

IN DEFENSE OF CHEATING

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Preamble:

In a recent issue of *Ubiquity*, Evan Golub examined the implications for cheating of allowing students to use computers during examinations (Golub, E. (2005). PCs in the classroom & open book exams. *Ubiquity*, 6(9). www.acm.org/ubiquity)

I was disturbed by Golub's article because the emphasis was on cheating by students and possible counteractive measures. Never did he ask the more fundamental questions: What is the purpose of an examination; Why do students cheat? Instead, he proposed that faculty become police enforcers, trying to weed out dishonest behavior. I would prefer to turn faculty into educators and mentors, guiding students to use all the resources at their disposal to solve important problems.

Golub takes as a given our current educational methods that test by requiring students to prove that they can regurgitate the information presented in class without assistance from others (although, thankfully, he does allow them to consult books, reference notes, and even internet sources). But in real life, asking others for help is not only permitted, it is encouraged. Why not rethink the entire purpose of our examination system? We should be encouraging students to learn how to use all possible resources to come up with effective answers to important problems. Students should be encouraged to ask others for help, and they should also be taught to give full credit to those others. So, the purpose of this contribution to *Ubiquity* is to offer an alternative approach: to examine the origins of cheating, and by solving the root cause, to simultaneously reduce or eliminate cheating while enhancing learning. (This essay is adapted from an unpublished posting on my website: In defense of cheating, www.jnd.org.)

No, I am not in favor of deception, trickery, fraud, or swindle. What I wish to change are the curricula and examination practices of our school systems that insist on unaided work, arbitrary learning of irrelevant and uninteresting facts. I'd like to move them toward an emphasis on understanding, on knowing how to get to an answer rather than knowing the answer, and on cooperation rather than isolation. Cheating that involves deceit is, of course wrong, but we should exam the school practices that lead to cheating: change the practices, and the deceit will naturally diminish.

Students cheat. There is no way of avoiding this fact. Students hand in homework and project assignments copied from others, or written by

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their parents, or even purchased. Students copy from one another on examinations, and they try to discover advance information about examinations. When cheating involves deceit, trickery, fraud, or swindle it must be prohibited. But the proper solution to the problem is not through prohibition and punishment: it is through examination of the sources. Why do even our best students feel compelled either to cheat, or to help other students, or to watch while others cheat, without taking action? I believe that the root cause of cheating in our school systems lies with inappropriate curricula and examinations. Change the practices and the cheating should naturally diminish.

Consider this: in many ways, the behavior we call cheating in schools is exactly the behavior we desire in the real world. Think about it. What behavior do we call cheating in the school system? Asking others for help, copying answers, copying papers.

Most of these activities are better called "networking" or "cooperative work." In the workplace these behaviors are encouraged and rewarded. Thus, many experts will tell you that their real expertise lies not in *what* they know but rather in *who* they know: that is, expertise is often knowing whom to ask and where to look. When we have problems in the real world, we want answers, no matter the source, which means searching to find someone else who has experienced the same problem, asking others for help, and cooperating.

Cooperative Versus Individual Work

In schools we over-emphasize individual work. Perhaps the only place where individual, isolated work is encouraged and cooperative work punished is in the school systems. In examinations, not only is it prohibited to copy other's work or to ask others for help, but it usually isn't possible to refer to books or, oh my goodness, the Internet. Yet these are all important skills in the world outside of schools. Students should be taught how to work effectively in teams, how to use reference works, how to use the Internet effectively, and especially how to find the significant from the non-significant, to distinguish quality from nonsense.

Our instructional philosophies are short-sighted. This insistence upon unaided, individual work is the result of the long-established policy of grading: each individual is ranked through the assignment of a numerical or letter score that is meant to reflect their mastery of the subject matter. But does it? First of all, are the examinations effective? Do they encourage understanding or do they emphasize the arbitrary recitation of material that is examinable. We know from our own experience, supported by numerous formal studies, that students cram for exams, regurgitate the material at exam time, and seldom retain it afterwards.

How much better to reward procedures for coming up with answers. Emphasize understanding of the issues and knowledge of how to gain insight and resolution. Emphasize cooperation.

Consider plagiarization. The sin of plagiarization is not that it involves copying, but that it doesn't give credit to the originator. Deceit is wrong: it should be avoided. The problem is that the current system of homework and examinations emphasize the individual activity, oftentimes in sterile, meaningless exercises, ones that are easy to grade. Grades have become critical to determining the future of each student, even though they measure only a fraction of a person's ability and potential, and quite often do a poor job even of the aspects they pretend to measure. It is no wonder that students study for the exam, that true understanding and exploration of issues is discouraged if it will detract from time that could be spent studying for the exam. The grading system, moreover, is often on a curve, with a fixed percentage of students receiving each letter grade. This means it is a zero-sum game: a person can only get a higher grade if someone else receives a lower grade.

No wonder the intense competition, no wonder the cramming for exams, no wonder cheating – anything to get ahead. No wonder copying without attribution, for the students feel compelled to lie: the student who finds just the perfect essay and presents it to the instructor receives no credit if the essay was written by someone else. But suppose the student got credit for finding the essay, that the reward was based upon just how relevant and insightful that essay really was? And if both the student who presented the essay and the originator of the essay received credit?

