

# The Case for "In-Class Only" Laboratory Report Writing

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## Abstract

The ability to copy prior laboratory reports and other documents has allowed plagiarism to flourish in technical education where computers are easily accessible. Institutions harshly punish plagiarism to discourage it, but this is aversive and ineffective. Although instructors are not often willing to assign take-home exams, they allow laboratory reports to be done out of class contributing to the plagiarism problem. Their rationale is that time and computer equipment are not available after the laboratory is completed. The result is that students copy portions of old report text and spreadsheets into their own documents and change the sequence, layout, and font to hide it. This practice is difficult and time consuming to detect. Requiring in-class writing of laboratory reports as practical laboratory tests would prevent plagiarism. A usable technique is requiring data taking and calculator analysis only during class time. Computer analysis could be done later as a course requirement but not graded. For a midterm and final exam, students would be scheduled on the available computers for a practical test during which a formal laboratory report would be produced. This procedure would require students to understand the experiment, operate the computer and the software, create good written communications, and enter the text by typing. Because students could not avoid the above processes, they would, hopefully, learn them. An in-class setting would not allow them to use the talents of others for their benefit.

## Introduction

It recently came to the attention of this writer that some laboratory reports have been placed on the local market at a fair price by enterprising students who have completed the course. This form of cheating, plagiarism, is not in the best interest of a student's education and severe punishment can occur. It must be easy for students to follow this path of low resistance because many institutions carefully define plagiarism and provide harsh penalties for those who are caught [1], [2], [3], [4], [5], [6], [7]. Unfortunately, detecting "good" plagiarism is difficult and time consuming for instructors. Consequently, too few students get caught and thus reap the rewards. To discourage it, universities often severely punish plagiarism with a maximum penalty of

dismissal from the university [1], [2], [5], [7]. In other institutions, a plagiarism infraction results in an F or zero for the assignment [3], [4], [6]. First offense leniency may be appropriate because plagiarism in the form of paraphrasing is often accepted in secondary schools [3]. However, this first offense should not apply to copying another student's laboratory report. For two or more students working as a laboratory team, plagiarism rules must be made clear by the instructor and students should be encouraged to speak with the instructor about possible plagiarism before the work is submitted for a grade [5], [6]. Because plagiarism can be complex, some institutions use several pages of text with examples to define plagiarism [2], [3], [7].

## Laboratory Report Plagiarism

It has been the experience of this writer that few faculty assign "take-home" examinations because a student may obtain help from others to solve the test problems. To thwart copying of an adjacent student's work during an in-class test, instructors often create two forms of the test with different questions. Although faculty are careful with tests, they usually allow laboratory reports to be done out of class where computer copying is easy. According to an informal faculty survey at the University of Southern Mississippi, the reason for this practice is that class time for report writing is not available after the experiment is completed. Secondly, if computer analysis is required, the computers are not available during the class time.

The reasons that students copy laboratory reports can be logically deduced as follows: Plagiarizing laboratory reports, particularly spreadsheets, is usually not caused by the student misunderstanding the laboratory experiment. The laboratory reports are generally not similar to test questions in which the right answer must be found. Laboratory reports are an exercise in written, mathematical and graphical communication of a known procedure and result. Thus, students do not appear to copy laboratory reports due to lack of technical knowledge as they would copy a test answer. It is the writer's opinion that laziness (low frustration tolerance), lack of time, and skill deficiencies in English, word processing, spreadsheeting and, keyboarding, that push students toward copying. It is interesting that

communication with the new super-fast computers relies heavily on the "old qwerty" skill of typing. In a recent class polling, twelve of twenty-eight students or 43% could not type.

If the punishment of laboratory plagiarism is enforced, some students will get caught and suffer often severe consequences. However, others will successfully cheat and be rewarded. If the philosophy of testing were applied to laboratory report writing, suffering would be reduced, cheating would not occur and be rewarded, and more learning would occur.

### Solutions

If the requirement were that all laboratory assignments were to be done in class like tests, plagiarism would be virtually eliminated. Students would have to know the technical aspects of the experiment, be able to create sentences to communicate this knowledge, know the applicable software, and type, at least a little. However, some difficulties would still occur. A problem for most institutions would be a lack of computer facilities that could be supervised by the laboratory instructor during the lab period. A second problem is that students who used different hardware and/or software at home or the dormitory would have to learn the institution's computer system. Copying would still be possible if the floppy disk drives were available to the students. However, disabling the drives by covering them or preventing computer access would be effective. The output would be the printed copy only, no file saving would be used. Students with laptops or portables should not be allowed to use them to avoid use of stored information.

Because the above procedure on all reports is troublesome, a more workable solution is to use a short form for the experiment on which the student notes by hand the procedure, data, calculations, errors, conclusion, etc. These forms would be graded by the instructor for completeness and accuracy. If computer programming, spreadsheeting or other outside work is needed, the results would be required for the laboratory but not graded. This computer work may have been plagiarized but would it not enhance their grade. However, a midterm and final practical in-class exam would be given in which one experiment form would be returned to each student for preparation of a formal report. The advantage of this strategy is that a schedule for the laboratory practical test can be arranged for students to perform on supervised, in-class, computers. Additionally, the playing field would be leveled for students who did not own computers and were not able to spend as much time on the reports as the computer owners.

### Conclusion

Plagiarism is a difficult problem for education because it punishes students, rewards dishonesty, reduces learning, and

consumes instructors' time. Although there are difficulties in administering supervised laboratory report writing, it is probably worth the effort. It can be used for a few experiments which can be counted for a large portion of the grade. Some students may complain that their poor keyboarding skills are a disadvantage in laboratory practical "tests." However, the U.S. Government Occupational Outlook Handbook states "Professionals and managers increasingly do their own word processing rather than submit the work to secretaries and other support staff" [8]. Consequently, even if the ideas are the student's, others should not type on wordprocessors, design spreadsheets, construct programs, or perform any other tasks that the workplace may require. Nevertheless, the time allowed for the laboratory practical "tests" should be sufficiently long to reduce the influence of differing levels of software and keyboarding skills. It should be a "power" test, not a "speed" test. Such "In-Class Only" laboratory reports would greatly reduce the opportunity to cheat, increase the rewards of written communication, software facility, and keyboarding.

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