EVIDENCE

Program Assessment for Continuous Improvement

Richard Stockton College of New Jersey January 2014

Measuring the Effectiveness of On-Line Lectures

In the Physics for the Life Sciences I and II courses, there is a broad range of important foundational topics that are necessary pre-requisites for understanding later concepts, and time is often a limiting factor in deciding how to apportion the instructional emphasis. Many students, including the students who have both a strong desire to understand the concepts and a strong foundation in the mathematical techniques needed to apply the concepts, find themselves overwhelmed by the volume of material covered in lecture.

One solution to this problem is for the instructor to selectively trim the list of topics. The decisions as to which topics to trim can be easy decisions if all of the students in the class come from the same program (or major). For example, for a class of pre-med students, the topic on reinforced concrete may be optional, whereas it is not optional for a class of architectural students. If the class has students from a diverse range of programs, the task of trimming becomes daunting. The instructor may find some comfort in giving an assignment to read the chapter, but a recent study completed in the Richard Stockton College of NJ Physics Program, using a self-reporting survey, shows that the amount of the text being read by the students is minimal.

Contributed by Joseph Trout, Assistant Professor of Physics

Assessment in the Visual Arts

from Jed Morfit, Associate Professor of Art

At our retreat last July, the ARTV faculty identified a topic for assessment in 2013/14; “How effectively can students relate their work to the work of other historical or contemporary artists" Our collective concern was that, while our students were often smart and capable, they did not appear to be interested or able to imagine their efforts in relation to the larger context of contemporary art. While we had identified this problem anecdotally, the first logical step in addressing the issue seemed to be setting a baseline - getting a sense of what, if anything, our students knew about contemporary art, and whether or not they made any connections between that art and their own lives.

This is a big question, and it probably deserves a really refined and well constructed instrument. Unfortunately, that's not what it got. Instead, it got me. A member of the assessment committee, to be sure, but not a social scientist. Definitely not a *researcher*. A sculptor, actually. Still, as an assessment stalwart, and the Department Coordinator, I felt obligated to give it a try.

The instrument I came up with (my colleagues helped in the particulars, but should not be implicated in the overall design) had 4 sections, was given to 180 art students at every stage of the curriculum, and was distinctly imperfect. The first section showed pictures with a single space below each image, where students were asked to identify the artist. This section was, on balance, probably too hard.

The second section asked students to match art-related terms from a column on the right with a selection of images on the left. This section turned out to be entirely too open-ended, and was so difficult to score that it ended up being thrown out entirely.

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The last two sections asked students to a) name 5 artists they admired, including 2-3 sentences about what they admired about the work and b) to identify two occasions where their work had been influenced by the work of other artists. This section proved tedious to score, as students responded with a wide range of names, and I am not enough of an excel ninja to know how to enter that kind of data efficiently (although I should acknowledge that I was paid for my time).

The good news in all of this was that it worked. It didn't work as well as it might have if I had been a real researcher with more than a couple of weeks to design it, but it worked well eough to prove to everyone in the program that our fears were well founded, and that we need to make some changes in the program if we want to address them. That's a good outome, and it we're hopeful that it will lead to real improvements in our curriculum. I think that there's a (probably well founded) fear that assessment instruments need to be scrupulously crafted, and insightfully designed in order to get empirically valid answers. I'm happy to report that that's not the case. At least not in this case.

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A second solution can be found in "classroom flipping" techniques, such as online video assignments. Although there may be some argument as to the quality of a degree completed entirely online, very few educators would find fault with the concept that online components can be used to enhance a lecture course. Evidence of enhancing education can be found at Sun Microsystems, Inc. and the National Center for Atmospheric Research, who require attendees of workshops to complete an online tutorial prior to attendance at the workshops.