This is a tricky concept. Thus, if one student writes a paper and another simply copies it, no, that's not what we are trying to encourage, not even if full credit is given to the original. The goal is to support cooperative work, where everyone contributes, each according to their abilities, but that those abilities are recorded and become part of the student transcript. In other words, the goal is not to rank order the students by some arbitrary mark of performance measure, which is what grades do, but rather to determine a student's true attributes and skills and to record them accurately. Some students are scholars, others leaders. Some are team players, others not. Some are generalists, others specialists. The goal is accurate characterization. We do not need value judgments among the attributes: society needs all of them.

In a system where copying is punished, the student feels compelled to lie. Suppose that copying were encouraged – honest copying, where the source must be revealed. And suppose that both the copier and the originator of the material were rewarded, the originator for their contribution and the copier for knowing where to seek the information. This would reinforce the correct behaviors, minimize deceit, and encourage cooperativeness.

Take a tip from the "recommendation" sites on the Internet, where contributors are rated on the basis of their effectiveness and usefulness to others. We should grade students on their effectiveness in forming coalitions in organizing groups, and in the nature of their contributions to the group work. Thus, if one person is frequently

copied, that person's stature as a contributor should rise. Similarly, if a person makes no original contribution, but is effective at forming coalitions that solve problems, that person's status as an organizer should rise.

We could change the educational system to make it more relevant to the world, to teach proper social skills, and at the same time eliminate the deceitful, hidden acts of cheating by recognizing cheating for the good that it brings: group activities toward a common end.

Mastery Grading

Today, the grading system fosters a competitive, zero-sum game spirit in which if one student wins, the others lose. I have long been bothered by the system of grading on the curve, forcing students to compete rather than cooperate. I favor grading to absolute standards. Determine what is to be learned and measure how successful each student is in their accomplishments. If every student gets an A, hurrah! It means every student has learned.

If every student gets an A, this does not mean that all students are equal. Not at all: some students can accomplish more than others, and this difference should be noted. But suppose we replace the fixed curriculum and its rigid grading scheme with a new procedure in which different students would do different work and their "grade" would be a list of their accomplishments? Evaluate students on their mastery level: mastery grading. In addition, evaluate them on their ability to work with others, either by being a productive team member, by organizing the team, or by their ability to contribute toward the solution.

Suppose the grading system measured level of accomplishment. Suppose the school curriculum were divided into modules of useful knowledge or skills, each relatively small (a week or two of class, perhaps even a few hours). Each student is mentored, and the module is marked as complete only when the student masters it. In other words, grade on a "Pass" basis. But only use "Pass" – do not use a "Fail" or "Not-Pass" grade. A student either knows the stuff or doesn't, and in the latter case, the student is encouraged to keep learning.

Some modules should be mandatory: some optional. Schools could require that students complete the mandatory modules as well as a specified number of others, perhaps requiring a distribution across disciplines. The major structure of a curriculum need not change. The major point of mastery grading is that evaluation specifies the modules completed rather than today's attempt at measuring the quality of accomplishment of a fixed-length course. A student transcript would list the set of modules completed satisfactorily.

Admission to higher grades or to universities – or even employment – could be based upon what students know. Schools or employers would not look at grade point averages, rather they would judge students by

their particular skills, by their ability to work in teams, and by the set of modules that they have mastered.

Note that changing to modular education with mastery grading also means changing today's system of lock-step education. Today, if students fail at some topic, when they are moved to the next grade, they no longer have exposure to it, even if they wish to. In a modular system, students could study the modules they need or that they are interested in, regardless of grade level.

In the end, the students possess a list of topics that they understand. Some will have completed many modules, some just the minimum required. Some will have modules that reflect a broad range of topics, some more narrow, but deeper knowledge. Instead of arbitrary ranking through grade-point averages, each student is characterized by their accomplishments.

Restructuring the Curriculum

In this essay, I focus upon changes to curriculum and instruction that would change the emphasis in school systems from that of competition to cooperation, from arbitrary grading on the curve to mastery assessment of a student's accomplishments. But these changes are only part of the restructuring required of our educational systems. Many more changes are needed.

We need to get away from the lecture-centered method of teaching. We need to emphasize "learning," not "teaching." Teaching is about the teacher. Learning is about the student. The emphasis should be on doing, on activities – "learning by doing."

Yes, depth of understanding should be encouraged, but this is best nourished when there is true interest and excitement, which often means project-based instruction, where teachers act as mentors and guides to the material. None of this is particularly new: many others have advocated this form of education, starting with John Dewey in the early 1900s. But changes in teaching can not take place without changes in the curriculum and in the way we assess students.

Moreover, these changes are consistent with changes in both Computer Science and Engineering curricula being widely debated. They are consistent with a move toward problem-based instruction, where students work in teams on complex, realistic projects, with the academic material timed to be relevant to the problems being faced on the projects. The goal is to teach the skills of creative problem solving, built upon fundamental principles of the discipline, but where the fundamentals are motivated by demonstrating their relevance to real issues. Our courses can be made more interesting without losing rigor or depth. Make them relevant. Encourage teamwork and cooperation. Remember that when our students encounter problems many years from now, they will not remember the details of what they were taught (assuming those details are even still relevant), but they will remember the fundamentals and the skills.

We need to rethink the curriculum, for today, we try to cram everything we think the student will ever need to know into their heads in a relatively short period. Instead, we need to train curiosity, self-reliance, cooperative skills, and knowledge of how to learn on their own, knowledge that will be of value for the 2/3 of their lives that remain after the completion of formal schooling.

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