

# Astronomy Education Review

Volume 7, Aug 2008 - Jan 2009

Issue 2

## Online Academic Integrity

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Received: 07/02/08, Revised: 08/29/08, Posted: 10/10/08

The Astronomy Education Review, Issue 2, Volume 7:98-102, 2009

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### Abstract

As online instruction increases in popularity, a recurring topic of concern among educators and administrators is maintaining integrity in evaluation of student performance in online courses. Suggestions are presented to encourage academic integrity in online courses, including ways to promote the academic integrity statement or honor code of the school, techniques for designing activities for online astronomy classes, testing online, enlisting new technologies such as digital cameras, and using antiplagiarism software.

## 1. INTRODUCTION

A common concern among online instructors is: How do we know that the online assignment being submitted is the student's own work? A comparable question applies to on-campus courses: How do we know that the on-campus assignment being submitted is the student's own work?

It is conceivable that a student would pay someone else to take an entire on-campus course, write papers, attend lectures, and take tests. This statement applies to online courses as well. Does this mean that we should not offer courses online because of the possibility of cheating? We cannot remove the possibility of cheating completely, just as we cannot remove the possibility of on-campus cheating completely. What we can do is take steps to minimize the potential effects of academic dishonesty.

## 2. SUGGESTIONS

Following are suggestions to help support academic integrity in online courses.

1. *Have the students read the academic integrity statement or honor code for your school.*

You can even make this an assignment at the beginning of the course to have students attest to the fact that they have read the code and agree to abide by it. This lets students know your expectations and gives them a chance to see the repercussions if they chose to cheat, and get caught.

Repercussions can vary in severity, from getting a zero on the assignment to being expelled from the school.

2. *Distribute the points over a number of activities throughout the course.*

Do not base the grade for a course solely on online tests. Discussion or other peer-to-peer communications are important for developing online learning communities that can enhance learning. Points can be awarded for responding to an initial question, and additional points can be awarded for responding to other students' responses to that question. The responses must have more substance than "I agree" or "Good post" because these types of comments do not advance the discussion. Written projects, Web hunts, online homework assignments, and field exercises may also supplement the grading options.

3. *Have the tests proctored.*

a) Having students come to a campus-based testing center is the best way to ensure their identity, but if they live out of state or in another country, it is possible to send the test to a trustworthy individual (such as a professor, teacher, or librarian) to administer. Students must show proof of identity at these testing sites. This can be bothersome to arrange if you have too many of these types of students. Another drawback is the drain on resources for the testing centers. Some departments have online classes that serve hundreds of students. If all the online students went to the testing center at the same time, the center would not have the room or the staff to cover the testing. This problem is solved at some institutions by having individual departments set up their own proctoring areas and staff.

b) If only one or two of the tests are proctored and the identity of the student is verified, those exams could be weighted more heavily to ensure that the final grade accurately reflects the student's knowledge.

4. *If you offer your tests online, use techniques that make it difficult to cheat.*

a) Change your tests each semester or quarter.

This seems obvious. If you use the same test year after year, students will quickly discover this, and the chance of sharing the answers increases, especially for students who live in dorms and in fraternity and sorority houses.

b) Have a time limit on your tests.

There is no way to make students take closed-book tests online. However, you can set the test to close a certain number of minutes after the student begins taking the test, making it difficult for him or her to look up every answer. If your multiple-choice questions are conceptual or computational, students will not be able to just look up the answers or use Google; they will

need to understand the material to answer the question correctly.

c) Ask essay questions.

This will make grading more difficult for you because the computer cannot easily grade essays; however, it allows you to "hear" the student. If a student's discussion postings have all had poor grammar, poor spelling, no punctuation, and slang, and then he or she hands in a beautifully written essay, waxing philosophical about magnetohydrodynamics and offering the mathematics behind Lagrangian points, you might be suspicious. For essay questions, you can provide a list and ask students to answer 3 out of 5, or 4 out of 6. Require that their answers be thorough and use critical reflection to explain what they learned and how they learned it.

d) Write test questions based on homework questions and in-class work.

Write conceptual questions that would make it difficult for students to copy answers obtained from Google searches. You could also ask application questions about a concept. Scott Hildreth, an astronomy and physics instructor from Chabot College in California, has been teaching online for over 13 years. He explained, "I ask a standard essay question about how spectra are created, and what each type indicates about the state of matter that gives rise to that spectrum. To answer this, they can cut and paste something on continuous, emission, and absorption spectra easily. But then I ask students to analyze a follow-up situation and explain it in light of their answer: Given observations of gas around a star in the Orion Nebula, and the Nebula material itself, what type of spectra would be collected looking at the star itself, at the gas around the star, the dust around the star, and the gas far away from the star? It is interesting to see how many people can find a pat answer to what types of spectra exist, but who can't apply that information to a real situation."

e) Have the testing software randomize the order of questions for each student.

f) If you can, have the testing software randomize the values for each computational question for each student.