In one section of the Fall 2013 semester of the Physics for the Life Sciences I course, three online video lectures were used to cover topics that lent themselves to an online format. The topics were: 1.) Fluids 2.) Temperature and 3.) Heat. The lectures covered the introduction to these topics, definition of terms used, presentation of basic equations needed, and some application of the equations. The video lectures were recorded using Camtasia Software and consisted of a thirty minute power point presentation with a voice-over lecture component. The lectures were made available on the Blackboard website. The lecture on fluids covered density, states of matter, and pressure at a depth. The topics covered in the temperature lecture included the different temperature scales, conversions between the scales, and the kinetic theory of temperature. The lecture on heat covered the very basics of the units used, thermal expansion and methods of heat transfer.

To assess the success of the lectures, a ten question, online pre-test and post-test were completed for each of the three topics. Seven of the questions were conceptually based and three were simple quantitative questions. The students received credit for completing the tests, but the actual scores on the tests were not used to compute the students' grades. A graph of the difference between the post-test score and per-test scores is shown in Fig. 1.

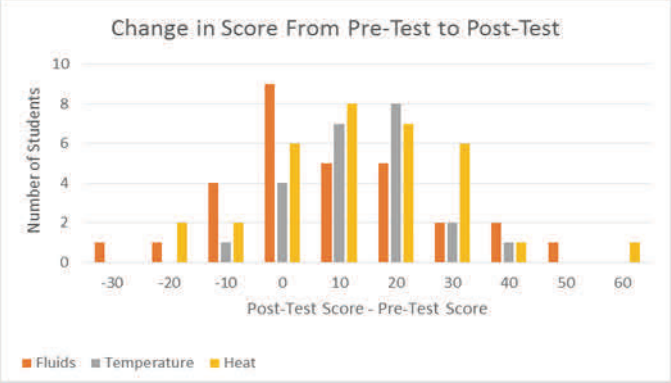


Fig. 1 A graph of the post-test score minus the pre-test score for the three topics covered by on-line lectures.

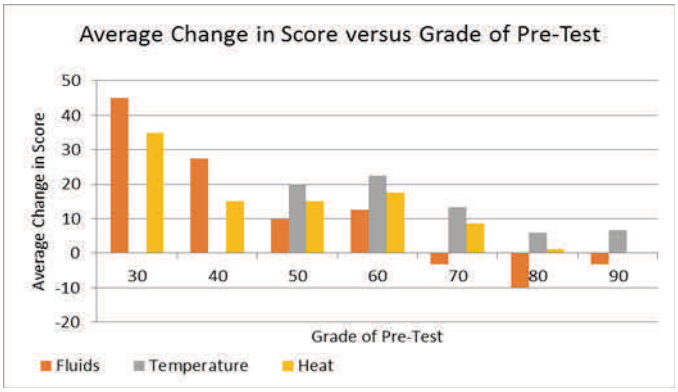
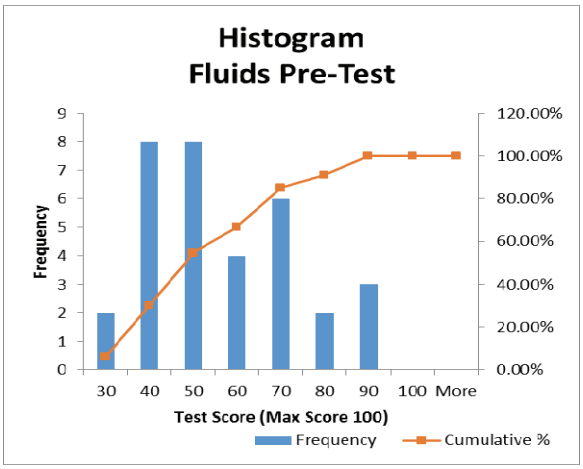


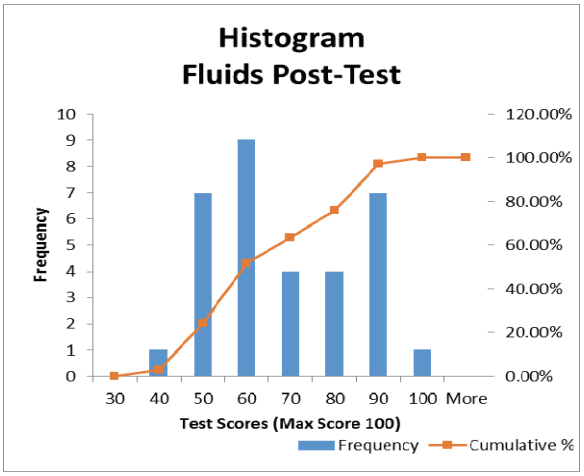
Fig. 2 A graph of the average change in score versus Pre-Test grade.

