some feeling for the frequency of words in those responses.

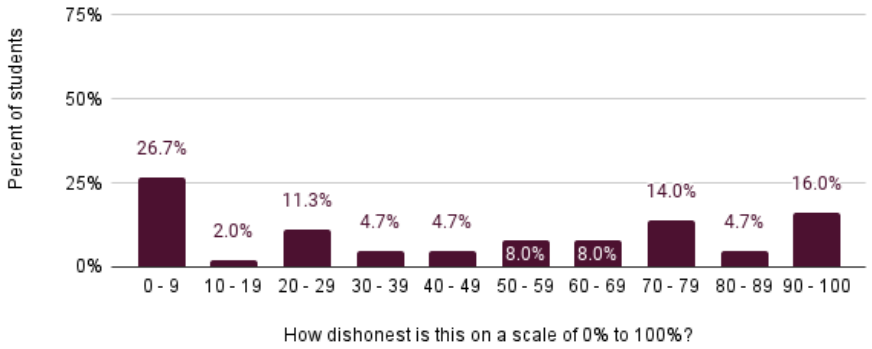

Figure 3: (Scenario O) A student asks a friend about a homework assignment using their actual code as a reference, and the friend gives tips based on the student's questions.

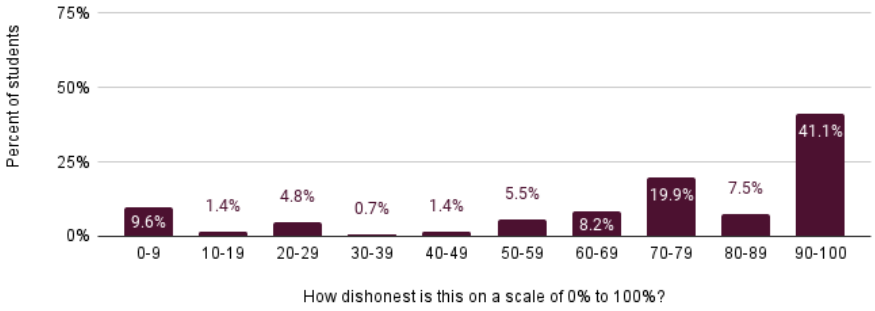

Figure 4: (Scenario K) A student asks a friend about a homework assignment, and the friend gives tips by revealing their code.

Table 1: Scenarios averages, standard deviations, and total number of responses. Ranked by smallest standard deviation to largest.

Scenario	**Q Num**	**A student...**	**Avg**	**StD**	**Num**
A	3	does their lab alongside their notes so that they can reference them when they get confused.	6	16	159
B	6	asks a friend about a homework assignment using pseudocode as an example, and the friend gives tips based on the student's questions.	13	18	156
C	15	is taking a closed-note test and looks up a question verbatim online when they get confused.	94	19	159
D	14	is taking a closed-note test and looks up a concept online when confused by a question.	92	20	159
E	13	is taking a closed-note test and writes a few concepts and reminders on their hand for the test.	88	23	158
F	1	uses code they wrote in a lecture exercise for a homework assignment.	16	24	155
G	12	is taking a closed-note test and looks up a concept in their notes when they are confused by a question.	88	25	157
H	4	looks up a specific concept required for a lab and uses that information to complete the lab.	24	29	150
I	8	asks a friend about a homework assignment, and the friend gives tips by communicating their pseudocode.	30	29	146
J	11	takes an open-note test and looks up a question verbatim online when they get confused by the question.	75	30	148
K	9	asks a friend about a homework assignment, and the friend gives tips by revealing their code.	73	31	148
L	5	looks up a particular homework assignment question online, finds a version of how to complete that requirement, and uses that to complete a lab.	70	32	149
M	2	uses code they wrote for a homework assignment in an quiz or exam.	30	33	155
N	10	takes an open-note test and looks up a concept online when they get confused by a question.	52	35	146
O	7	asks a friend about a homework assignment using their actual code as a reference, and the friend gives tips based on the student's questions.	47	36	150

