

**Spot the Error**:

Authentic Learning Mixed

Inclusivity

Academic Integrity Mixed

Faculty Time Pro

Pros:

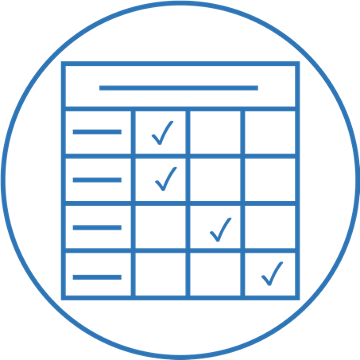
* Faculty Time
  + The instructor might be able to easily adapt current exams to this style.
  + This format might be straightforward enough that the instructor could create multiple versions of exams.
* It could be an excellent way to test a student’s ability to assess whether an answer makes sense, even in introductory courses. It would be important to pair this summative assessment with lots of practice assessing the reasonableness of answers.
* It has the potential to dissuade students from a “plug and chug mentality”.
* This kind of question could be applicable outside of equation-based courses. (e.g. Languages)

Cons:

* This model wouldn’t give students the ability to demonstrate mastery over notation.
* This model has the potential to *actually teach students incorrect solutions*.

Mixed/Other:

* Academic Integrity:
  + While the questions aren’t easily google-able,
  + it would be easy for students to share the correct answers amongst themselves.
  + Instructors have had some success counteracting this by providing “solutions” with multiple mistakes. (e.g. CompSci)
* Authentic Learning:
  + There could be a chance for the student to guess,
  + but instructors have had some success asking students to explain their answer as well. (e.g. Econ)
* Instructors would need to give students practice with this model before it appears on a high-stakes exam.

**Explain the Solution:**

Authentic Learning Pro

Inclusivity Mixed

Academic Integrity Pro

Faculty Time Con

Pros:

* Authentic Learning:
  + A full explanation of a student’s rationale seems like the most authentic expression of student learning.
  + Provides more evidence to differentiate a student’s level of learning.
* Academic Integrity:
  + Not google-able.
  + Because it doesn’t ask for specific answers, there may be less incentive to cheat.

Cons:

* Faculty Time:
  + This could take a great deal of time to assess. In particular, poor responses take a very long time to assess given the “word salad” that accompanies the poor solution.

Mixed/Other:

* Inclusion:
  + This method might lend itself to being paired with video/oral assessment, which will require resources:
    - Though it requires a camera, many students are comfortable with video on a number of platforms.
    - There exist good platforms for sharing video in classes. (e.g. Flipgrid)
    - However, some of those platforms/methods are more public than others.
  + There could be technological barriers in written work if it requires equations in responses on a digital platform.
    - Written responses might require the use of mobile scanning apps (e.g. CamScan, MS Lens, OneDrive) but will surely come with illegible writing.
* Might be more appropriate for smaller classes rather than larger classes.
* Rubrics are probably key here. A good one will make this easy; however that takes time to develop and could become a time sink if it’s not properly done.

**Student-Developed Questions**: 

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Faculty Time Con

Pros:

* Authentic Learning:
  + An instructor who has used this before found that because students have to identify/develop plausible distractors, they confront common mistakes and misconceptions.
* Student Engagement:
  + If questions are used on the exam, this can empower the student.
  + Can be used for a review day in a course.
* Academic Integrity:
  + Hard to get the internet to solve this problem for you.

Cons:

* Faculty Time:
  + If done right, this could take considerable faculty time. (See Mixed/Other for advice from peers about how to make this go well.)
* Inclusivity:
  + If we acknowledge that this method isn’t simply about a summative assessment but motivating students through formative assessment to learn the material, there is a potential that struggling students will have trouble making meaningful progress in this kind of model. (Again, see advice below.)

Mixed Other:

* There are several workshop participants who reported using this method in their classes. Their experiences range from excellent to poor.
* Give students focus. Students will need direction on how to create a question and will need help limiting the range of topics. This could pair well with a spot-the-error assessment method.
* Instructors will need a good rubric to share with students ahead of time. Suggested criteria include: relevance, correctness, and explanation (Dr. Burns-Kaurin, Spelman).

