

TIPS FOR ASSESSING STUDENT LEARNING REMOTELY

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With fall instruction expected to be predominately online, we may have to assess our students remotely. This raises two important issues when administering an exam: academic integrity and equity in testing environment. Since students will not be taking exams all in the same room, we cannot ensure that all students will be able to take an exam without individual advantages or disadvantages. Students may face very different exam conditions, with different levels of privacy, ambient noise, and internet connectivity. It is important to recognize these potential inequities and adjust our assessment strategies accordingly.

This note provides some “best practices” associated with administering exams remotely. We also highlight a few of the approaches adopted by some of our spring instructors and discuss their advantages and disadvantages. In compiling this document, we gathered information from several primary and secondary sources, including this detailed [campus report](#), which complements the existing guidance on [Best Practices for Remote Exams](#); we encourage all instructors to read it carefully. We have also embedded links to various resources throughout the document. To be clear, we are not recommending one approach over another. The goal of this document is simply to bring attention to certain teaching practices and to highlight some of the tradeoffs associated with different assessment strategies.

Some Best Practices

1. **Have students acknowledge the [UC-Berkeley Honor Code](#):** Instructors should include the UC-Berkeley Honor Code on the coversheet or at the beginning of the exam. Instructors may also want to include their own statements, such as “I am alone in taking the exam” or “I will not take screenshots, photos, or otherwise make copies of exam questions to share with others.” We recommend having students sign a copy of the Honor Code or acknowledge the Honor Code at the start of an electronic examination. Having students acknowledge the Honor Code may not deter all students from cheating, but it will promote an expectation of academic integrity.
2. **Survey students to assess their needs:** It is important to recognize that testing conditions are not uniform across students. Prior to the exam, instructors should make it possible for students to communicate any challenges they may face and make a plan to address their students’ needs. Instructors should also consult with DSP Disability Specialist Services in a

timely manner if they have concerns about providing an accommodation. Instructors can find a sample Google survey [here](#).

- 3. Be aware of time constraints:** It is possible that students will be located across several time zones. We encourage instructors to offer either multiple exam times or a time-limited exam that students can take over a longer period of time (e.g. 24-hour window). It is important to realize that exams and answers take time to download and upload, especially when using an online platform such as Gradescope or bCourses. Instructors are encouraged to consider this when determining both the length and time window of the exam. Here is what a student from Econ 134 mentioned in this regard:

“One issue I encountered with timed exams this past semester was submitting exams late due to the time it took to upload to Gradescope. It takes a long time to download files and submit them. Professors, GSIs, and students should be informed of the time that it takes to upload and the most efficient methods for doing so. I learned that one of the fastest ways to upload was to use a smartphone app called CamScanner, take pictures of my exam, email them as a single pdf to myself, and download the file and upload it. The process still takes about 10 minutes. Thus, the window for the exam should accommodate that time; I would also push for a grace period since people may have connectivity issues, though students should not be informed of this beforehand to prevent moral hazard.”

It is also helpful to communicate contingency plans, in case issues arise. For example, here is the approach Christy and David took for Econ 2:

“We added 10 minutes to the exam time to allow for downloading and uploading. We sent out the exams by email, using Gmail’s “scheduled send” feature. The students were supposed to upload their exams to Gradescope, and the instructions stated that if they had problems doing so, they should email photos of their exam to their GSI and then upload the exam, even if they weren’t able to do the uploading by the end time of the exam. We were not as successful as we should have been in communicating this clearly, however, so some students submitted the exam late and some reported finding the uploading quite stressful. For the final, we will allow 15 minutes for uploading (since it will be longer than the midterm) plus a 5 minute grace period, and we have told the students emphatically that if they are having technical problems and are worried they will not be able to get your exam uploaded in time, they must send an email with a scan or photos of their exam to their your GSI before the end of the grace period. They then have to complete the uploading process.”

For instructions on how to create a timed exam, see here for [bCourses](#) or [Gradescope](#).

