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Emily Faulconer, PhD and Beverly Wood, PhD ▪ May 13, 2019

While most faculty think of assessments as used to measure learning after the fact, formative assessment classroom techniques (FACTs) give an instructor a snapshot of where students are in their learning so as to address any gaps in their understanding. Online instructors have a variety of tools at their disposal to incorporate engaging FACTs into their courses that will improve learning outcomes.

Partner Questioning Rounds is a discussion forum strategy that will both measure student learning and force students to approach the course content with a questioning mind. Students are put into pairs, with each given its own discussion forum. Students then take turns asking each other questions they have about the course material, with the other student answering. Students do three rounds of questions, and so this technique can be spread out across a weeklong online module, with one student assigned to ask a question on Monday, Wednesday, and Friday, and the other assigned to ask a question on Tuesday, Thursday, and Saturday. In this way students are asking and answering questions as their understanding develops throughout the module. The

process thus allows instructors to see how student understanding is or is not developing, and how students are interpreting the course content.

Think-Pair-Share (TPS) is another discussion forum strategy that tasks students to work together to solve a problem or answer a question. This strategy also requires dividing students into pairs. First, students think individually about the topic or question and then share their ideas with their partner. Pairing students helps because many are more likely to engage when they are working in a semi-private area, outside of the larger online discussion forum visible to all students. The structure of this FACT also encourages individual accountability for engagement.

This strategy could be applied in an English course where students contemplate a prompt about a specific excerpt or piece then exchange ideas with a partner to prepare a response to the whole group. The instructor can monitor the pairs for productive exchange of ideas and be prepared for the disparities or consistencies when the pairs share with the whole class. The FACT could also be used in a mathematics course to allow students to share their strategies for solving problems. Instructors could then observe the different processes students used and gather information on the most common strategies used successfully, as well as common errors and misconceptions.

Annotated Student Drawings is a FACT that allows students to apply their understanding to images. Student first either create or find an image related to the course content. They then annotative that image to represent concepts covered in the course. For example, in an engineering course exploring waste water treatment, students could be required to either find or create an image of a waste water treatment system. Some students will prefer to use their graphic design skills to create a drawing, while others will find one on the Internet. Then students would be required to sketch out the various steps in waste water treatment by adding labels to the image that represent those steps. They can do this by using free photo editing software such as Pixorize, Pixlr, PicMonkey, or meme generating websites like Meme Generator, or Meme Creator. Most students today are well versed in annotating images and creating memes.

Using this strategy early in a lesson gives the instructor insight into prior knowledge, while using it later in a lesson provides an opportunity to evaluate misconceptions and vocabulary use. If used early in the module, the annotated image could be revisited later in the module with a reflective prompt and the opportunity to edit based on feedback.

3-2-1 is an excellent FACT to use as an exit ticket in either traditional or asynchronous classrooms. While this FACT has several variations, the common theme is that students prepare 3 key ideas, 2 vocabulary words with definitions, and 1 question they still have. These can be submitted as ordinary text documents using the assignment feature of an LMS or gathered with a tool such as Google Forms. A form can be set up with fields to fill out, with the results automatically compiled and presented to the instructor to determine where the class stands on the material. The instructor can use the information to craft a wrap-up announcement for the module that answers the student questions or to develop extra content or work to address common issues.

While clickers have garnered significant attention in traditional classrooms, particularly those with large enrollments, **online polls** can serve the same function in an asynchronous online course. PollEverywhere even has the capability to embed the poll directly into the LMS and report the live results. Polling is truly versatile and can be used to check for basic content understanding, explore prior knowledge or common misconceptions, or to gauge opinions. For example, in a biomechanics course, the poll could quickly determine if students can identify a specific muscle by name. This poll can also be open throughout the module to measure student learning at different points as they go through the content. The fact that the poll is not graded and only feeds one or two questions at a time makes it less anxiety-inducing than graded assessments.

Students can use their results to determine where they misunderstood something and need to go back to look at the material again.

A **Terminology Inventory Probe** (TIP) can be used as an introduction activity in an online module to gauge student prior knowledge and misconceptions. In this FACT, students are presented key vocabulary and asked to identify if they 1) have never heard of the word 2) have heard of the word but are unsure of the definition 3) have an idea of what the word means, or 4) know what it means and can define it. This FACT could be programmed into the LMS as a quiz or an unweighted survey. Alternatively, it could be embedded into the LMS using H5P, a free open-source platform that allows the completion of the TIP to be graded as pass/fail for participation.

Sorting activities are an engaging alternative to the traditional quizzing format. In a meteorology course, for example, students may be tasked with sorting gases by whether they are greenhouse gases. Online card sorting tools are freemium-based, with the free version only allowing a limited amount of time on the system or only permitting a restricted number of participants. Paying the premium cost removes these restrictions. However, there are some off-line card sorting tools that are free to use but require software downloads, including UXSORT, Uzilla Mozdev, and WebCat.

Formative assessment is an underutilized method of determining where online students stand in understanding material. Luckily, there are a variety of tools and techniques available to the online instructor to measure student understanding and intervene where needed to improve learning outcomes.

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