**Open-Ended Questions**: 

Authentic Learning Pro

Inclusivity Mixed

Academic Integrity Pro

Faculty Time Con

Pros:

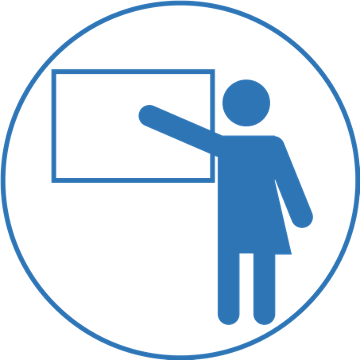
* Student Motivation:
  + These questions can be interesting and engaging for students.
* Authentic Learning:
  + Models other good aspects of our discipline.
* Academic Integrity:
  + Harder to cheat on.

Cons:

* Faculty Time:
  + Could take less time to write but much longer to grade.
* Inclusivity:
  + Open-ended questions require a good understanding of context. Students may make incorrect assumptions or focus on inappropriate parts of the question.
  + If using a literature-based model, will need to make sure students have similar levels of access to information.

Mixed/Other

* Will require good use of rubrics, but how long would it take to write a good one that respects the different paths we want students to explore?
* Different level learners (e.g. freshers vs. seniors) will require really different styles/scaffolding to succeed.
* Seems great for formative assessment.



**Oral Assessment**:

Authentic Learning Pro

Inclusivity Con

Academic Integrity Pro

Faculty Time Con

Pros:

* Authentic Learning: Can reliably gauge whether a student has achieved excellent understanding or little understanding.
* Academic Integrity: Can quickly determine if students are saying the same things.
* Builds skills in presenting via video and web meetings.
* Could be used in groups with a digital whiteboard.

Con:

* Inclusivity:
  + This could be a major problem for students without high-speed internet.
  + This could also be a problem for students who struggle with anxiety.
  + Having the ability to record (and re-record) and send might alleviate some of these issues.
* Faculty Time: With many students, it would take a long time to assess.

Mixed/Other:

* Could be used well for asynchronous learners, but it limits our ability to ask follow up questions and probe further.
* Might be better as a *compliment* to exams.
* Advice from Dr. Oakley (Spelman) has used this method: to reduce time burden, have students select one problem they would explain, and then you choose a second. Since they could prepare one, helped reduce the time burden on the faculty.
* In many upper-level classes, students are doing presentations, which moves to a video platform. In the spring, faculty may have been the only audience, as opposed to normally the entire class. How does that impact quality? If classmates are there, does it raise the bar? Students may try harder when peers are listening. But may vary with the student, the size of the class, the rapport.
* One adaptation - assign an extensive, applied investigation and have students discuss the problem-solving process and justify the solution in context
* What if oral assessment was reserved only for a subset of students: oral exams necessary to get an A in the course or reverse -- lower end students take oral exam to demonstrate knowledge.

**Other Comments**

**Other Assessment Models:**

* *Mastery-based/Specifications.* Assessments are pass/fail (did the student demonstrate mastery of the learning objective?) - students get multiple opportunities to pass (fewer students testing each round, hopefully)
  + Or more generally, what if assessment included the options for retaking and replacing grades.
* *Drilling often* - learning by repetition - forcing thought through continued work
* *Combine algorithmic testing (every student gets a different problem) with video explanations* - each student must explain 2-3 of their problems’ solutions.

**Questions/Concerns to keep in mind:**

* In all cases, your summative assessment needs to line up with your formative assessments and teaching. Practice and scaffolding are essential to any assessment method.
* Keeping *inclusivity* in mind – access to technology, quality of technology, internet connection and data limits.
  + Make clear you are judging on quality of their explanation not quality of their production
  + How will you create an equitable assessment for students who have to participate from different locations and different circumstances – especially students who miss substantial parts of class due to illness?
* Keeping *faculty time* in mind:
  + Are some of these assessment methods more subjective than others?
  + Consider the time necessary to develop a rubric, or to find one that works.
* Keeping *academic integrity* in mind:
  + How will an all take-home approach impact this?
  + How do you know who you are assessing unless the student is in front of you?
* Keeping *student angst/motivation* in mind:
  + Do some methods created additional stress for students
    - If so, is it still a good skill to learn, e.g. it is a life skill for students to learn to talk about STEM, answer questions in real time?
    - Scaffolding problems can help
* Ask yourself, “Is the adaptation I’m applying now something that will enhance my classes when life ‘returns to normal’?”
* Consider blending assessment methods to fit your style, level of students, and your situation.