Teaching Mythbusters

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CASE 1:
Which of the following best describes what we know about student attention span during class?

1. Student attention tends to flag after about 5 minutes.
2. Student attention span is generally 10 – 15 minutes.
3. Students can maintain reasonable constant levels of attention throughout a 50-minute class.
4. Student attention does vary during class, but there is no clearly defined time frame for it.

CASE 1:

It is clear that students’ attention does vary during lectures, but the literature does not support the perpetuation of the 10- to 15-min attention estimate. If psychologists and other educators continue to promote such a parameter as an empirically based estimate, they need to support it with more controlled research.

Attention During Lectures: Beyond Ten Minutes.
Wilson, Karen, Saint Louis University
Korn, James H. Saint Louis University
Teaching of Psychology; Spring2007, Vol. 34 Issue 2, p85-89, 5p
CASE 2: Research on student attitudes toward group work has led to the conclusion that

1. There are no differences in student attitudes toward group work, based on student major.
2. Attitudes toward group work don’t differ much by major, but education majors express a more positive attitude than do business majors.
3. Attitudes toward group work don’t differ much by major, but business majors express a more positive attitude than do education majors.
4. The only noticeable difference is that students in professional schools express more favorable attitudes than do students in arts & sciences.

CASE 2:

Analysis of the positive and negative aspects of group work revealed generally similar results across majors, but with some exceptions. **Education majors had a more positive attitude toward group work than Business and Mathematics majors** and Business majors selected more negative aspects than the Education and Mathematics majors.

Student Attitudes Towards Group Work Among Undergraduates in Business Administration, Education and Mathematics.
Gottschall, Holli University of North Carolina, Greensboro
García-Bayonas, Mariche University of North Carolina, Greensboro
Educational Research Quarterly; Sep2008, Vol. 32 Issue 1, p3-28, 26p
CASE 3:
“Constructed-Response” (short-answer, essay) questions and Multiple-Choice questions

1. Can and do measure the same types of learning and can be used interchangeably.
2. Measure different types of learning and Multiple-Choice test results better predict future (in-course and across-course) learning.
3. Measure different types of learning and Constructed-Response test results better predict future (in-course and across-course) learning.
4. Some studies support (1), while others support (3).

CASE 3:
We conclude that CR and MC questions do not measure the same thing. Our main contribution is that we show that CR questions contain independent information that is related to student learning. Specifically, we find that the component of CR scores that cannot be explained by MC responses is positively and significantly related to (i) performance on a subsequent exam in the same economics course, and (ii) academic performance in other courses. Further, we present evidence that CR questions provide information that could not be obtained by expanding the set of MC questions.

Do Constructed-Response and Multiple-Choice Questions Measure the Same Thing?
Stephen Hickson and W. Robert Reed
CASE 4: The use of Student Response Systems ("clickers") has led to:

1. More student engagement, but not to improved attendance or exam performance.
2. Better exam performance and more student engagement, but not to improved attendance.
3. Improved attendance and student engagement, but not to better exam performance.
4. No significant differences in engagement, exam performance, or attendance.

CASE 4:

Using an education production function that controls for student GPA, etc., we find no significant differences between the clicker and nonclicker sections in student attitudes toward attendance, participation or class engagement, nor do we find any difference in exam performance. We conclude instructors should be cautious patching new technologies into traditional lecture courses, and universities cautious in mandating technology use.

Clickers, Student Engagement and Performance in an Introductory Economics Course: a Cautionary Tale
Marianne Johnson and Denise Robson, University of Wisconsin Oshkosh
The Economics Network of the UK’s Higher Education Academy
CASE 5:
If we compare student learning using web-only materials with a mix of web-based and print-based materials, we find that

1. Students appear to learn more using web-only materials.
2. Students appear to learn more using print-only materials.
3. Students appear to learn more using a mix of web-based and print materials.
4. There is no difference in student learning in these cases.

CASE 5:

Hundred and twenty two undergraduate students used either a web site or printed documents to answer 18 mathematics questions during a tutored session. The group working with printed documents had the highest performance. Furthermore, students perceived the paper materials as less effortful to read, and expressed preference for printing lecture notes and questions. However, students appreciated having a Web site available.