This is a great feature for online homework questions. The *Mastering* series of homework and tutorial software, including *Mastering Physics* and *Mastering Astronomy*, offers this capability. It is advantageous to encourage students to work together in groups to help each other understand their homework; however, this makes it easy for some students in the on-campus class to copy the material and get perfect homework scores without understanding the content. These students then fail the tests miserably. If the values of the answers are randomized for each student, he or she must understand how to calculate his or her own homework problem even though the students may work on problems together. This strategy considerably lessens the copying of homework answers.

Note: If you use an online homework service, make sure that students who have dropped the course are not still turning in homework. Students might get a code from a previous classmate and use that as the "sacrificial" account to go through and get the answers to apply to their own accounts. To avoid this, be sure to delete from the online homework courseroom the students who have withdrawn.

In addition, most testing systems see how long each student took to answer each question. If it took most students an hour to take a test and one student took it in three minutes, you might be suspicious.

g) If students are using Blackboard and their Internet connection is severed, the quiz is locked and needs to be reset by the instructor. Students have seen the questions and can complete the quiz at their leisure. If you are aware of this, you can keep track of repeat offenders.

5. *Use photographic evidence.*

Require an inexpensive digital camera and the ability to send photographs. Have students write their field exercises or astronomical observations with pencil and paper, sign and date them, and either scan the papers or take a digital photo and upload the images. Many students have a camera built into their cell phones or webcams in their computers. If you make a digital camera a requirement for the course, students can often get financial aid to cover the cost.

6. *Realize that relationships exist between some students.*

Sometimes, husband/wife, mother/son, father/daughter, and roommate teams take an online class together. The advantage for them is that they can share a textbook and the additional resources such as study guides and videos; however, they each need their own accounts for the course and any accompanying sites (*Mastering Astronomy*, publishers' Web sites, or plagiarism-checking sites). The disadvantage for the instructor is that he or she must be extra vigilant about academic integrity.

You may want to go so far as to let these couples or groups know your expectations. You can say in a personal e-mail at the beginning of the course, "I encourage you to work together on the homework because that will help you understand it better, but the discussions, the written material, and your tests should be your own work." If they have the same last name, their scores are likely to be next to each other in the grade book. You can see if they are missing the exact same questions, and you can compare their essay question answers.

7. *Use antiplagiarism software.*

If you assign written essays or research papers, you should have a written guide to help students avoid plagiarism. Many undergraduates believe that copying and pasting from a Web site is not plagiarism, but "doing research." You should let the students know your thoughts on Wikipedia up front; most students will use a search engine, and Wikipedia entries will likely be among the first hits. Stress that you want answers "in their own words," and give them lots of resources on how to properly quote and cite a source. If your college or university has online writing center resources, link to those.

If you are afraid of students buying papers online or using someone else's paper, you can use antiplagiarism software available from <http://www.turnitin.com> or <http://www.safeassign.com> (formerly known as MyDropBox) by Blackboard, or simply type some key phrases into <http://www.Google.com>.

An even better alternative is to let the students themselves turn in their papers to these sites. That way, they know that you are serious about plagiarism, and they can see the results. This also removes the suggestion that you distrust the students and replaces it with the perspective of wanting to help them check their citations and sources. SafeAssign works well because it checks Web sites and puts information that has been copied and pasted from different Web sites in different colors. You can tell students that it allows them to check their citations before they turn in their assignment to you. Check

with your institution to find out what services are available to you.

Your communications department may have resources developed, and it gives you an opportunity to collaborate with instructors in different fields for a more unified college experience for your students. For example, other instructors may require APA style formatting, and if that is what the students learn in their writing classes, it would be beneficial to ask them to use those writing skills in your science class. You may also consult your librarians, because they may know the cutting-edge applications to prevent plagiarism.

The Web site Educause, created by the Board of Regents of the University System of Georgia, presents a chart with the information from several different antiplagiarism software packages (see <http://www.educause.edu/ir/library/pdf/ser07017b.pdf>). For finding further recommendations on curbing academic dishonesty in online classes, Krsak (2007) presented an excellent paper on the topic at the Technology, Colleges & Community (TCC) conference.

## 5. CONCLUSION

As technological advances become more common, so do more sophisticated ways of plagiarizing. However, there are also new advances in antiplagiarism techniques. Cindi Boyd leads an online instructors' group for her college, and she stated, "Some of the potential means of verifying [that] the student is the student during testing that I have heard described at conferences is pretty shocking: thumb prints, sound activated cameras that can rotate, and challenge questions that only the student would know and they only had 30 seconds to respond or the test is stopped."

Scott Hildreth stated, "I like to remind colleagues obsessed with the concern of academic integrity that no amount of safeguards, short of locking students in a room for a term, can eliminate cheating completely. Keeping perspective here is important. We all have students in our classes that might otherwise not be able to get a college education, or might be taking care of a family, or might be overseas in support of our country." Online teaching is growing rapidly, and institutions must adapt or their students will find other alternatives. As concerned educators, it is our duty to provide quality education, either online or in the classroom, with as much integrity as we can offer.

### Acknowledgments

Thanks to Scott Hildreth from Chabot College, Megan Donahue and Jeffrey Bennett from the University of Colorado, Beth Hufnagel from Anne Arundel Community College, and Cindi Boyd from Hawkeye Community College for sharing their comments on this subject. Thanks also to Andrew Fraknoi for suggesting the article.

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