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Paper Report on
Academic Dishonesty in Computer Science
- *Plagiarism and Code Reuse* -

Papers chosen:

- [1] Barrett, Ruth, et al. "Plagiarism prevention is discipline specific: a view from computer science." *Journal for the Enhancement of Learning and Teaching* (2006).
- [2] Fraser, Robert. "Collaboration, collusion and plagiarism in computer science coursework." *Informatics in Education-An International Journal* 13.2 (2014): 179-195.

1. Introduction

This report focuses on “academic dishonesty with respect to assignments in computer science courses” [2]. Computer science is a subject prone to cheating because of the nature of most of the assignments. Many of them have an ideal solution and thus the majority of student submissions will be similar. A lot of students are aware of this and can exploit it with ease. One of the papers chosen takes a close look at collaboration, collusion and plagiarism and tries to define boundaries between them even though they “are difficult to define objectively” [2]. The other offers some guidelines for teachers to follow to help mitigate or discourage dishonesty.

2. Definitions

In this section we will discuss the concepts of collaboration, collusion and plagiarism.

Collaboration - Both collusion and collaboration are group activities where students work together on assignments, but collusion is a group activity that is unpermitted [2]. Many courses permit and even encourage collaboration meaning students discussing ideas together but prohibit students from writing solutions together, which would be considered collusion. Collaboration is considered beneficial for students in the learning process. This active learning technique may be used to fulfill the primary goal of teachers which is for the students to truly understand the material presented [2].

Collusion - It is common for the boundary between collaboration and collusion to be poorly defined or for the students to have a bad understanding of it. It is generally regarded in a “softer light than plagiarism”[2] and many educators tolerate it because the students do actually think and learn during that time.

Plagiarism - Plagiarism is the “act of copying someone else's work whether or not the original author is aware of the act” [2]. This is a problem particularly in computer science where a solution can be obtained with a simple copy and paste. In universities, plagiarism is considered a great offense and institutions go to great lengths to highlight the severity of the penalties involved.

3. Mitigating Dishonesty

In this section how to mitigate academic dishonest practices especially collusion as it is the most common one.

- a. Detection and Discipline [2] - One of the significant challenges for mitigating academic dishonesty is detection. It is believed that high rates of detection and prosecution will deter cheaters. If students believe that cheating is commonplace, then they are more likely to cheat

themselves, as they feel that this creates a level playing field. Conduct a session in which you demonstrate the effectiveness of electronic plagiarism detectors.

b. Knowledge [2][1]

Students who are more comfortable with course material are less likely to cheat. Students may be tempted to plagiarize or to collude with others because they don't know how to start the assignment. Students are more likely to cheat if they have left the work to the last minute. Use tutorials to help students get to the point where they can tackle the pass level part of the assignment. Allow students to work in 'optional pairs' which allows students to work collaboratively or to choose to work alone.

Quizzes [2][1] - To ensure that students are putting thought into their assignments, the instructor may provide a quiz to the class after each assignment is due (ideally in the class immediately following the assignment deadline) to test their knowledge of the assignment material. To be successful, these quizzes should be fairly easy for someone who dutifully completed the assignment. The intent is that weaker students would be compelled to understand the material during collaboration sessions, since they know that they will be tested on it shortly.

c. Entitlement & Apathy [2]

Students may be inclined to cheat because they feel a sense of entitlement to their grades. Such students may regard paying tuition as a transaction to purchase their grades and degree. One plausible approach is to emphasize that those students who conduct themselves honestly tend to perform better in the course with data.

Battling a sense of apathy is challenging. Some students confess that they cheat because they are simply lazy. A related factor is that students ran out of time because they started the assignment too late. Offer strategies which assist with time management, particularly for first year students.

d. Motivation [2]

Some students who cheat on assignments rationalize their actions by claiming that the assignment is a waste of their time or that they are not motivated to complete the task. To mitigate this, the paper suggests that courses be designed in a way which involves more teacher interactions which results in students believing that the instructor is more concerned with their learning (rather than simply assigning a grade based on their performance).

Intended Learning Outcomes [2] - Educators often feel that the lessons to be learned by course work are obvious. However, it is often the case that students lose sight of these values, particularly as they become pressed for time while juggling the workload. With each lecture and assignment, it is worthwhile to emphasize the intended learning outcomes.

e. Mitigating confusion [2] - Since a lack of understanding with respect to such boundaries is also a leading cause of plagiarism, it is useful to clarify with examples what kind of collaboration is allowed and what not;

f. Assignment scenarios [1]

It is possible to change the scenario, for example from ticket-selling to theater-booking, from a book library to a video library. These will often have a similar data structure and operations to add, delete, change and query the data. These isomorphic systems will look very different to students because, whilst the expert can recognise the patterns, the novice will focus on the surface details.

The assignment can have a unique feature that cannot be copied from previous years (such as 'include a frog as a part of your system'), or one part that is left to the student to devise, such as an added requirement.

The mode of submission can be changed, for example from a report to a poster presentation or the numerical values in questions or asking for a critique of a 'wrong' answer instead of giving the right one.

g. Large nr of students [1]

Give the students some choice. Allow the students to choose a topic and define the assessment criteria quite tightly. Give a range of requirements in the same case study from which the students have to choose;

Include a written element, checked electronically, that asks for personal reflection or evaluation. For example: write about the decisions you had to make in the design process, evaluate the final product against your own criteria;

Assess students' understanding under test conditions. For example a compulsory examination question based on the coursework, a time constrained and supervised practical assessment;

4. Conclusion

To sum up, the differences between collaboration, collusion and plagiarism are subjective in nature. In this report we have summarized some specific guidelines to aid lecturers in designing course assignments that minimize plagiarism and collusion. The intention was to improve rather than change existing practices as the papers recognise that there is a great deal of good practice already currently employed.