

Mitigating Academic Dishonesty in Online Testing

An annotated bibliography, curated by Chris Heard, Pepperdine University

What's Here: An annotated bibliography of empirical research on online cheating (mainly on tests/quizzes/exams) and the effect of proctoring.

What's Not Here: Advice articles, how-to guides (these may be mentioned under “Related sources” but are not annotated extensively).

What's New Here: See the version history at the end of the document to quickly find the latest additions.

Key sources

Alessio, H.M., Malay, N., Maurer, K. Bailer, A.J., & Rubin, B. (2018). Interaction of proctoring and student major on online test performance. *Educational Review of Research in Open and Distributed Learning*, 19(5), 165–185. [DOI: 10.19173/irrodl.v19i5.3698](https://doi.org/10.19173/irrodl.v19i5.3698)

Administered quizzes mostly testing memorization of vocabulary terms (p. 178–179) under proctored and unproctored conditions. Inferred cheating rates from longer time taken and higher scores on unproctored quizzes: “Results showed that the unproctored quiz scores tended to be higher with longer time taken for most sections compared with proctored quiz scores. Since these results happened both across and within sections, together, these two findings suggest that when not proctored, students may spend extra time looking up answers using resources that were not allowed during the test” (p. 176–177). The authors caution that “the results may not be generalized to more broad-based courses that incorporate theory, calculations, and subjective type questions” (p. 178–179).

Alessio, H.M., Malay, N., Maurer, K. Bailer, A.J., & Rubin, B. (2017). Examining the effect of proctoring on online test scores. *Online Learning*, 21(1). [DOI: 10.24059/olj.v21i1.885](https://doi.org/10.24059/olj.v21i1.885)

Administered quizzes mostly testing memorization of vocabulary terms (12) across nine sections of a course under proctored, unproctored, and unproctored/lockdown conditions. Inferred cheating rates from longer time taken and higher scores on unproctored quizzes: “We see that there are noticeable differences in proctored and unproctored exams, primarily that proctored exams seem to have lower scores and take a larger percentage of allotted time. The average tests scores for proctored tests was 74.3% (SD=12.3) and 89.4% (SD=9.0) for unproctored tests. The average percentage of allotted time taken on proctored tests was 20.4% (SD=13.9) and unproctored tests was 41.2% (SD=14.1); ... unproctored tests with lockdown only (no video monitor) had an average score of 93.2% (SD=5.9) and took an average of 40.0% (SD=10.1) of the time allotted” (6). “These findings are consistent with the suspicion that

academic dishonesty, in the form of students searching through prohibited reference materials during the test, is more prevalent on unproctored exams” (p. 10). “The current study did not assess cheating behavior. Instead, it compared test scores when students used proctoring software with those that were unproctored. Disparate test grades imply that cheating likely occurred when student tests were unproctored, especially given the large and statistically significant grade difference of 17 points” (12). The authors caution that “it is not clear that the size of the effect would be as large with courses that do not involve timed, closed-ended tests” (p. 12).

Beck, V. (2014). Testing a model to predict online cheating—Much ado about nothing. *Active Learning in Higher Education*, 15(1), 65–75. DOI: [10.1177/1469787413514646](https://doi.org/10.1177/1469787413514646)

Analyzed student examination scores “from three sections of the same courses, taught during the spring 2012 semester, by the same instructor [who is also the investigator]. There was one online section with unmonitored examinations (N = 19), one online hybrid section with monitored examinations (N = 21), and one F2F section with monitored examinations (N = 60)” (69). In the hybrid course, examinations were monitored F2F, *not* using online proctoring. Monitored examinations employed Scantron. Although online tests were not proctored, “online students were warned not to engage in academic dishonesty. As an additional deterrent to academic dishonesty, a message is posted on the online course site advising students that much of what they do online can be viewed by the instructor” (p. 70). T-tests revealed “no significant differences in examination scores between groups of monitored and unmonitored testing for the mid-term examination ... or the final examination. In fact, the differences in the averages ... are so small that they can be measured in tenths of a point” (p. 70). Additional analyses found student GPA to be “the only substantive explanatory variable” (p. 71), with GPA “explain[ing] a greater degree of variation for online, unmonitored testing when compared to the monitored testing in the hybrid and F2F courses” (p. 72).

Charlesworth, P., Charlesworth, D.D., & Vician, C. (2006). *Journal of Chemical Education*, 83(9), 1368–1375.

The investigators surveyed 178 first-year college students at a small, public midwestern university. In open-ended questions, the investigators asked students their definitions of cheating and why students cheat. 50% of respondents said that presenting someone else’s work as one’s own (plagiarism, copying test answers without permission) is cheating, 25% said that collaborating to give another student answers instead of helping them understand the material is cheating, and 25% said that breaking course or institutional rules is cheating. As to why students cheat, the respondents cited laziness (31%), desire for good grades (26%), competition or other forms of pressure to achieve (21%), lack of knowledge or preparedness (16%), and simply taking advantage of the opportunity (6%). For both sets of responses, the percentages reported by the investigators sum up to 100%, implying that the investigators coded each student’s response into only one category; the article does not make this clear.