- 4. Provide students with an opportunity to test drive the online submission process and request student feedback:** Instructors should test the online submission process of their

exams at least one week before the exam date. This will help troubleshoot any potential issues and allow the instructor to receive student feedback. Christy and David provide another nice example of all the steps they took for their Econ 2 class:

“We spent a lot of time beforehand preparing. We sent a very long email to the class 9 days before explaining the procedures and why we were using them; extended the lecture 7 days before the exam to give students as much time as they wanted to ask questions about the procedures, P/NP grading, and how the Economics Department was adjusting its criteria for admission to the major (which ended up taking about half an hour); met with the GSIs; met repeatedly with the head GSI; had a mandatory trial run the weekend before the exam where students were required to do and upload a trivially simple assignment (which turned out to be crucial); and spent considerably more time than we usually do crafting the questions.”

Instructors might consider even incentivizing students to do the trial run, as Christy and David did: “We gave everyone 6 points (out of 150) for doing the trial run. Students who didn’t do the trial run and didn’t explain why lost some or all of the 6 points, as did students who uploaded their exams more than 10 minutes late and offered no explanation. We were quite generous with students who told us that they’d encountered problems in uploading.”

Both bCourses and Gradescope allow an instructor to duplicate assignments. This function can be used to create the dry run assignment with a similar setup. Duplicating an assignment in [bCourses](#) and in [Gradescope](#).

5. **Provide clear written guidance on availability of GSI and Instructors.** GSI and/or Instructors should be available for the entire time of the exam, including the extended time for DSP students. Communicate to students as early as possible what the protocol will be for asking for help or raising concerns to an instructor or GSI.
6. **Communicate the format of the exam and how it might deter cheating.** Communication about format might also deter misconduct by highlighting how it is designed to limit students sharing answers (e.g., shuffling the order of questions or answers, using different versions, etc). It also helps students prepare for exams under these new conditions and anticipates any needs.
7. **Webcam proctoring.** The EVCP is currently allowing webcam proctoring via Zoom. Should instructors decide to use this proctoring option, they are required to:

For Summer Sessions

- a. *Inform students at the beginning of the term, either on a syllabus or in a separate written communication, that remote proctoring will be taking place for the final exam.*

- b. *Provide accommodations for students with letters of accommodation from DSP services. Please be advised that some student's letters of accommodation will state that they are exempted from remote proctoring.*
- c. *Provide at least one optional time for the exam so that students in time zones that are markedly different than UC Berkeley's are not at a disadvantage.*
- d. *Provide guidance to the students on the types of virtual and physical backgrounds permitted. The guidance should be based on a determination of the backgrounds that work best with the zoom video conferencing program.*
- e. *Establish procedures to help students with limited wifi access or wifi access that may be disrupted during the exam.*

Instructors and GSIs will be responsible for implementing the remote proctoring. The campus will survey instructors and GSIs at the end of the summer to assess remote proctoring.

For Fall Semester

Similar to Summer Sessions, during the fall semester the Colleges and Schools have the option to use the zoom video conferencing tool for remote proctoring of final exams as part of a pilot program. The campus will track remote proctoring and assess GSI feedback at the end of the semester. Instructors whose courses are part of the pilot program are required to:

- a. *Inform students in a prompt manner that remote proctoring will be taking place for some or all of their exams.*
- b. *Provide accommodations for students with letters of accommodation from DSP services. Please be advised that some student's letters of accommodation will state that they are exempted from remote proctoring.*
- c. *Provide at least one optional time for the exam so that students in time zones that are markedly different than UC Berkeley's are not at a disadvantage.*
- d. *Provide guidance to the students on the types of backgrounds permitted. The guidance should be based on a determination of the backgrounds that work best with the zoom video conferencing program.*
- e. *Establish procedures to help students with limited wifi access or wifi access that may be disrupted during the exam.*

Some Common Approaches

At the end of the spring semester, we reached out to all of the spring instructors and asked them about how they had evaluated their students' learning. Most instructors adopted one of three

approaches. Below, we describe each of these approaches, discuss their advantages and disadvantages, and offer some recommendations. We also solicited feedback from dozens of undergraduate students about their testing experiences. They provided extremely valuable feedback on the benefits and drawbacks of each approach.