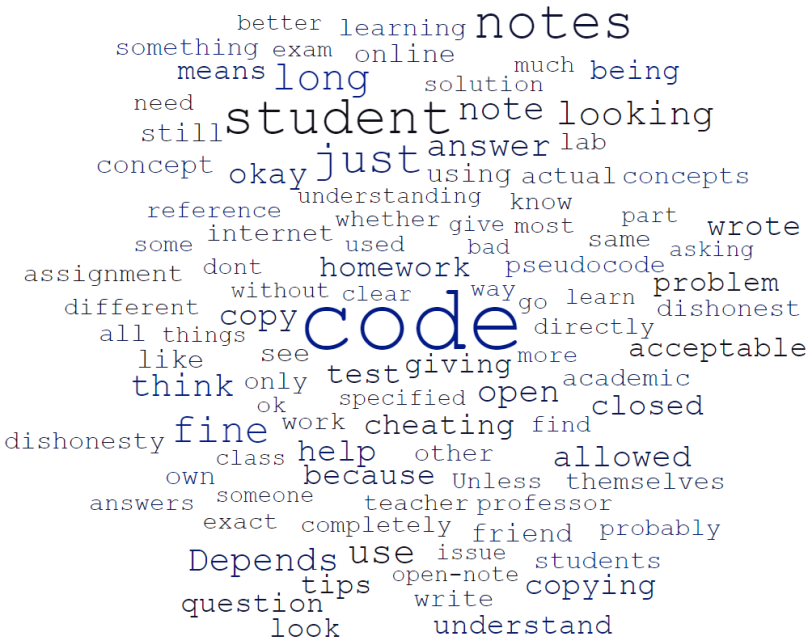

Figure 5: Word cloud generated from the 400 text responses in the open ended comment boxes.

5 Discussion

Academic dishonesty policies as written are typically fairly rigid: either the students' behavior clearly violated the policies of the class, or it did not. Consequences for academic dishonesty are also, at most institutions, strict: a typical list of penalties (in order of severity) includes zero on the assignment, zero for the class, suspension, and expulsion. Instructors would not be able to assess such strong penalties if they were not confident in the determination of any particular case. That there are typically only a few outcomes suggests a narrow consideration of degrees of severity: if nuance of circumstances was an important factor there would be more nuanced possibilities in consequences. Often the penalties are sequential: the first act gets the lower penalty, and subsequent acts get higher penalties, under the assumption that students might not understand academic dishonesty the first time, and that acts after the first one are willful and not due to ignorance.

We make the above point to highlight how interesting it is that participants used the sliding scale at all, instead of just answering a clear 'honest' or 'dishonest'. Furthermore, the size of the standard deviation suggests that there is, for many of these scenarios, wide disagreement on whether or not they are academically honest.

From the open-ended text responses, we found some patterns in how students responded to each scenario. Some scenarios had primarily justifications, others had qualifying context which would make the determination of particular behavior honest or not, and some showed significant student confusion. Scenario A had the lowest standard deviation and the comments reflect that there was generally a solid understanding of the policy. An example comment was: "labs are normally open internet as long as you don't copy and paste and or type the code line for line". Scenario E, despite appearing to be a very clear cut case of dishonesty, nevertheless didn't have complete student buy-in: "If they didn't get caught, it's not cheating.". Others suggested that the context might matter: "Depending on the concepts or the student's situation this could go either way. I would side more with dishonesty because these could give the student a significant edge over others."

Scenario O was one of the highest standard deviations, demonstrating wide confusion on whether it was permitted, and if so, in what circumstances. For example, one student said "It's giving tips not answers", another said "Generally UNACCEPTABLE ACADEMIC DISHONESTY" and another said "Should be fine as long as the code wasn't exactly copied.". Many of the comments on this scenario described very subjective and fuzzy boundaries between acceptable and unacceptable situations in which students could ask for help with their code: "If [their] tips are more conceptual based [or very specific like syntax what a certain error means] than that seems fine. Telling them what to write to fix it is more dishonest." Or "The friend giving help shouldn't be someone who may benefit from seeing your code, such as a classmate who has the same assignment". Although not all students believed that a prohibition against showing their code to classmates would be valid ("Homework should never be strictly individual"),

most comments demonstrated student confusion about how they were expected to enact course policies and a tension with wanting to get debugging help from their friends and yet knowing there was a line (somewhere) that would cross into academic dishonestly.