Students also responded to a series of questions about the impact of online testing on cheating behaviors. 68% of respondents said they would never cheat in a class. 19% said they found it acceptable to cheat “a little.” 45% agreed that online testing would increase the incidence of cheating; 30% neither agreed nor disagreed, and 25% disagreed. 71% disagreed that providing the opportunity to cheat would automatically lead to cheating, but only 47% agreed that removing the need to cheat would automatically eliminate cheating. Only 8% said that

online testing increased their own likelihood to cheat; 27% said that online cheating is without risk; and 63% said that online testing removed their need to cheat. 62% of respondents said they had contemplated cheating at least once, but only 38% said they had actually cheated on written assignments and only 17% admitted to actually cheating on online assignments.

Students with cumulative GPAs of 2.4–3.0 were statistically significantly more likely to cheat than other groups. No other demographic variables showed statistically significant relationships with likelihood to cheat.

Corrigan-Gibbs, H., Gupta, N., Northcutt, C., Cutrell, E., & Thies, W. (2015). Deterring cheating in online environments. *ACM Transactions on Human-Computer Interaction*, 22(6), 1–23. DOI: [10.1145/2810239](https://doi.org/10.1145/2810239)

Tested the efficacy of an honor code versus a warning in mitigating cheating on an online exam. Citing research indicating that honor codes deter cheating “by making cheating more harmful to one’s self-concept,” the authors conjecture that “it may be less harmful to one’s self-concept to violate a ‘digital’ honor code, signed on a computer, than it is to violate an in-person honor code, signed on paper in a classroom” (p. 6). The investigators administered the same exam under three conditions: a control group with no special mitigation, an honor code (“I promise not to visit other websites or take help from other people during the exam”) that students were to retype into a box, and a warning that spelled out consequences for cheating with an affirmation that students were to retype into a box (“I understand the consequences of visiting other websites or taking help from other people during the exam”). Afterward, they examined free-response questions for plagiarism, including plagiarism from a “honey pot” website that they set up to attract cheaters who were searching the internet for exam answers. By these measures, in the first (August 2014) iteration, 34.4% of the control group cheated, 25.5% of the honor code group cheated, and 15.5% of the warning group cheated; here only the difference between the control group and the warning group is statistically significant ($p < 0.001$). In the second (February 2015) iteration, 26.2% of the control group, 26.5% of the honor code group, and 12.9% of the warning group cheated; the difference between the control group and the warning group was statistically significant at the $p < 0.1$ level but not the $p < 0.05$ level. The investigators conclude that “displaying a pretask warning that focused users on potential negative outcomes of dishonesty deterred cheating ... typically reducing the rate of cheating by about 50% from the baseline. Further, we replicated previous findings, showing that priming participants with an honor code (instead of a warning) had no significant effect” (p. 20).

Fask, A., Englander, F., & Wang, Z. (2014). Do online exams facilitate cheating? An experiment designed to separate possible cheating from the effect of the online test taking environment. *Journal of Academic Ethics*, 12(2), 101–112. DOI: [10.1007/s10805-014-9207-1](https://doi.org/10.1007/s10805-014-9207-1)

The investigators sought “to separate the effects of environment from cheating” in comparing online and onsite assessments. For two sections of the same course, the investigators randomly selected one section to take an online, unproctored, ungraded practice test three days before the final exam, while the other section took their practice test onsite. The actual final examination was administered using the same modality as the practice test. The difference in final exam modality was the only significant difference between the two sections. The investigators assumed (their word, p. 106) that the low-stakes practice test would be relatively free of cheating, and therefore (a) differences in scores between online and onsite practice tests

should indicate environmental effects, and (b) after controlling for those effects, differences in scores between online and onsite actual tests should indicate the presence or absence of cheating. The investigators found online exam scores to be significantly lower than onsite scores for the practice test, suggesting that “students taking an exam in an online environment do face a disadvantage relative to other students in a traditional, proctored environment because of the absence of a proctor to provide clarifications to questions on the exam, the possibility of greater distractions in the ambient environment and possible problems with the students’ computers or the connectivity of those computers” (p. 107). The investigators found online exam scores to be significantly higher than onsite scores for the actual test, suggesting that “this extraordinary change in the online test scores from adversely affecting performance on the practice final exam to bolstering performance on the actual final exam is likely the result of cheating in the online class” (p. 109).

Grijalva, T.C., & Kerkvliet, J. (2006). Academic honesty and online courses. *College Student Journal*, 40(1), 180–185.

Focusing on single classes and using a randomized response method to protect student anonymity, the investigators found that about 3% of students ($N = 796$) admitted to cheating in any given course. “Our estimate of online cheating of 3% suggests that cheating in the online setting is not quantitatively different from the level of cheating in the traditional classroom” (p. 184). These data do not disaggregate cheating on a test from other forms of cheating, such as plagiarism on a paper; “cheating” was defined as “us[ing] unauthorized help to complete homework assignments, papers, or exams for this course” (p. 183). For a comparable figure of 3% cheating in a single onsite class, the investigators cite Karlins, Michaels, and Podlogar (1988), but that study was specific to plagiarism on a paper, not to testing.