“Business as Usual” Model: Every student receives the same exam. The exams are timed, but to accommodate multiple time zones, the instructor offers students either multiple exam times or a 24 hours window in which to take the exam. The instructor either sends/receives the exam via email, or requires the student to download/upload the exam using an online platform, such as bCourses or Gradescope.

Advantages:

- Students are familiar with the test format.
- Transaction costs associated with sending/returning the exam are relatively low.
- Students have a lot of flexibility in how they take the exam.
- Minimal additional work for the instructor.

Disadvantages:

- High potential for cheating. It is important for instructors to convey an expectation of integrity and fairness, and several students expressed concerns regarding the fairness of this approach. Several argued that the format makes cheating “risk free” and may even induce more cheating if expectations are that everyone cheats. Here is an example, which was quite insightful:

“The [“business as usual”] model for sure spurs cheating/plagiarism, which is totally “risk free” under this model. It’s unfair for people who choose not to cheat when others take advantage of this model. Also, this happened to my friend, that you cannot just turn people down if they reach out to you for “help”. It’s just so easy for people to communicate during the exam.” Student from Econ 134.

Recommendations:

- Make the exam open book or notes, and adjust the questions accordingly. Example, include:
 - o Consider more open-ended or essay-based questions; questions that require more critical thinking or drawing connections across different concepts.
 - o Avoid asking questions whose answers are easily searchable online or in class notes. Write questions that are closely and specifically connected to course content; this will also discourage internet searches.

Several students expressed an appreciation for questions that require less memorization and more critical thinking. For example:

“The potential for cheating is the highest and therefore you have to assume that there will be the most cheating going on with this model. This model is also open book/note by default, whether it has been explicitly designated that way or not. However, if an exam were to consist primarily of open-ended, essay style question where cheating is difficult and especially if those questions require a high degree of critical thinking about the material and synthesis of original ideas or connections between concepts - essentially, if it is difficult to do well by just copying from the textbook or from online resources - this model is not completely out of the question.” Student from Econ 134.

- Increase the time pressure of the exam. This reduces the incentive for student to “search” for answers. But, it also raises two potential drawbacks: 1) Students may feel additional stress and anxiety; 2) It may exacerbate inequities in any testing environments. That said, a student from Econ 101B, appreciated the strategy:

“An additional strategy that I believed was fair, was enacted by Professor Schoefer in ECON101B. The exam was timed and questions were on the easier end which would be conducive to being looked up, however, doing so would be detrimental to your performance taking away valuable time from answering questions.”

- Consider using originality checks such as [Turnitin](#). The instructor may also want to announce this before the exam to deter cheating and further convey expectations of integrity.
- Despite the format’s susceptibility for cheating, some professors have had positive experiences using it. For example, as Professor DellaVigna writes “All signed an honesty statement on top of the exam. I asked for close book, as I always do, but the exam was not identical to any past one so I did not worry too much about copying. (that took time though!) I sent out one day before a mock exam with the same spacing as the final so they could print it out, or draw the lines on paper, in case they did not have a printer at home. I was very happy with the results. There were no complaints and most importantly, the correlation in score between midterm 1 (done the usual way) and midterm 2 (done this way) was 0.5, about the same as in any other year. This suggests no widespread cheating, and/or disruptions.”

“Business as Usual” with Modifications: Students receive different exams assigned at random or quasi-randomly. The exams are timed, but to accommodate multiple time zones, the instructor offers students either multiple exam times or a 24 hours window in which to take the exam.

Advantages:

- Students are familiar with test format
- Students have a lot of flexibility in how they take the exam.
- Multiple exams reduces the opportunity for students to collaborate.

Disadvantages:

- The instructor has to create multiple exams.
- Transactions costs in delivery/assignment of exam is slightly higher.
- Does not guard against online cheating.
- Different exams may not be fully comparable in level of difficulty.

Recommendations

- The recommendations from the Business as Usual approach still apply. Nothing prevents students from going online, therefore we encourage you not to ask questions whose answers are easily searchable.
- We recommend using either Gradescope or Bcourses. Both platforms are capable of assigning different tests to different students in a straightforward manner.

bCourses Exam: Several faculty held their exams on bCourses. Students take the exam online in a highly controlled setting. Questions are presented one at a time, and students cannot go back after answering the question; it is similar in many respects to how the GRE or TOFEL exams are administered. The exams are timed. Instructor offers multiple time windows or one 24-hour window. A video of how to build a quiz on bCourses can be found [here](#).

