Implementing Assessment in Online Instructional Environments

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Benefits of Assessment

Implementing an assessment system in online instruction can improve the learning outcomes and increase attendance in the course.

Explore Resources on MetEd

• [Online Course Support](#)
  MetEd log-in required.

While it is impossible to create a cheat-proof test online, it is possible to implement measures that will discourage students from cheating. Students who try to cheat will end up spending more time and effort on the online test than it would take to actually study and pass the test.
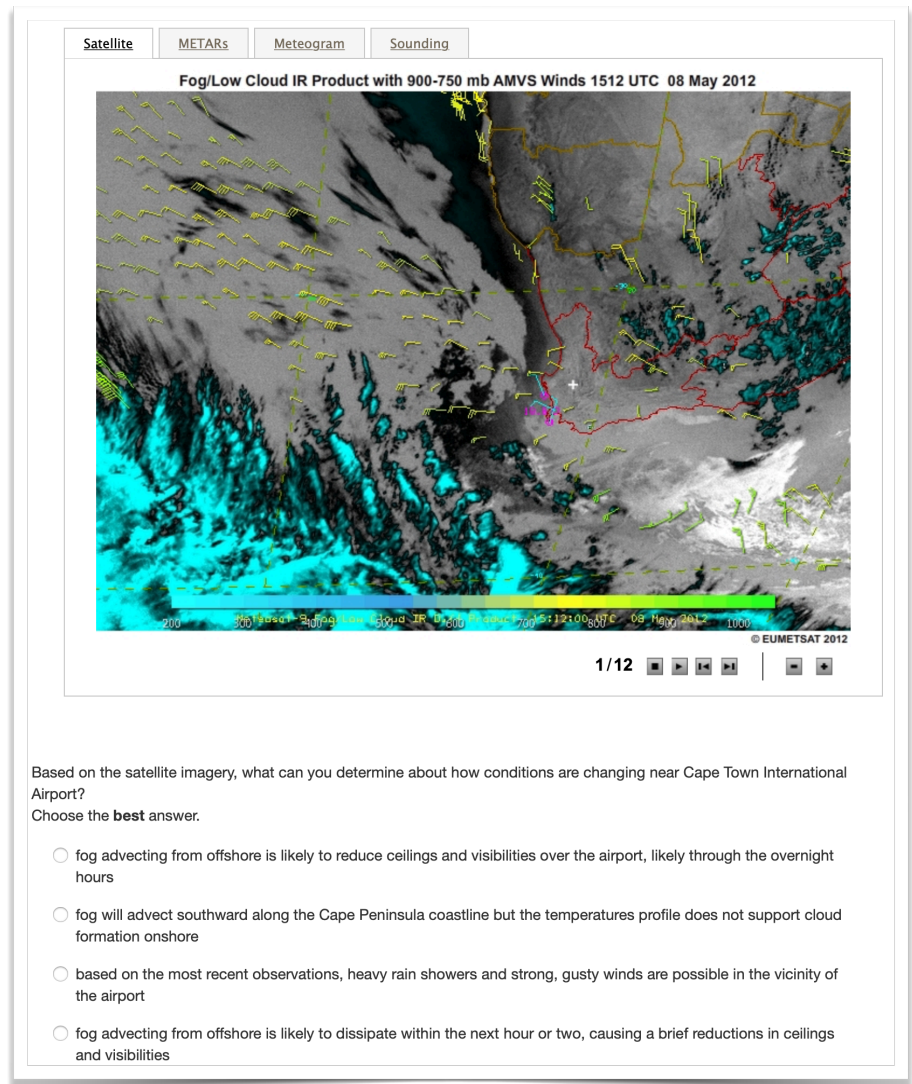
Take a moment to review the question in the image below. Why is it harder to cheat on this question?

To answer this question correctly, learners will need to analyze satellite observations, METARs and Soundings in order to solve the problem presented in the question. This goes beyond asking learners to recall information and draws out the more complex cognitive skills of analysis, problem-solving, and making decisions based on evidence.

Writing Questions for Complex Skills

To write questions that draw out more complex cognitive skills:

- Write what the students will be able to do after the course

- Identify the observable actions that indicate the cognitive activities are taking place

- Write questions that draw these activities out

| Satellite | METARs | Meteogram | Sounding |

Fog/Low Cloud IR Product with 900-750 mb AMVS Winds 1512 UTC 08 May 2012

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Based on the satellite imagery, what can you determine about how conditions are changing near Cape Town International Airport?
Choose the **best** answer.

○ fog advecting from offshore is likely to reduce ceilings and visibilities over the airport, likely through the overnight hours

○ fog will advect southward along the Cape Peninsula coastline but the temperatures profile does not support cloud formation onshore

○ based on the most recent observations, heavy rain showers and strong, gusty winds are possible in the vicinity of the airport

○ fog advecting from offshore is likely to dissipate within the next hour or two, causing a brief reductions in ceilings and visibilities

The following image shows these steps if we wanted our learners to analyze forecast guidance and observations to generate a forecast.

