Plagiarism is not new. However, the May 10, 2001, headline “U of Virginia Hit by Scandal over Cheating” on the front page of the *New York Times* rekindled debates on the topic of cheating. The following day the *Chronicle of Higher Education* carried an article titled “Cheating Is Up at Amherst College, Data Suggest.” And a few days later *USA Today* ran an editorial, “Cheating Thrives on Campus, As Officials Turn Their Heads.”
In most states, it is illegal to sell papers that will be turned in as student work. There is no current estimate of the number of sites, although some lists of Internet paper mills or term paper submission groups (<http://www.coastal.edu/library/mills.html>) exist. These sites attract secondary school students as well as college and university students. They are not exclusive to the United States. The growing number of term paper mill sites on the Web attest to their popularity among students.

- At term paper mills, students can directly purchase pre-written papers. Some sites offer free services or make money through advertising. Others act as an exchange—a student must submit a paper to get a free paper. Some sites charge a fee, ranging from about $5 to $10 per page. Students may add an additional fee for immediate e-mail delivery (e.g., $15). Other sites will write a customized paper for a much higher fee.

In most states, it is illegal to sell papers that will be turned in as student work. Thus a growing number of term paper mill sites on the Web are likely adding to the growing problem of plagiarism. For example, a neurobiology professor at the University of California–Berkeley found that 45 of 320 students in his class had plagiarized at least part of their term paper from the Internet. Nearly 50 percent of his students plagiarized even after they had been warned that he would use anti-plagiarism technology.

A recent survey commissioned by Knowledge Ventures, an education technology company, more than 90 percent of academic administrators and faculty interviewed said that academic integrity is an issue on their campus. More than 80 percent said they had cheated on class assignments.

The amount of cheating appears to be increasing. For example, at medium-to-large universities, the percentage of students who said they collaborated on assignments even though it was not permitted increased from 11 percent in a 1965 survey to 49 percent in 1999. For thirty-one small-to-medium institutions, unpermitted collaboration increased from 30 percent to 58 percent between 1992 and 1997.

Furthermore, the ease with which information can be copied from the Web and the emergence of term paper vendors or mills on the Internet are likely adding to the growing problem of plagiarism. For example, a neurobiology professor at the University of California–Berkeley found that 45 of 320 students in his class had plagiarized at least part of their term paper from the Internet. Nearly 50 percent of his students plagiarized even after they had been warned that he would use anti-plagiarism technology.

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days, depending on the length of the text and the level of demand.

Turnitin.com was designed to provide users with a simple process for submitting papers for a plagiarism test. A user completes a short form to submit the paper. The user identifies the institution, department, course, name, and ID number. Then the user may submit the paper for testing by pasting a text-only document onto the Web page.

The company has developed a four-tier pricing structure: an individual instructor can opt for a plan that provides 100 originality reports for $100 per semester. A department with no more than 50 classes can choose a plan that provides 500 originality reports for $650 per semester. A small institution with no more than 170 classes per semester can get 3,000 originality reports for $1,750 per semester. Finally, a large institution can receive an unlimited number of originality reports for $4,000 per semester.

Another vendor is EVE2 (Essay Verification Engine), anti-plagiarism software that instructors may license for a one-time fee and download to their hard drives. A user may submit a paper in .txt form, and the software will search the Internet, including term paper mills, for results. Although the software is targeted at all educational levels, most users seem to be high school teachers.

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As noted, an instructor must convert papers to .txt format and submit the text to the software (which has been downloaded to his or her hard drive). EVE2 then examines the papers and makes a large number of searches of the Internet to locate “suspect” sites. Once suspect sites have been located, EVE2 visits all of these sites to determine if they contain work that matches the paper in question. Searches require fifteen minutes to two hours for processing. This time is in part linked to the power of the user’s hard drive. Once the search is complete, the instructor is given a full report on each paper that contained suspected plagiarism, including the percentage of the paper plagiarized, an annotated copy of the paper showing all plagiarism highlighted in red, and links to the plagiarized sites. The report does not distinguish which sentences have been plagiarized from which sites. There is a fifteen-day free trial of the software, after which time a customer may purchase a license to the software for $19.99.