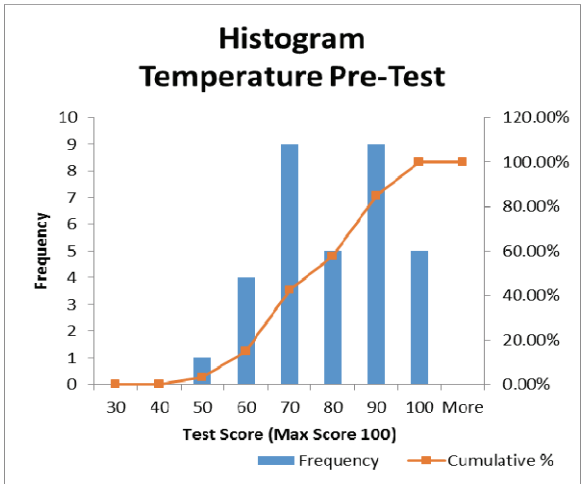
For all three topics post-test scores were higher on the average than were pre-test scores. The average increase of 11.8 points for the topic of Fluids, an average increase in grades of 9.7 points for the topic of Temperature, and an average increase in grades of 11.8 points for the topic of Heat. The average pre-test scores were 56.7, 79.7 and 61.8 for the Fluids, Temperature and Heat. Not surprisingly, the lower the average pre-test score, the greater the average increase in the scores. This can be seen in Fig. 2 which shows that the lower the average pre-test score, the greater the increase in post-score tests can be. Histograms of the pre-test and post-test scores are shown in Fig. 3.

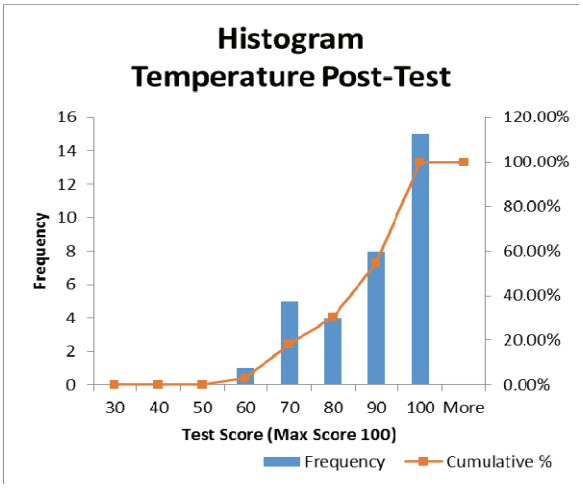
Note that the topic of temperature had the highest increase in scores. Of the three topics, this topic was the most compatible with the online format. The topics in this lecture were straightforward and the graphics available for the online video lecture were very useful.

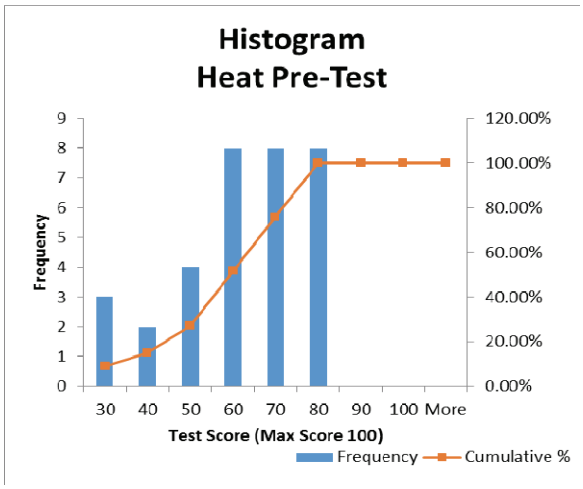
The graphs in Fig. 1 and Fig. 2 also shows that a number of students received lower scores after watching the video lecture for fluids. Although this information is disheartening, it can be used to improve the lectures and used to correct misconceptions during the normal instructional cycle. It should be noted that although the lecture on fluids lends itself well to a video format, it covered the most diverse topics and ran for the longer time period, which might explain the lower grades after viewing the lecture. After the scores were analyzed, the decision was made to reformat the lecture on Fluids into two shorter lectures.