Harmon, O., & Lambrinos, J. (2008). Are online exams an invitation to cheat? *Journal of Economic Education*, 39(2), 116–125. <https://www.jstor.org/stable/43608736>

The investigators used data from students enrolled in two iterations of the same online course ($N_1 = 24$, $N_2 = 38$) to “estimate a model that predicts exam scores from independent variables of student characteristics” (p. 116). The courses featured three exams consisting of 20 multiple choice items drawn from a pool of 100 such items; each exam contributed 18% of a student’s semester grade. The final exam included 30 multiple choice items and contributed 28% of a student’s semester grade. For the first iteration, all exams were proctored; for the second iteration, the three smaller exams were unproctored and the final exam was proctored. The predictive model used the students’ cumulative GPA, age, academic major, and college grade level (sophomore, junior, senior) to quantify the students’ “human capital.” The investigators “assumed that the more human capital variables worked to explain test scores [as indicated by a high R^2 statistic], the more the likelihood that the test scores reflected the student’s own ability. ... Cheating should serve to weaken this correlation, resulting in a low R -squared statistic” (p. 121). For the first iteration of the course (all exams unproctored), R^2 averaged 2.8% (for the final alone $R^2 = 0.08\%$); for the second iteration of the course, R^2 for the three unproctored exams averaged 14.8% and R^2 for the proctored final was 49.72% (Table 3, p. 122 and discussion, p. 123). As another test, the investigators used the proctored exam to predict scores on the unproctored exam; using this method, three students (out of $N_1 = 24$) had lower-than-expected scores (that is, more than two standard errors below the predicted score) and five had

higher-than-expected scores (p. 123). The investigators “concluded that cheating took place because the comparison of the *R*-squared statistics revealed that the human capital variables did not explain nearly as much of the variation in test scores in the unproctored format as they did in the proctored format” (p. 123).

Jones, I.S., Blankenship, D., & Hollier, G. (2003). Am I cheating? An analysis of online student perceptions of their behaviors and attitudes. *Proceedings of the American Society of Business and Behavioral Sciences*, 20(1), 59–69.

Surveyed students “at a mid-size southern Hispanic Serving Institution ... enrolled in junior and senior level Paralegal or Business online courses during the spring, summer and fall 2012 semesters” (p. 62). Respondents were enrolled in classes where at least 80% of the content was delivered online. The investigators adapted the instrument used by McCabe *et al.*, eliminating questions inapplicable to online courses. Results (Table 2, pp. 63–64) specific to online examinations (items 1–12) showed that 69.6% of these respondents had used their textbooks during online exams at least once, and 63.4% had consulted their own or shared class notes. Only 29.9% admitted to searching internet resources for answers during online tests, and less than 25% admitted to each of the other behaviors—including, perhaps surprisingly, swapping answers with other students via texting (0.05%).

The investigators also asked students about their attitudes toward these behaviors. Not surprisingly, students’ attitudes mirrored their self-reported behaviors. Behaviors that instructors might consider cheating but students consider to be not cheating, or only trivial cheating, include consulting the textbook during an online exam (76.9%), consulting notes during an exam (75.8%), going over the allotted time (58.2%), consulting non-textbook print resources during an exam (56.6%), consulting online sources during an exam (41.2%), and saving an exam for future use (36.3%). For the other behaviors tested, fewer than 21% of respondents considered them not cheating or trivial cheating. Two results were polarized: 33.0% of students said using non-textbook print resources was not cheating, while 27.5% consider it serious cheating, and 34.6% of students said going over the allotted time was not cheating, while 25.8% consider it serious cheating. Most of the other behaviors had a clear “slant” toward cheating or not cheating.

The authors recommend honor codes, including course-level honor codes if the institution lacks one, but this advice seems to derive from the literature review, not the study results. With respect to the study results, the authors highlight the potential discrepancies between faculty and student definitions of cheating, and “recommend that additional information be included in the syllabus to clarify faculty expectations of academic behavior” (p. 66).

Kennedy, K., Nowak, S., Raghuraman, R., Thomas, J., & Davis, S.F. (2000). Academic dishonesty and distance learning: student and faculty views. *College Student Journal*, 34(2), 309–314.

Students (*N* = 172 at a single institution) answered a survey. Questions included “whether the respondent had cheated at least once, the frequency of cheating, and whether the person had been caught cheating in high school (Question 1) and college (Question 2).” Students were also asked “whether the respondent felt cheating improves a person’s exam score (Question 3),” “whether the respondent felt it would be easier to cheat in an electronic class (Question 5),” and “what methods the respondent would use to cheat in an electronic class (Question 6).” (By “electronic class” the investigators mean technology-mediated distance learning.) Faculty

respondents (*N* not given?) were also asked similar questions. 64% of faculty and 57% of students “felt it would be easier to cheat in the electronic classes.” Students who had taken online classes were more likely to say that cheating is easier in online classes. The investigators suggest that “Because both students and faculty believe it is easier to cheat in a distance learning class, the present results suggest that as the number of distance learning classes increases so will academic dishonesty.” However, the study did not ask students whether they were personally more likely to cheat in a distance-learning class, only whether it was easier to do so. Moreover, the conclusion is banal: if students will cheat in *any* classes, then increasing the number of classes increases the net opportunities to cheat regardless of modality.