Similarly, scenario K, which represents a behavior commonly more explicitly forbidden by the CS professors at this university, generated significant confusion in students. Some comments were very adamant this was prohibited ("no sharing code!!!!1!!1!111!!!! :(") while others were quite sure it was acceptable ("Its ok but it could be done better."). The bulk of the comments, however, formed a mishmash of caveats, mitigating factors, and exceptions, many of which were entirely subjective. Examples include:

- "again i don't know whether very tiny snippets like single line is okay because it's just maybe a very simple part, also it is homework, not lab."
- "I think it's fine if the student understands what they're looking at, however it's something that could very easily be abused."
- "The student revealing their code isn't being dishonest however if the student then takes that code and copy pastes, then it is. There shouldn't be a punishment for revealing info only on how it is used."
- "Again, it wouldn't lend to good learning environment, but I don't think it would be academic dishonesty."

Most of these comments were in regard to CS courses which have explicit policies against this very scenario which has engendered so much student misconception. Clearly, the students in this study do not have a good understanding of what constitutes academic dishonesty (not to mention that some students simply don't buy into the policies even as they do understand them).

5.1 Limitations and Future Work

One limitation of this work is that the students surveyed came from a single institution; it is possible that this institution has a culture of academic integrity (both in terms of how faculty explain and enforce it, and how students enact it) which is unlike other institutions. A second round of this study is currently under way with students being surveyed across multiple institutions and countries. It is also possible that the range of answers reflects variations in policies between different professors and classes. However, if the variations were due to faculty having different policies we would expect to see bimodal distributions on the questions as we asked students not to average their courses but to consider a single recent course when answering the prompts.

6 Summary and Conclusion

In conclusion, computing students are aware of some practices that constitute academic dishonesty. However, some students continue to engage in academic

dishonesty because they are unfamiliar with the meaning of plagiarism and have inappropriate attitudes toward it, especially when it relates to self-plagiarism [27]. As a result, students are more prone to engage in these dishonesty activities after graduation, affecting the academic integrity of those who eventually become researchers and those who design secure and safe systems in industry [27]. Notably, some of the actions considered academic dishonesty in other fields are acceptable and expected in computing, such as code sharing. While computing students understand that actions such as cheating in tests, using unauthorized sources for assignments, and plagiarism constitute academic dishonesty, other activities such as code sharing and collaboration are expected in the field. Students are therefore less likely to consider the latter practices as academic dishonesty, especially if they are permitted by some professors [15]. Some students may rationalize academic dishonesty with justifications such as the need to perform better than their peers in order to gain an advantage in the job market. Others will rationalize it by noting that it is standard industry practice and hence should not be considered academic dishonesty. In either case, it is clear that so long as universities aim to assess the work of individual students, they have a great deal of work ahead of them to help students understand just what that entails and why it is important.

References

[1] Meital Amzalag, Noa Shapira, and Niva Dolev. "Two sides of the coin: lack of academic integrity in exams during the corona pandemic, students' and lecturers' perceptions". In: *Journal of Academic Ethics* (2021), pp. 1–21.

[2] Mebratu Mulatu Bachore. "The nature, causes and practices of academic dishonesty/cheating in higher education: the case of Hawassa University". In: *Journal of Education and Practice* 7.19 (2016), pp. 14–20.

[3] Regis Chireshe. "Academic dishonesty: Zimbabwe university lecturers' and students' views". In: *South African Journal of Higher Education* 28.1 (2014), pp. 45–59.

[4] Stephen F Davis et al. "Academic dishonesty: prevalence, determinants, techniques, and punishments". In: *Teaching of Psychology* 19.1 (1992), pp. 16–20.

[5] Martin Dick et al. "Addressing student cheating: definitions and solutions". In: *ACM SIGCSE Bulletin* 35.2 (2002), pp. 172–184.

[6] Zorana Ercegovac and John V. Richardson. "Academic Dishonesty, Plagiarism Included, in the Digital Age: A Literature Review". In: *College and Research Libraries* 65.4 (2004), pp. 301–318. ISSN: 2150-6701. DOI: 10.5860/crl.65.4.301. URL: https://crl.acrl.org/index.php/crl/article/view/15673.

[7] Robert Fraser et al. “Collaboration, collusion and plagiarism in computer science coursework”. In: *Informatics in Education* 13.2 (2014), pp. 179–195.