Objective	Observable Actions	Questions
Analyze guidance and observations to generate a forecast	• Analyze data in guidance • Interpret the guidance and reach conclusions • Determine possible weather scenarios • Select the most likely scenario • Create forecast for that scenario	• Include guidance products • Ask learners to review them and select the appropriate interpretation from a number of interpretations • Ask learners to select the most likely scenario based on their interpretations • Ask learners to select the forecast they will issue from a number of possible forecasts

Instructors can incorporate low-stakes quizzing in the following ways:

- Poll question during live session

- Conceptual quizzes at the end of class

- Exercises throughout e-Learning modules

The questions need to be cumulative and drawing out application, analysis and evaluation skills. These daily or weekly low-stakes quizzes can be worth 20% of the overall grade.

Portfolios
Another approach to assessment is to use portfolios. After an instructor has identified what their students should be able to do at the end of the course, the instructor can create a system of assignments that helps students to practice these actions.

If one goal is to help students create a forecast, the first assignment will ask them to analyse satellite images to determine the current state of the upper atmosphere and explain why they think their analysis is correct. Another assignment will ask them to analyze a sounding and determine the state of the lower atmosphere and explain their reasoning again. In the course of the semester, students will create these analysis documents and store them in an online portfolio.
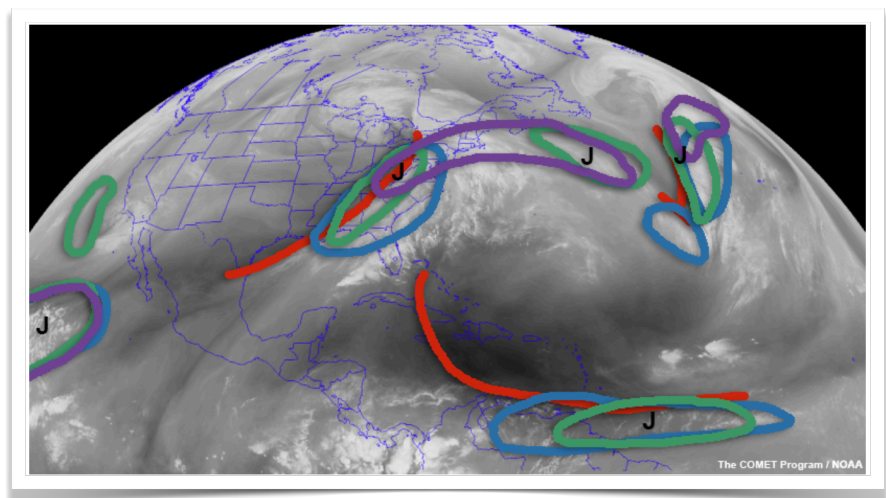
Grading Portfolios

Portfolio assessment requires different grading practices that midterms and finals. First students need to know what they must do and how well they must do it. To help them with that, the instructor needs to create model analyses for each product and show them to the students. Student work is then graded against these models.

If teaching assistants are grading, they need training in order to ensure inter-rater reliability. The teaching assistants need to consistently recognize good examples and poor examples of student work.
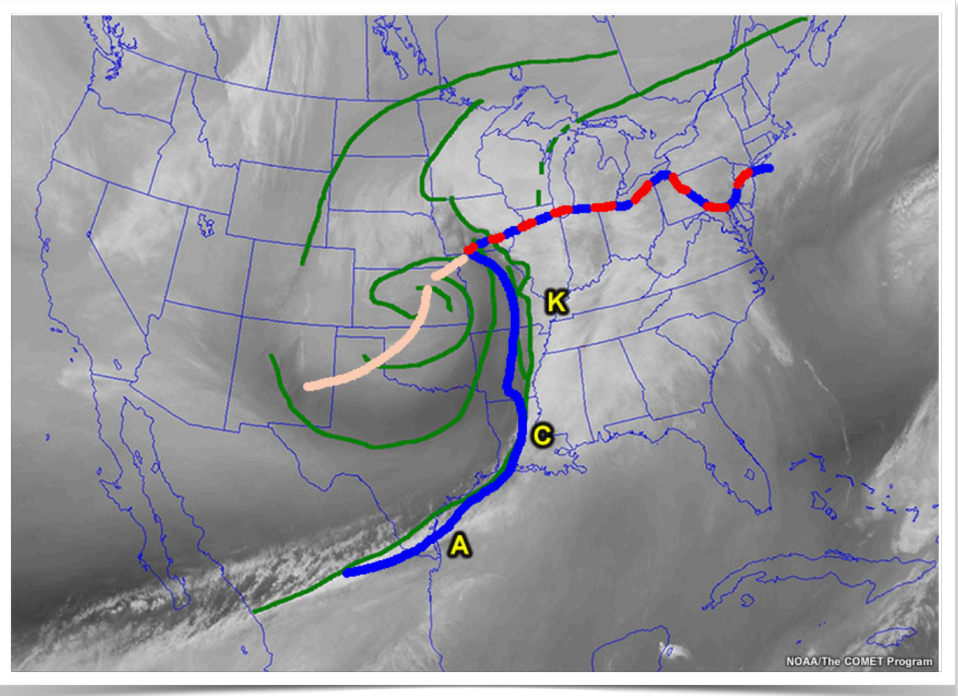
Testing as a Learning Tool

In their book "Make It Stick: The Science of Successful Learning," Brown, Rudiger and McDaniel review research that indicates that testing can play a powerful role as a learning tool. The authors concluded that:

"To be most effective, retrieval must be repeated again and again, in spaced out sessions so that the recall, rather than becoming a mindless recitation, requires some cognitive effort." (Brown, et al, 2014.)