King, C.G., Guyette, R.W., Jr., & Piotrowski, C. (2009). Online exams and cheating: An empirical analysis of business students’ views. *Journal of Educators Online*, 6(6), 1–11. DOI: [10.9743/jeo.2009.1.1](https://doi.org/10.9743/jeo.2009.1.1)

Surveys of students, using a five-item scale from “very inappropriate” to “very appropriate,” show that students widely agree that certain types of behavior (like having someone else take one’s exam or obtaining an advance copy of an exam from another student) are inappropriate under all conditions. For other types of behavior, however (such as consulting a textbook or personal notes during an exam) vary widely depending on the teacher’s instructions. For example, 71% of respondents said it was very inappropriate to consult a textbook during an exam if the teacher had instructed students not to do so, but only 7% said it was inappropriate when the teacher had given no such instructions. The investigators conclude that “it is critical to clearly spell out the academic standards regarding what constitutes cheating” (p. 7). Other survey items revealed that students broadly perceive cheating to be easier on online exams than on onsite exams, and that students are more likely to cheat on online exams than on onsite exams.

Ladyshevsky, R.K. (2015). Post-graduate student performance in ‘supervised in-class’ vs. ‘unsupervised online’ multiple choice tests: Implications for cheating and test security. *Assessment & Evaluation in Higher Education*, 40(7), 833–897. DOI: [10.1080/02602938.2014.956683](https://doi.org/10.1080/02602938.2014.956683)

250 post-graduate students in a management and leadership course complete a multiple-choice test either on paper in class or online outside of class. “Each multiple choice question had a short-case scenario with four options which required students to demonstrate some critical thinking as the answer had to be applied to a business scenario” (p. 890). A pilot test was run to test each question for an appropriate level of difficulty. The test was worth 25% of the course grade. The paper version was proctored in a classroom, included 50 questions and had a 130-minute time limit. The online version, delivered via Blackboard, was unproctored, drew 25 questions from a pool of 50, had a 75-minute time limit, and did not allow backtracking. The paper version was given four times and the online version five times. The results “add support to other studies that claim to have found no significant differences in test scores between supervised in-class tests and comparable unsupervised online tests” (p. 893). The ninth test score was significantly *lower* than the other eight, and thus not indicative of cheating. The investigators speculate that the post-graduate students in the sample may be less prone to cheat overall than younger undergraduate students. The authors also credit the test design (mini-case studies requiring application, correct answers not revealed, random selection from a question pool, time

limits, no backtracking, plus a culture of academic integrity at the institution) with mitigating cheating. The authors also speculate that the ability to backtrack may have contributed to higher scores on the paper-and-pencil tests. The authors admit that environmental factors for which they did not control could confound the results.

Lanier, Mark M. (2007). Academic integrity and distance learning. *Journal of Criminal Justice Education*, 17(2), 244–261.

Collected self-reporting data on cheating ($N = 1,262$ students enrolled in certain courses at a particular institution). The instrument itself is not published in the article, but it can be inferred that two questions asked respondents to rate their frequency of cheating in onsite and online courses as *often*, *sometimes*, *rarely*, or *never*. This scale was then dichotomized into those who reported any cheating and those who report no cheating (p. 249). 41.1% of respondents admitted cheating in online courses (5.8% reported cheating “often”), while only 21.3% admitted to cheating in onsite courses (1% reported cheating “often”). Curiously, Lanier characterizes these results as affirming that “most students cheat,” as if adding the two percentages together—but . If the survey instrument included a definition of cheating or some other means to control for varied student perceptions of what might constitute cheating, the article does not reveal this. The survey questions apparently did not disaggregate various behaviors that the respondents might classify as cheating. The investigators analyzed many demographic variables to see whether any might predict cheating. Lanier offers several possible mitigation strategies, all based on literature review, theorizing, or direct experience; the experimental study as such did not test any of these mitigation strategies. (The statistics in this study are reported in a very confusing fashion.)

McCabe, D.L., Treviño, L.K., & Butterfield, K.D. (2001). Cheating in academic institutions: A decade of research. *Ethics & Behavior*, 11(3), 219–232. [DOI: 10.1207/S15327019EB1103_2](https://doi.org/10.1207/S15327019EB1103_2)

Summarizes the investigators’ own research on onsite academic dishonesty from 1990–2000. Given the time frame, there is no specific attention to online learning, but the body of research cited here is a touchstone for all research on cheating in the 2000s. W.J. Bowers (1964) had found that 39% of student survey respondents admitted to “serious test cheating,” meaning they had on one or more occasions (a) copied another student’s test answers, (b) used crib notes, or (c) helped another student cheat on an exam. In 1993, 64% of students admitted the same in a(n almost) replicative study by McCabe and Treviño. In studies conducted in 1990–1991 and 1995–1996, McCabe and Treviño found that self-reported rates of serious test cheating were significantly lower at colleges with honor codes (or institutional cultures with honor code-like characteristics) than at those lacking such codes. McCabe also found (in a 1993 study) that “faculty at both code and noncode schools are reluctant to report cheating and prefer to handle suspected cases of cheating on their own rather than appeal to institutional policies and procedures,” which makes it “hard to convince students that an ethic of integrity exists on campus” (pp. 225–226). The investigators suggest that “cheating can be most effectively addressed at the institutional level” by “creating an ‘ethical community’ on their campuses—one that includes clear communication of rules and standards, moral socialization of community members, and mutual respect between students and faculty, and one that extends certain privileges to its students (e.g., unproctored exams, self-scheduled exams, etc.)” (p. 228). At the level of individual classes, the investigators “suggest that faculty members can pursue numerous