Students' Performance and Satisfaction with Web vs. Paper-Based Practice Quizzes and Lecture Notes
Author(s): Macedo-Rouet; Ney Charles; Lallich-Boidin;
ISSN: 0360-1315
CASE 6:

When we compare full-time faculty with part-time (adjunct) faculty, we find that full-time faculty

1. Receive higher student course-teacher evaluations and have less-lenient grade distributions.
2. Receive higher student course-teacher evaluations and have more-lenient grade distributions.
3. Receive lower student course-teacher evaluations and have less-lenient grade distributions.
4. Receive lower student course-teacher evaluations and have more-lenient grade distributions.
5. None of the above appear to be true.

CASE 6:

Using data from eight academic departments and 361 courses taught during a semester, the author examined differences between full-time and part-time faculty in the areas of general demographic variables, student evaluation of teaching outcomes, and the distribution of grades earned. The author expected full-time faculty to exhibit higher teaching evaluations and less lenient grade distributions, yet neither hypothesis was supported. However, substantial differences exist in the support mechanisms provided to part-time and full-time faculty. There was not a significant difference between full-time faculty and part-time faculty) in the average number of students enrolled per class.

Are There Instructional Differences between Full-Time and Part-Time Faculty?

Landrum, R. Eric
College Teaching, v57 n1 p23-26 Win 2009. 4 pp. (Peer Reviewed Journal)
ISSN: 8756-7555
CASE 7:
Peer-led, team based learning programs appear to provide:

1. No particular benefits to any types of students.
2. Benefits to “traditional” students (i.e., age 18 – 24), but not to non-traditional students.
3. Benefits to non-traditional students, but not to traditional students.
4. Roughly equivalent benefits to all types of students.

CASE 7:
Our University is a large, urban-situated campus with not only traditional age college students, but also older, employed students seeking a college degree. Students have very disparate backgrounds and levels of preparedness to begin chemistry courses intended for chemistry and other science majors. In order to address issues of low student retention and success in their academic programs, we have instituted a large scale Peer-led Team Learning Program. The Program has led to significantly higher student success rates and increased retention in courses. Students in the PLTL Program have also demonstrated improved performance on standardized examinations as a result of this intervention.

Peer-led Team Learning in an Urban University
Author(s): DAI Weimalike (IUPUI)
CHINESE JOURNAL OF CHEMICAL EDUCATION, Year 2003, Issue 7, Page 37-39
"Peer-led Team Learning in an Urban University"
CASE 8:
Providing short breaks in class for students to work in small groups (e.g., to clarify issues in their class notes) resulted in:

1. Neither immediate gains in understanding nor long-term (higher scores on subsequent tests) gains.
2. Immediate, but not long-term gains.
3. Long-term, but not immediate gains.
4. Both immediate and long-term gains.

CASE 8:
In a study involving 72 students over two courses in each of two semesters, the researchers examined the effect of interrupting a 45-minute lecture three times with two-minute breaks during which students worked in pairs to clarify their notes. Short-term recall with the pause procedure averaged 108 correct facts compared to 80 correct facts recalled in classes with straight lecture. Long-term retention was assessed with a 65 question multiple-choice exam given one and a half weeks after the last of five lectures used in the study. Long-term retention test scores were 89.4 with the pause procedure compared to 80.9 without pause for one class, and 80.4 with the pause procedure compared to 72.6 with no pause in the other class.

CASE 9:
In determining the proper placement of incoming students (at least in math),
1. SAT or ACT test scores will work as well as, or better than, institution-specific assessment instruments.
2. Institution-specific assessment instruments work better than SAT or ACT test score.
3. Neither approach works very well.

(NOTE: “Works better” means that students perform better in the math course into which they placed)

CASE 9:
This study compares the use of math placement scores and SAT scores for 188 freshman students. The student’s grades and faculty observations were analyzed to determine if the SAT scores and/or college math assessment scores are better or equivalent indicators of the proper math level at which students should be enrolled in the first year. The data revealed that the SAT scores were not the best indicators of the math level course the student should select, and that the college math assessment scores may have been better indicators according to initial midterm grades.
CASE 10:
Measures of student readiness to use, and enthusiasm about, podcasting as a form of supplemental instruction or instruction about repetitive topics about indicate that

1. Students in general do not like, and do not take advantage of, podcasts.
2. Student enthusiasm about and readiness to use podcasting is less than faculty expect, but they can be persuaded to use these tools.
3. Student enthusiasm about and readiness to use podcasting is greater than faculty expect, and they are active users of these tools.