[8] Ursula Fuller et al. “Perspectives on developing and assessing professional values in computing”. In: *ACM SIGCSE Bulletin* 41.4 (2010), pp. 174–194.

[9] Kisten Ann Gillespie. “The frequency and perceptions of academic dishonesty among graduate students: a literature review and critical anaylsis [sic]”. In: (2003).

[10] Melody A Graham et al. “Cheating at small colleges: an examination of student and faculty attitudes and behaviors”. In: *Journal of College Student Development* 35.4 (1994), pp. 255–60.

[11] Paul W. Grimes. “Dishonesty in Academics and Business: A Cross-Cultural Evaluation of Student Attitudes”. In: *Journal of Business Ethics* 49.3 (2004), pp. 273–290. ISSN: 01674544, 15730697. URL: `http://www.jstor.org/stable/25123171` (visited on 05/02/2022).

[12] Darryl J Hancock. “Faculty beliefs regarding online academic dishonesty and the measures taken to address academic dishonesty in Georgia”. In: (2011).

[13] Brittney Hansen, Danica Stith, and Lee S Tesdell. “Plagiarism: what’s the big deal?” In: *Business Communication Quarterly* 74.2 (2011), pp. 188–191.

[14] Patricia Keith-Spiegel et al. “Why professors ignore cheating: opinions of a national sample of psychology instructors”. In: *Ethics & Behavior* 8.3 (1998), pp. 215–227.

[15] Carolyn Duffy Marsan. “Why computer science students cheat”. In: *PC World, April April* (2010).

[16] C.J. Morgan and W.T. Foster. “Student cheating: an ethical dilemma”. In: *22nd Frontiers in Education Conference*. 1992, pp. 678–682. DOI: `10.1109/FIE.1992.683486`.

[17] Tamera B Murdock and Jason M Stephens. “Is cheating wrong? Students’ reasoning about academic dishonesty”. In: *Psychology of Academic Cheating*. Elsevier, 2007, pp. 229–251.

[18] Bakhtiar Naghdipour and Okechukwu Lawrence Emeagwali. “Students’ justifications for academic dishonesty: call for action”. In: *Procedia – Social and Behavioral Sciences* 83 (2013), pp. 261–265.

[19] Lori Olafson et al. “Exploring the judgment-action gap: college students and academic dishonesty”. In: *Ethics & Behavior* 23.2 (2013), pp. 148–162.

[20] Jay Parkes and Dawn Zimmaro. *The college classroom assessment compendium: a practical guide to the college instructor’s daily assessment life*. Routledge, 2017.

[21] Jennifer Peterson. "An analysis of academic dishonesty in online classes." In: *Mid-Western Educational Researcher* 31.1 (2019).

[22] Judy Sheard et al. "Strategies for maintaining academic integrity in first-year computing courses". In: *2017 Conference on Innovation and Technology in Computer Science Education*. 2017, pp. 244–249.

[23] Mark G Simkin and Alexander McLeod. "Why do college students cheat?" In: *Journal of business ethics* 94.3 (2010), pp. 441–453.

[24] Simon and Judy Sheard. "Academic integrity and professional integrity in computing education". In: *2015 Conference on Innovation and Technology in Computer Science Education*. 2015, pp. 237–241.

[25] Simon et al. "Negotiating the maze of academic integrity in computing education". In: *ITiCSE 2016 Working Group Reports*. ITiCSE-WGR 2016. Arequipa, Peru, 2016, pp. 57–80. ISBN: 978-1-4503-4882-9. DOI: 10.1145/3024906.3024910. URL: http://doi.acm.org/10.1145/3024906.3024910.

[26] Matúš Sulír et al. "Sharing developers' mental models through source code annotations". In: *2015 Federated Conference on Computer Science and Information Systems (FedCSIS)*. IEEE. 2015, pp. 997–1006.

[27] Paul Walcott. "Attitudes of second year computer science undergraduates toward plagiarism". In: *The Caribbean Teaching Scholar* 6.1 (2016).

[28] Eshet Yovav et al. "I did not know its prohibited – academic dishonesty in online courses". In: *Journal of Communication and Computer* 10 (2013), pp. 661–667.