strategies, including clearly communicating expectations regarding cheating behavior, establishing policies regarding appropriate conduct, and encouraging students to abide by those policies” (p. 229; see Table 3 and Table 4 for specific recommendations).

McNabb, L., & Olmstead, A. (2009). Communities of integrity in online courses: Faculty member beliefs and strategies. *MERLOT Journal of Online Learning and Teaching*, 5(2). http://jolt.merlot.org/vol5no2/mcnabb_0609.htm

76 faculty members who were at the time teaching online courses or had taught online courses in the past responded to a survey about faculty perceptions of cheating in online courses. “Cheating” was defined broadly, and different specific cheating behaviors were not differentiated. Faculty thought it was more likely for undergraduates to cheat (15% said very often, 28% often, 43% occasionally, 11% rarely) than for graduate students to do so (1% very often, 5% often, 62% occasionally, 19% rarely). About half perceived no substantial difference across modalities for students’ opportunities to cheat (51% for undergraduate courses, 56% for graduate courses), students’ likelihood to cheat (57% undergraduate, 64% graduate), faculty members’ ability to detect cheating (49% undergraduate, 47% graduate), the ease of preventing cheating (52% undergraduate, 53% graduate), and the ease with which a community of integrity can be created (50% undergraduate, 58% graduate).

Mirza, N., & Staples, E. (2010). Webcam as a new invigilation method: Students’ comfort and potential for cheating. *Journal of Nursing Education*, 49(2), 116–119. DOI: [10.3928/01484834-20090916-06](https://doi.org/10.3928/01484834-20090916-06)

In a very small ($N = 33$) survey, investigators found that 57.57% (Table 2; reported as “55%” in the text) of respondents thought that webcam monitoring could prevent cheating on online tests. 72.72% (Table 2; reported as “more than 80%” in the text) reported that being monitored via webcam made them uncomfortable.

Raines, D.A., Ricci, P., Brown, S.L., Eggenberger, T., Hindle, T., & Schiff, M. (2011). *Journal of Effective Teaching*, 11(1), 80–89. https://uncw.edu/jet/articles/vol11_1/raines.pdf

Students ($N = 1,028$) taking part in “a larger cross-sectional, non-experimental survey” who were “enrolled in fall 2009 courses on one of the university supported online course platforms” (p. 82) were asked to describe their definitions of cheating. The investigators seem to treat these platforms as “the online environment” without distinguishing explicitly between onsite classes with substantial LMS use (e.g., flipped classes), hybrid classes, and fully online classes. The investigators identified the themes of breaking rules, acting dishonestly, and not doing one’s own work in over 60% of the responses (pp. 83, 86). The investigators report that “a number of respondents noted that there are differences in the ‘rules’ for online and classroom courses” (p. 84), but they only supply two examples and do not characterize these comments further. The authors state that “across all the definitions [of cheating, supplied by the students] was recognition of the unique characteristics of online learning and that there are differences between the expectations in an online and classroom based course” (p. 86). They suggest that “students look to faculty to set the boundaries of acceptable learning behaviors” and that therefore faculty must outline their expectations clearly.

Spaulding, M. (2009). Perceptions of academic honesty in online vs. face-to-face classrooms. *Journal of Interactive Online Learning*, 8(3), 183–198.
<http://www.ncolr.org/jiol/issues/pdf/8.3.1.pdf>

Students in parallel online ($N = 27$) and onsite ($N = 76$) courses completed previously validated Survey of Student Academic Misconduct (Hard *et al.*, 2006). The survey lists 24 behaviors related to academic integrity; most are behaviors that faculty would typically classify as cheating (except when expressly permitted), but some were pro-integrity behaviors such as refusing other students' requests to engage in collaborative cheating. "The results showed no significant differences in students' perception of the academic integrity of their own behavior or other students' behavior based on course type (face-to-face or online)" (p. 195).

Stuber-McEwen, D., Wiseley, P., & Hoggatt, S. (2009). Point, click, and cheat: Frequency and type of academic dishonesty in the virtual classroom. *Online Journal of Distance Learning Administration*, 12(3). <https://www.westga.edu/~distance/ojdla/fall123/stuber123.html>

Students in onsite ($N = 87$) and online ($N = 138$) answered yes-no survey questions about whether they had ever been involved in seven specific, explicitly defined types of cheating. Although one of the categories is labeled "cheating on tests," the definitions' [source](#) includes items unrelated to examinations in the "cheating" category, and explicitly includes actions related to examinations in the "unfair advantage" and "aiding and abetting" categories; implicitly, "plagiarism" could also occur on an examination with free-response questions. Both in the aggregate and for each discrete form of cheating where an exam-related action lies within the definition, reported online cheating was lower than the expected value, and reported onsite cheating was higher than the expected value. Thus "the online students in this sample reported engaging in academic misconduct less often than their on ground counterparts." The investigators offer several possible explanations for the differences observed, but these suggestions were not tested in this study. (The article's title seems an odd fit with the study's results.)