Instructors who choose the implement low-stakes testing report that they need to explain the following findings about learning at the start of the semester:

- Testing effect

- Desirable difficulties

- Illusion of mastery

Testing effect: "practicing retrieval makes learning stick far better than re-exposure to the original material." (Brown, et al, 2014.)

Desirable difficulties: "the more effort required to retrieve something, the better you learn it." (Brown, et al, 2014.)

Illusion of mastery: "rising familiarity with a text and fluency in reading it" creates the illusion that students "understand the significance of the precepts they describe, their application, or how they relate" to what they already know. (Brown, et al, 2014.)

Closing the Achievement Gap in Sciences

Based on research by Dr. Mary Pat Wenderoth and her colleagues, daily or weekly low-stakes conceptual quizzes "significantly reduced student failure rates" in science courses. (Brown, et al, 2014.)
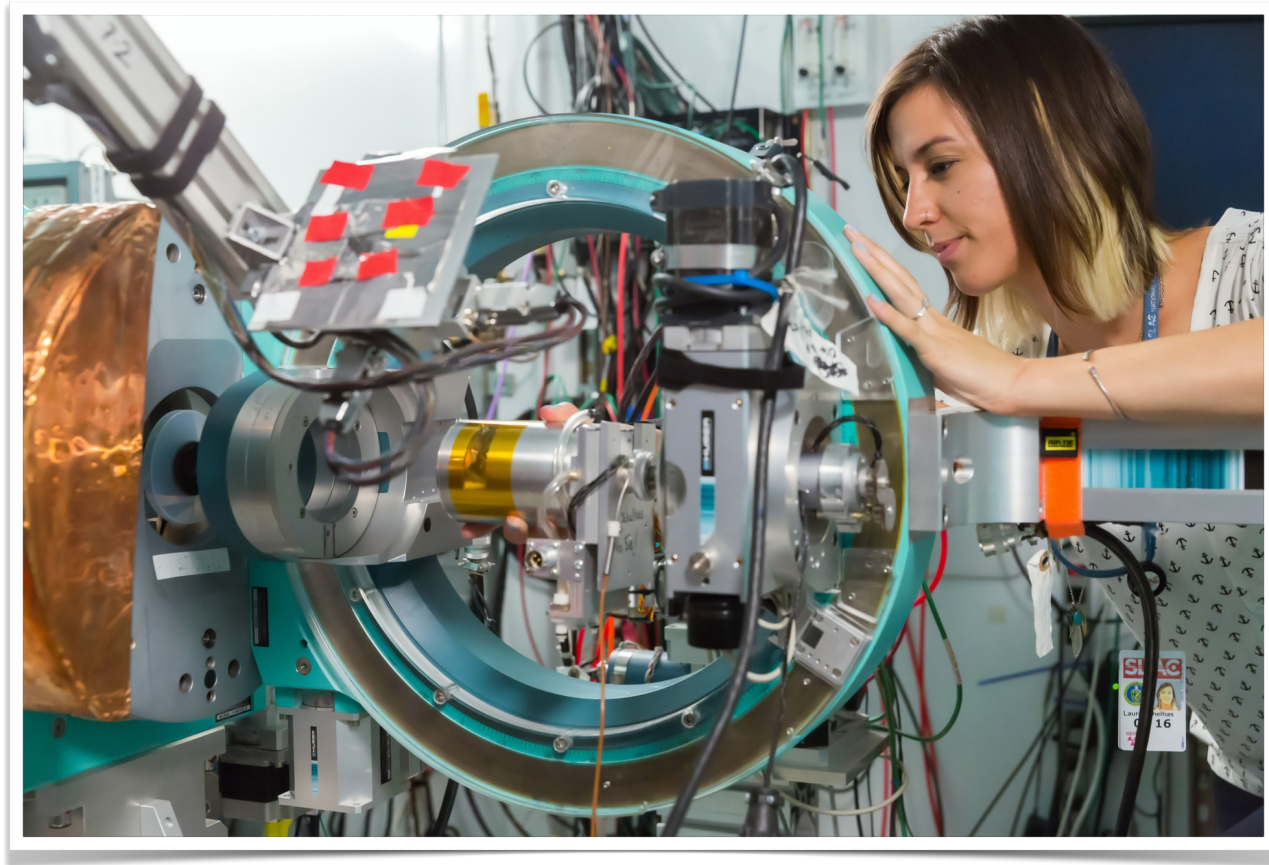
(Source: Photo by ZezSTY, Unsplash)

For more information about implementing assessment in e-Learning, please contact:
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