New companies are planning to enter this market as well. One is Knowledge Ventures, headquartered in Boston, which undertook portions of the research for this article. Knowledge Ventures is developing a suite of tools and middleware components for use in text-to-text matching applications. CiteMaster, the first application to incorporate these tools, will use supercomputer processing power to compare submitted text documents against the content of a proprietary academic database of textbooks, journals, Web content, and student-submitted papers. Through the use of customized algorithms and a parallel-processing platform, CiteMaster should be able to detect both verbatim and inexact text matches and to return results in real time. For each student-submitted paper, a dynamically generated “report” will be returned to a Web browser, including an HTML reconstruction of the original query document and relevant statistical information about the matches found. Matching or “suspect” sentences will be clearly identified in the text, with their proper citations listed accordingly. CiteMaster is in the early stages of development, however, and is not yet commercially available.

Lastly, other vendors focus on the fact that patterns of words in documents can be used for more than detecting plagiarism.
However, not all plagiarism can be attributed to the increased use of the Internet. In a study of 4,500 students from twenty-five high schools, 54 percent had used the Internet to plagiarize. But the research also showed that the majority of those cheating would have plagiarized without the Internet. Only 6 percent of those who submitted plagiarized work had relied solely on the Internet.

As technology continues to change, so do the options for cheating. Information may be stored on calculators, for example, and e-mails can be sent via palm-held devices. Will plagiarism increase as today’s high school students enter college? If existing attitudes are an indicator, it might. In a survey by Who’s Who among American High School Students, 84 percent of students said cheating was common in their high schools. According to studies by Donald McCabe, less than half of the students surveyed felt that copying a few sentences without a citation was wrong. In addition, 22 percent of students in the study turned in an assignment done by their parents. Another poll found that 66 percent of students said that cheating “didn’t seem like a big deal.” Sixty-six percent of their parents agreed. In addition, in focus groups involving high school students, many agreed with the following statement: “Many of our teachers are clueless when it comes to the Internet, the material you can find on the Internet is of sufficient quality to submit on your assignments, and paper topics are usually so broad that your teachers are not at all likely to recognize a source you might use.”

Although the anti-plagiarism tools currently available can search for instances of suspected plagiarism, this plagiarism-screening approach is not always integrated with other activities, such as the discussion of ethics and overall academic integrity. Identifying instances of suspected plagiarism without providing a more developmental remedy may not provide a long-term solution. For example, a major factor determining whether or not a student will cheat is the academic culture of the specific institution that he or she attends. At the fewer than one hundred institutions with robust academic honor codes in place— institutions where students pledge not to cheat and where they play a major role in the judicial process—significantly fewer incidents of cheating occur. Size of the institution does not seem to matter. Recent evidence shows that cheating can be reduced, even on large campuses, with strong honor codes and a focus on academic integrity. When students are frequently reminded that their institution places a high value on academic integrity, and when this value is reinforced by the campus community, the incidence of cheating is lower.
Campuses have responded to the academic integrity issue by taking the following actions:

- Increasing the emphasis on the institution’s honor code. This may include requiring that freshmen sign the honor code or discussing the issue with students. One university gives all incoming students a CD-ROM that provides an overview of intellectual property and copyright issues.

- Forming student groups to monitor and promote the honor code. A handful of institutions have created student groups that are responsible for promoting academic integrity on campus. These groups may make presentations about the importance of academic integrity to students, for example, or may convene workshops about academic integrity.

- Rewriting student guidelines. Many campuses have rewritten student guidelines to emphasize academic integrity.

- Establishing an academic integrity office. Some campuses have formed offices of academic integrity. These offices may provide an annual review of the status of academic integrity on campus, develop a forum to address issues of academic integrity, and/or oversee a faculty-student council designed to resolve incidences of academic dishonesty as they arise.

- Convening faculty workshops aimed at more effectively addressing the issue in classrooms. Faculty may be unaware of the growth of academic dishonesty on campus or of specific techniques that can be used to combat this issue. Many campuses have convened workshops and lectures specifically designed to teach faculty how to identify and deal with academic dishonesty.

- Utilizing technology-based tools. Some campuses use these tools to find and verify suspected cases of plagiarism.

It is not just cheating by students that appears to be on the rise today. The pressures and opportunities for dishonest behavior are increasing in many academic and professional contexts, ranging from using term paper mills to falsifying credentials to fabricating research results. Academic integrity is a fundamental tenet for higher education. Both higher education and society benefit when college and university integrity standards provide a lifelong foundation. Although technology tools have a role to play in this mission, higher education must find the solution to academic integrity problems through an integration of technology, policies, and personal interaction. C

**Notes**

9. This survey was conducted in February 2001 by PrincetonSurvey/TaylorCoopers on behalf of Knowledge Ventures.
22. Ibid.

This piece is adapted from a sample research bulletin produced for the new EDUCAUSE Center for Applied Research (ECAR). For more information about ECAR, visit http://www.educause.edu/ecar/.