Uhráková, E., & Podařil, M. (2011). The attitude of students towards electronic and non-electronic cheating. The Future of Education Conference, Florence, Italy, June 16–17.
https://conference.pixel-online.net/conferences/edu_future/common/download/Paper_pdf/ENT20-Uhrakova.pdf

The investigators surveyed Slovakian university students in two cohorts ($N_1 = 406$, $N_2 = 353$) about their attitudes toward specific cheating behaviors. In the aggregate across both cohorts (according to my calculations; the investigators reported each cohort separately), about 66% of respondents thought that more than 75% of their classmates have cheated more than once (in onsite classes). The investigators gave students a hypothetical scenario: "Imagine that the teacher leaves the classroom during the exam. Would you do the following activities?" (Table 1, p. 4). The unproctored condition here could perhaps be considered somewhat analogous to an unproctored condition on an online test. 77.2% said they would likely or certainly copy answers from another student, 83.2% said they would collaborate with other students to find the right answers, 71.9% said they would use their textbook or notes, 73.1% said they would use "cheating sheets" (crib notes?), and 66.6% said they would let other students look at their answers. The reference to "electronic" cheating in the title seems to relate to coordinating by

mobile phone with someone outside the class to find the right answers; only 18.6% said they would do this (while the professor is out of the room in an onsite exam).

Watson, G., & Sottile, J. (2010). Cheating in the digital age:: Do students cheat more in online courses? *Online Journal of Distance Learning Administration*, 13(1).

<https://www.westga.edu/~distance/ojdl/spring131/watson131.html>

On a survey ($N = 635$ from a single institution), 32.1% of students reported that they had cheated at least once “on an assignment, quiz, or test” in an onsite class and 32.7% reported cheating in an online class. Over twice as many reported that they had been caught cheating in a live class (4.9%) as in an online class (2.1%). Disaggregating the various forms of cheating behavior, the investigators found that modality might correlate to specific cheating strategies, even if not to the overall self-reported rates. 23.3% of respondents admitted to receiving answers from someone else during an online test or quiz, compared to 18.1% for onsite assessments ($p < .05$). Conversely, 33.2% reported receiving answers in advance to an onsite test or quiz from someone who had already taken the assessment, compared to 20.3% for online tests or quizzes (not statistically significant, though; $p = .134$). The difference between students who admitted exchanging answers using a phone or similar device onsite and online was not statistically significant (3.0% onsite vs. 4.2% online, $p = .109$). Despite the almost identical rates of self-reported “cheating at least once,” 42.2% of respondents said they were more likely to cheat in online courses (compared to 32.7% who said they had actually done so), while 61.0% said their classmates were more likely to cheat online; however, these figures do not disaggregate test-taking from other types of assignments.

Watters, M.P., Robertson, P.J., & Clark, R.K. (2011). Student perceptions of cheating in online business courses. Academic and Business Research Institute International Conference, Nashville, Tennessee, USA, March 24–26.

<http://www.aabri.com/NC2011Manuscripts/NC11064.pdf>

Surveyed undergraduate accounting majors at two different universities ($N_1 = 60$; $N_2 = 38$) about cheating they had personally observed, cheating they believed had happened, and their perceptions about various mitigation measures. The investigators report that the method of instruction in applicable classes at these institutions was relatively uniform (mostly lecture), but methods of assessment could vary widely. With respect to observed or otherwise known cheating behaviors, in descending order of frequency, students reported knowing of cases where students had received help on an online test (46.9%), used material from the web to complete an online test (41.8%), used other types of prohibited materials while taking an online test (37.8%), or had someone else take an online test in their place (14.3%; Table 2, p. 10). With respect to anti-cheating measures, more than half the students rated the following online-only measures as effective: randomized questions (76.5%), timed exams (61.2%), synchronous or near-synchronous exam administration (54.1%), webcam proctoring (53.1%; Table 6, p. 13). Students also rated in-person proctoring as highly effective, whether taking a paper test in a classroom (73.5%) or an online test in a computer lab (71.4%), but of course neither condition is available in a fully online course. With respect to the prevalence of cheating, 54.1% said there is more opportunity to cheat in online classes and 45.9% said more cheating actually does occur in online than onsite courses, but in both cases 34.7% said they had no opinion on the matter.

Related sources

Berkey, D., & Halfond, J. (2015). Cheating, student authentication and proctoring in online programs. *New England Journal of Higher Education*, July 20.