Advantages:

- bCourses offer several [advanced features to discourage cheating](#). These include the ability to:
 - o shuffle the multiple-choice responses so that each student sees multiple-choice responses in a unique order
 - o [show only one question at a time, without the possibility of going back](#)
 - o [randomize the order in which the questions appear for each student taking the exam](#)
 - o [create and use a test bank that bCourses draws from to create a unique test for each student](#)

- The platform supports [all question types](#). Because of the various cheating safeguards, the instructors are able to ask more “routine” questions (although we do not necessarily recommend this).
- Grading can be made completely automated.
- It is easy to [set availability dates](#).

Disadvantages:

- Some students may not be too familiar with this testing approach.
- Several students find this approach stressful.
- Students dislike the inability to review their answers (should the instructor enable this feature) or to answer the questions in the order of their choosing. Here are the responses from some of our students:

“I don't believe that seeing only one question at a time and not being able to go back to review the questions is fair to students, especially if these exams are timed. A key component of test-taking is reviewing one's answers, additionally, many students manage time better if they can skim the exam beforehand and start with the questions that are easiest for them to answer.”

“I would say that it is a little bit too harsh for the students, especially regarding the fact that the students can only see one question at a time and cannot go back to the questions that they have already answered. This violates the normal conditions of an exam, whereby a student can treat the questions in the order that they want etc.”

“I am also strongly opposed to this model. I really don't like taking tests in order. Oftentimes I blank on questions and it helps me to move on through the rest of the test and circle back to the question. I know many friends also take tests this way. I get that this may be the most fair way to give the Exam as it would minimize cheating, but I also don't think that it is the most optimal way of going about it. It is more difficult to take a test like this, it is more difficult for instructors to write all the extra questions, would be the most prone to technical glitches, and it just seems like it would take some of the fun out of the exam.”

- Because the exam is completely online, internet connectivity (and the potential inequities in testing environment) becomes more salient.
- The instructor has to create a test bank to take advantage of all of the anti-cheating features.

Recommendations:

- It is unclear how much cheating takes place in our classrooms.¹ For instructors who feel that this is an important concern, we would recommend using bCourses and all of its features. However, it comes with a non-trivial cost: it can cause stress and anxiety and it appears to be very unpopular among the students.
- One does not need to enable the “anti-cheating” features of bCourses and can simply use it as a platform delivery method, such as Gradescope. In addition, while Gradescope does not currently offer these anti-cheating features, they are currently working on LockDown Browsers to enable many of these features. According to recent communication with the helpline, they expect it to be available in their next release.

Alternative Approach: We do not typically assign term papers or group projects in Economics, but it is an approach worth considering. As one instructor stated: “If I knew COVID19 was going to do what it did and if I could go back in time, I would have reconfigured C175 to look like it did before about 2015, when it included an empirical term paper in addition to exams. Term papers are more time consuming to grade, and academic honesty is still an issue, but it is easy to check for duplicated passages in term papers, and I believe requiring a term paper does a better job accomplishing the instructional goals than multiple choice exams.” And when we asked students the following question: “For classes that might be online in the fall semester, do you have suggestions for ensuring academic integrity (i.e., limit cheating)?” A common response among was “More project/paper based assessment”.

Advantages:

- Students find it much harder to cheat on a term paper or project.
- Software exists to detect blatant forms of cheating and plagiarism.

Disadvantages:

- Increases the time cost of grading.

Recommendation:

- If applicable, it can be useful to require use of (only) course materials. This serves both to assess their learning of course material and to deter using assignments from the internet.
- Consider asking questions centered on fictional or unique scenarios. This provides a mechanism to assess how deeply students understand specific ideas while limiting the ability of students to turn to exam services or the internet for answers.

¹ One student wrote: “To say a final note on cheating, I can’t speak from anything but my own experience, but it seems to me the Econ department is less susceptible to cheating behaviors than other STEM courses. I suspect this is due to the open ended nature of the problems and different departmental attitudes.”