Teaching Remotely
What Educators Can Learn from One Another

Assessment (part 3 of 3)

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Part 3 – Assessment

In previous parts of this series covering lectures and discussion, I looked at what educators from different sectors (K-12, higher-ed, online) could learn from one another to maximize their effectiveness teaching remotely. In this final part of this series, I'd like to provide insights for improving assessments and assignments in courses taught remotely based on principles from fields adjacent to teaching: instructional design and professional test development.

These recommendations are based on my work with HarvardX and other MOOC providers to help improve the quality and effectiveness of assessment in massive open online courses, as well as assessment-related competencies developed for a new graduate school of education. Because some of these steps are technical, a short, free course on the subject is available for those interested in learning more.

While it would be difficult to banish the word "assessment" from discussions of measurement-related educational activities; quizzes, exams, writing assignments, and other graded and ungraded work are better thought of as "active learning components" that give students the opportunity to put their learning to work.

Active learning components that evaluate student mastery (called summative assessments) tend to be highly motivating since they usually contribute to grades, while formative assessment (usually ungraded) can inform teachers of individual student progress. When creating either type of active learning component, writing test questions or assignment prompts are final steps of a backwards-design process that begins with detailed planning.

The backwards-design process, used by instructional designers and professional test developers, is also baked into the popular teacher-planning methodologies, such as Understanding by Design (UbD). Backwards design begins by defining goals for a course, course units and individual lessons, then determining teachable and measurable learning objectives, mastery of which will get students to each goal. For example, a geometry unit with the goal of ensuring students understand the Pythagorean Theorem might include separate learning objectives that require students to explain, apply, and prove the theorem.

Once goals and learning objectives are captured in planning documentation, the next step is to determine what evidence will demonstrate student mastery of each

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objective. Only when such a learning-objective-aligned evidence list has been finalized should teachers come up with mechanisms to get students to generate that evidence – preferably in varied and engaging ways.

Content development, which follows planning in the backwards-design process, can involve creating graded quizzes and tests, or assignments requiring more complex work, such as written essays or individual or group presentations and projects.

Some learning objectives can be covered by test questions with correct answers (called *closed-response items*). Popular closed-response item formats include multiple-choice or short answer (fill-in-the-blank). *Open-response items* also have correct and incorrect answers, but involve more complex student input, usually requiring human (versus machine) scoring. For example, learning objectives such as "apply the Pythagorean Theorem to solve problems," are candidates for closed-response math problems (multiple-choice, or fill-in-the-blank), while a question asking students to prove that theorem might require students to submit written proofs that would likely need to be graded manually.

Many educators, especially those in higher education, resist the use of item formats like multiple-choice out of a perception that they only evaluate lower-level knowledge versus higher-order thinking skills. While closed-response items are frequently used to assess knowledge recall, they can also serve as input mechanisms for questions requiring complex applications of knowledge and skills.

For example, a short-answer geometry problem can require students to perform complex mathematical operations in order to determine the correct answer that will ultimately be entered into an input field. Similarly, developers of standardized academic exams often ask students to analyze and synthesize information from multiple sources in order to arrive at a conclusion selected from a set of multiple-choice responses.

There is an art to creating closed-response questions that measure more than recall of facts, an art that educators teaching remotely could benefit from mastering, especially if they are using learning management systems with built-in assessment capability. But given that well-designed test questions should each measure a single learning objective, *performance-based assessments* provide ways to evaluate more complex and interrelated knowledge and skills.

The most popular performance-based test format used in education is the essay assignment in which written student work serves as the *artifact* that will be used as the basis for evaluating student mastery of learning. As with any active learning component, a performance-based assessment should measure explicit learning objectives. For example, a writing assignment might evaluate mechanics (such as spelling, grammar, and organization), while also evaluating research skills, comprehension of a topic, and the ability to argue a position.

Ways of measuring each of those objectives should be captured in a *rubric* in which performance levels for each learning objective are clearly articulated. As with any assessment-development process, there is an art to rubric design, and best practices involve creating a rubric and assignment (including prompts and support material) in tandem to ensure students following assignment instructions will generate sufficient amounts of the specific evidence needed to rubric score the assignment.

Performance-based assessments can require students to do all kinds of activities beyond essay writing, such as working on individual or group presentations, performing lab experiments, or creating artwork they can share online – anything that creates an artifact or observable activity that can serve as the basis for evaluation. When such tasks are designed to generate measurable evidence of learning, they become meaningful performance-based activities, rather than busy work.

Earlier, I mentioned formative assessment as a method used by teachers to evaluate student comprehension in the moment. When done properly,

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formative assessment can bring student misconceptions to the surface, and skilled teachers have strategies in place that use data generated through formative assessment to close learning gaps in real time.

For example, asking students to identify parts of a cell through an online poll might quickly separate those who understand a concept from those who do not. With that data in hand, a teacher can apply a range of pre-planned strategies (such as direct instruction, one-on-one teaching, or discussion where students who got the answer right can instruct those who did not) to ensure all students have mastered a topic before moving on.

As with all forms of active learning, formative assessment requires advanced planning to be used effectively. When done well, it helps establish a norm (both in the classroom and online) of seamlessness between learning and evaluation of learning.

K-12 teachers and college/university professors possess deep understanding of the content they teach, but their experience in testing may only come from an "Apprenticeship of Observation" based on having been on the receiving end of assessments over their own years as students. To move beyond the familiar, teachers should:

1. Plan assessments associated with courses, units and lessons using a backwards-design process that starts with goals then moves to learning objectives followed by evidence and finally content (rather than starting by writing a bunch of test question).

2. Become familiar with assessment tools built into technology you use for remote learning (such as quizzing tools in an LMS or polling options in conferencing programs like Zoom) as well as creative ways those tools are used by other educators.

3. Explore how educators (as well as professional test designers) use closed-response items, open-response items, or performance-based assignments to evaluate learning objectives that measure lower- and higher-level knowledge and skills.

4. When creating rubric-graded assignments, create the assignment and rubric together to ensure students know what evidence they need to generate to demonstrate mastery of learning objectives.

5. Employ formative assessment strategies that are integrated into an overall plan for a lesson, unit, or course.

As the initial shock of a wholesale move to remote teaching wears off, teachers and professors can bemoan the loss of the familiar or embrace techniques from within and beyond their current communities of practice to make remote learning just as effective and meaningful as any other teaching and learning experience.