<https://nebhe.org/journal/cheating-student-authentication-and-proctoring-in-online-programs/>

Essentially an op-ed with reference to some survey results. Only a few select results are mentioned; there is no link to a more comprehensive survey report. Substantial attention is given to remote proctoring; Berkey was at the time president of BIOMIDS, identified in the article itself as a vendor of automated remote proctoring services. Some statements in the article make the survey sound more like a marketing survey (“When asked to name the most desirable features in a remote proctoring system ...”) than a research survey (“We designed a survey to learn more about what was being done about cheating in online programs”). At any rate, the article does not advance empirical understandings of student cheating or the effectiveness of remote proctoring.

Cluskey, G.R., Ehlen, C.R., & Raiborn, M.H. (2011). Thwarting online exam cheating without proctor supervision. *Journal of Academic and Business Ethics*, 4, 1–7.

<http://www.aabri.com/manuscripts/11775.pdf>

Advice piece outlining an eight-factor plan for mitigating online cheating.

Eplion, D.M., & Keefe, T.J. (2007, April) Practical tips for preventing cheating on online exams. *Online Cl@ssroom*. http://augmenting.me/cte/resources/newsletters_archive/OC0704.pdf

Advice piece outlining the authors’ practices for mitigating online cheating.

Harbin, J.L., & Humphrey, P. (2013). Online cheating: The case of the emperor’s clothing, elephant in the room, and the 800 lb. gorilla. *Journal of Academic and Business Ethics*, 7.

<https://www.aabri.com/manuscripts/131450.pdf>

The authors open by forthrightly stating their belief that “six distinct groups with differing self-interests” are essentially ignoring cheating in online higher education: students, faculty, higher education administration, legislators, parents, and for-profit online universities. The authors’ discussion of cheating is substantially based on op-eds, common-sense analyses, and anecdotes. The only “empirical” evidence cited is from an unsigned article with the clickbait headline “8 Astonishing Stats on Academic Cheating” at oedb.org. That source reveals that the “astonishing stat” cited by the authors is from “an admittedly informal 2007 poll conducted by the popular website CollegeHumor.”

Heberling, M. (2002). Maintaining academic integrity in on-line education. *Online Journal of Distance Learning Administration*, 5(2).

<https://www.westga.edu/~distance/ojdl/spring51/heberling51.html>

A very short advice article, focused mostly on common-sense techniques for plagiarism detection.

Karlins, M., Michaels, C., & Podlogar, S. (1988). An empirical investigation of actual cheating in a large sample of undergraduates. *Research in Higher Education*, 29(4), 359–364.

Found that approximately 3% of students taking a particular course across two semesters ($N = 1,374$) “plagerized” (that spelling is consistent throughout the paper) on a library log assignment. Cited by Grijalva and Kerkvliet as the source for their figure of about 3% cheating in any given onsite course.

Kidwell, L.A. & Kent, J. (2008). Integrity at a distance: A study of academic misconduct among university students on and off campus. *Accounting Education*, 17(S1), S3–S16. DOI: [10.1080/09639280802044568](https://doi.org/10.1080/09639280802044568)

Kitahara, R., Westfall, F., & Mankelwicz, J. (2011). New, multi-faceted hybrid approaches to ensuring academic integrity. *Journal of Academic and Business Ethics*, 3. Available at <https://www.aabri.com/jabe.html>.

Summarizes earlier survey data and describes the deployment of SecureExam Remote Proctor and ProctorU at one university. What the authors say explicitly of SecureExam is true also of ProctorU as of publication: “Statistical data on its effectiveness in deterring aberrant behavior has yet to be collected” (pp. 6–7).

Krsak, A.M. (2007) Curbing academic dishonesty in online courses. Technology, Colleges and Community Worldwide Online Conference Proceedings, 159–170. <https://tccpapers.coe.hawaii.edu/archive/2007/krsak.pdf>

Essentially a literature review with derived advice.

Kwun, O., Alshave, K.A., & Grandon, E. (2005). Instructor and student perceptions of the online teaching/learning environment: A cross-cultural study. *Academy of Educational Leadership Journal*, 9(3), 105–130.

Referenced by Watters, Robertson, and Clark (2011) as “provid[ing] very limited information regarding student perceptions of cheating in online courses” (p. 2). The article itself is unavailable to me (the database through which I can access the journal only goes back to 2006).

Lathrop, A., & Foss, K. (2000). *Student cheating and plagiarism in the Internet era: A wake-up call*. Libraries Unlimited.

Referenced in Watters, Robertson, & Clark (2011) as a study of cheating in onsite courses. Currently unavailable to me; my library holds a print copy but not a digital copy.

McGee, P. (2013). Supporting academic honesty in online courses. *Journal of Educators Online*, 10(1). https://www.thejeo.com/archive/2013_10_1/mcgee

Primarily a how-to article. The advice is very thoroughly documented, but it’s not possible to tell at a glance which discrete bits of advice are supported by empirical research and which on commonsense notions or collective wisdom derived from experience.

McMurtry, K. (2001). E-cheating: Combating a 21st century challenge. *T.H.E. Journal*, 29(4), 36–41.

Opinion and advice piece based

Moten, J., Jr., Fitterer, A., Brazier, E., Leonard, J., & Brown, A. (2013). Examining online college cyber cheating methods and prevention measures. *Electronic Journal of e-Learning*, 11(2), 139–146. <https://eric.ed.gov/?id=EJ1012879>

A literature review plus how-to article (desperately in need of additional proofreading/copy editing).