CASE 10:
The present study explored students' readiness and attitudes towards these two forms of podcasting to provide fundamental information for future researchers and educators. The results indicated that students may not be as ready or eager to use podcasting for repetitive or supplemental educational purposes as much as we think they are, but they could be persuaded.

Title: Podcasting in Education: Are Students as Ready and Eager as We Think They Are?
Author(s): Walls, Stephen M.; Kucsera, John V.; Walker, Joshua D.; Acee, Taylor W.; McVaugh, Nate K.; Robinson, Daniel H.
CASE 11:
In general female students perform better than male students in:

1. Arts, humanities, and social science courses at the introductory level, but not in math, science, or advanced courses.
2. All courses, both at the introductory level and at the advanced level, and by increasingly wider margins.
3. All courses at the introductory level, and by narrower margins at the advanced levels.

(In all cases controls are used for student SAT scores.)

CASE 11:

Gender was investigated along with other academic variables as predictors of success in entry-level freshman courses from liberal arts mathematics through calculus. The female students were more successful than the male students in all the courses, but gender became less significant as the sophistication level of the course increased. The females outperformed the males in terms of successful completion when the females in each of the courses had lower average SAT mathematics scores.

Is Gender a Predictor of Success in College Mathematics Courses?
Nelson, C. Van (Ball State University); Leganza, Krystina (University of Indianapolis)
College and University, v81 n4 p11-18 2006
CASE 12:
Surveys designed to identify student personality traits and computer skills

1. Accurately predict performance in online learning experiences.
2. Suggest that some personality traits matter, but that computer skills do not matter, for predicting performance in online learning experiences.
3. Suggest that computer skills matter, but that personality traits do not matter, for predicting performance in on-line learning experiences.
4. Suggest that neither personality traits nor computer skills make much difference.

CASE 12:

Two common web-based surveys, "Is Online Learning Right for Me?' and "What Technical Skills Do I Need?' were combined into a single survey instrument and given to 228 on-campus and 83 distance education students. The students were enrolled in four different classes (business, computer information services, criminal justice, and early childhood development) on three different regional campuses of a mid-western community college. Although distance education students scored significantly higher on the survey instruments than on-campus students, the survey scores explained only 8% of the observed variance in their final grade percentage. The course in which they enrolled explained most of the variance in final grade percentage.

Predicting Student Performance in Web-Based Distance Education Courses Based on Survey Instruments Measuring Personality Traits and Technical Skills.
Hall, Michael(Ivy Tech)
Source: Online Journal of Distance Learning Administration; Fall2008, Vol. 11 Issue 3, p2-2, 1p (peer reviewed)
CASE 13:
Direct, personalized email contact with individual students who perform poorly on a first exam in a large class:

1. Makes no difference in student performance on subsequent exams.
2. Improves student performance, but the improvement is not statistically significant.
3. Leads to better performance on subsequent tests than a control group.
4. Results in students who performed worse on the first test performing even worse on subsequent tests than a control group.

CASE 13:

In large classes, students' feelings of anonymity and interpersonal distance from the instructor can be particularly detrimental to those who struggle with course material. We tested a simple method for connecting with struggling students to improve their performance. We randomly divided students who scored 75% or lower on the first exam into 2 groups. Students in one group received a personalized e-mail message expressing our concern and providing information about course resources. Students in the other group served as a no-e-mail control. Those who received the message performed better on the second exam than those who did not. We discuss possible explanations for our findings and question whether multiple e-mails might enhance performance more consistently.

Connecting With Struggling Students to Improve Performance in Large Classes.
Isbell, Linda M.; Cote, Nicole Gilbert, University of Massachusetts, Amherst
Teaching of Psychology; Jul-Sep2009, Vol. 36 Issue 3, p185-188, 4p