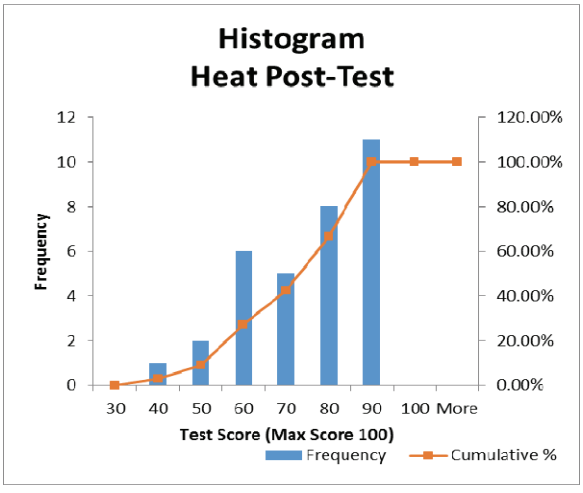












In summary, this study shows that the online lectures can be an effective method to enhance lecture courses. In general, the students increased their scores after watching the video lectures. The results from the tests were used to help direct the lectures and clean up misconceptions.

Submitted by Carra Hood, Associate Professor Writing

Rubric for Discussion Posts

Discussion posts enhance learning because they are a chance for you to share your ideas, perspectives, and experiences with other students. Posting will help you develop and refine your thoughts through the writing process, plus they can also broaden your classmates' understanding of the course content. In addition, I use the discussions as an opportunity to reinforce ideas in the week's lesson and to clarify any confusing points. It is important for you to keep up with the discussion threads for all of these reasons. The following is the grading rubric for your discussion posts:

Student's name _____

Criteria	Unacceptable	Acceptable	Good	Excellent
Frequency	Doesn't participate at all.	Participates once.	Participates 2 times but postings are not distributed throughout week.	Participates 3+ times throughout the week and replies to others' responses to previous posts.
Follow-Up Postings	Posts no follow-up responses to others.	Posts shallow contributions to discussion (e.g., agrees or disagrees); does not enrich	Elaborates on an existing posting with further comment or observation.	Demonstrates analysis of others' posts; extends meaningful discussion by building on previous posts and adding something new to the discussion.
Content Contribution	Posts information that is off-topic, incorrect, or irrelevant to discussion.	Repeats but does not add substantive information to the discussion.	Posts information that is factually correct but lacks full development of concept or	Posts factually correct, reflective and substantive posts that add to and advance the discussion.
References, Examples, & Support	Includes no references, examples or supporting experience.	Uses personal experience, but no references to readings or research.	Incorporates some references from reading and personal experience.	Uses references to course readings and personal experience to support comments.
Clarity & Mechanics	Posts long, unorganized or rude content that may contain multiple errors or may be inappro-	Communicates in friendly, courteous and helpful manner with some errors in clarity or	Contributes valuable information to discussion with minor clarity or mechanics er-	Contributes to discussion with clear, concise comments formatted in an easy to read style that is free of grammatical or spelling errors.

Examples of postings that demonstrate higher levels of thinking:

- "Some common themes I see are…." (analysis)
- "These newer trends are significant if we consider the relationship between …." (synthesis)
- "The reading for this week should be assessed by these standards …." (evaluation)

Grade for this week's Discussion ____