Nelson, T., & Schaeffer, N. (1986). Cheating among college students estimated with the randomized-response technique. *College Student Journal*, 20, 321–325.

Not available to me digitally. According to Karlins, Michaels, and Podlogar (1988), “Nelson and Schaeffer (1986), for example, using the randomized-response technique (RRT), found that only 12% of their student respondents (students enrolled in a college psychology course) admitted to cheating on college tests. What makes this investigation particularly intriguing—and important—is that the investigators also asked a second group of students in the same class to answer the questions about academic dishonesty through the normal questionnaire format (‘direct questioning’). Under this experimental condition 50% of the students reported they had cheated on college tests” (Karlins, Michaels, and Podlogar, 1988, p. 360). Karlins, Michaels, and Podlogar find here “a potential risk in attempting to estimate the degree of cheating on college campuses: Most of the estimates are based on questionnaire data (what students *say* about cheating) rather than behavioral data (what students *do* concerning cheating). And, as many investigators have warned, the potential for discrepancy between actual behavior and reported behavior can be significant” (p. 360).

Northcutt, C.G., Ho, A.D., & Chuang, I.L. (2016). Detecting and preventing “multiple-account” cheating in massive open online courses. *Computers and Education*, 100, 71–80. [arXiv: 1508.05699v3](https://arxiv.org/abs/1508.05699v3)

Describes a cheating strategy whereby MOOC users enroll with two different accounts, using one to submit assessments and get feedback, and using the second to actually complete the course for credit. This cheating strategy seems unlikely to be an option for most students enrolled in closed online courses where accounts are institutionally managed.

Olt, M.R. (2002). Ethics and distance education: strategies for minimizing academic dishonesty in online assessment. *Online Journal of Distance Learning Administration*, 5(3). <https://www.westga.edu/~distance/ojdla/fall53/olt53.pdf>

An advice piece drawing on widely accepted practices. Not grounded in empirical research on the effectiveness of the practices suggested.

Rogers, C.F. (2006). Faculty perceptions about e-cheating during online testing. *Journal of Computing Sciences in Colleges*, 22(2), 206–212.

Referenced in a bibliography but unavailable to me. The title indicates a perception survey.

Rowe, N.C. (2004). Cheating in online student assessment: Beyond plagiarism. *Online Journal of Distance Learning*, 7(2). <https://www.westga.edu/~distance/ojdla/summer72/rowe72.html>

Lists and discusses three types of cheating on online assessments: getting answers in advance, unfairly retaking assessments, and receiving unauthorized help during assessments. No empirical data assessing the prevalence of these practices is provided. Suggests various countermeasures, concluding that “traditional one-location one-time face-to-face testing for much of the student’s grade will need to be the assessment norm for distance learning in the foreseeable future.”

Szabo, A., & Underwood, J. (2004). Cybercheats: Is information and communication technology fueling academic dishonesty? *Active Learning in Higher Education*, 5(2), 180–199.

Unavailable to me at the present time, but from the abstract, it appears to focus on plagiarism, not test-taking.

Version history

Added on or before April 22, 2020	
<i>Key sources</i>	<i>Related sources</i>
Alessio <i>et al.</i> (2017)	Karlins, Michaels, & Podlogar (1988)
Alessio <i>et al.</i> (2018)	Kidwell & Kent (2008)
Beck (2014)	Kitahara, Westfall, & Mankelwicz (2011)
Corrigan-Gibbs <i>et al.</i> (2015)	McGee (2013)
Fask, Englander, & Wang (2014)	Moten <i>et al.</i> (2013)
Grijalva & Kerkvliet (2006)	Nelson, T., & Schaeffer, N. (1986)
King, Guyette, & Piotrowski (2009)	Northcutt, Ho, & Chuang (2016)
McCabe, Treviño, & Butterfield, (2001)	Rogers (2006)
Mirza & Staples (2010)	
Watson & Sottile (2010)	
Added April 23, 2020	
<i>Key sources</i>	<i>Related sources</i>
Lanier (2007)	
Stuber-McEwen, Wisely, & Hoggatt (2009)	
Added April 24, 2020	
<i>Key sources</i>	<i>Related sources</i>
Kennedy <i>et al.</i> (2000)	Heberling (2002)
	Rowe (2004)
	Szabo & Underwood (2004)
Added April 25, 2020	
<i>Key sources</i>	<i>Related sources</i>
Harmon & Lambrinos (2008)	Berkey & Halfond (2015)
Ladyshevsky (2015)	Harbin & Humphrey (2013)
Raines <i>et al.</i> (2011)	Kwun, Alshave, & Grandon (2005)
Spaulding (2009)	Lathrop & Foss (2000)
Uhráková & Podařil (2011)	Olt (2002)
Watters, Robertson, & Clark (2011)	
Added April 26, 2020	

Key sources

Charlesworth, Charlesworth, & Vician (2006)
McNabb & Olmstead (2009)

Related sources

Cluskey, Ehlen, & Raiborn (2011)
Eplion & Keefe (2007)
Krsak (2007)
McMurtry (2001)