

Exploring (and Removing) Hesitations to Using (Thoughtful) Fun in Statistics Classes

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Abstract

Many instructors appreciate the value of making statistics courses (especially for non-majors) more engaging and fun to build classroom community, reduce student anxiety/disinterest, and increase motivation and memorability of content. Some instructors hesitate, believing they lack sufficient class time, skills/talent, or resources for readily finding and using quality examples. Other hesitations include the need to be perceived as sufficiently serious, or not being aware of any empirical evidence that this approach can help student learning. We will discuss these hesitations so we all leave with more understanding of how they can be addressed. My contributions will be informed by Project UPLIFT, "Universal Portability of Learning Increased by Fun Teaching" (the NSF TUES type 1 grant I have with Dennis Pearl, John Weber, and Rey Reyes, now entering its second year) as well as by work with my colleagues in the CAUSE "Study of Fun" Cluster that was published as Lesser et al. (2013) and presented at USCOTS 2013.

Key Words: Fun, motivation, hesitation, humor, anxiety, education

1. Overview

The present proceedings paper aims not to duplicate but rather supplant the already-published papers on this topic. The main recent paper is a 33-page, 98-reference, 11-author article by Lesser, Wall, Carver, Pearl, Martin, Kuiper, Posner, Erickson, Liao, Albert, and Weber (2013). Within five months of its publication, that aforementioned paper was subsequently followed by a related poster (Posner, Erickson, Carver, Liao, and Martin, 2013), roundtable (Lesser, 2013a), and archived webinar (Lesser, Carver, and Erickson, 2013). The webinar, in particular, can be efficiently viewed for useful additional context to Lesser et al. (2013).

2. JSM 2013 Roundtable

Because the roundtable was not a published or archived product, we briefly describe it now. A full table of participants signed up for the roundtable and their backgrounds spanned a variety of institutions from two countries, including private and public, as well as research university, liberal arts college, and community college. Beyond discussing some of the themes and strategies from Lesser and Pearl (2008) and Lesser et al. (2013),

specific questions participants raised included how to use fun with a heterogeneous group, how to inspire one's colleagues to try using fun, how to avoid sounding scripted, and how to use fun in a large class. Participants also shared specific strategies and jokes they have successfully used, such as banter to lower student anxiety levels just before starting an exam. The instructor might say "Time shouldn't be a factor – it took me only 11 minutes." After students chuckle a bit, the instructor then continues, "...but I only got a 63, so you should try your best." Another instructor said he always dons cap and gown on the day he teaches the Central Limit Theorem, to emphasize its importance.

3. NSF Grant: Project UPLIFT

Quoting the abstract for the grant, "Project UPLIFT: Universal Portability of Learning Increased by Fun Teaching will offer college statistics teachers engaging classroom mini-lessons and resources consisting of "fun" items, spanning all main topics of introductory statistics, from the extensive, widely-visited CAUSEweb.org digital library. The fun items encompass many modalities, including cartoons, jokes, quotes, songs, poems, wordplay, and videos. UPLIFT will transform the undergraduate statistics classroom by putting fun items into well-indexed and annotated "classroom-ready" form with mini lesson plans for their use without requiring "special talent" - thus removing perceived barriers to use. UPLIFT materials will be assessed rigorously for their impact on student learning and student anxiety and attitudes towards the often-dreaded realm of introductory statistics. This will be done using a novel randomized controlled experiment and supporting interviews and observations of students. UPLIFT will disseminate methods and results through virtual and paper publications, conference presentations, and both general and customized webinars. UPLIFT's impact will be broad -- the fun-based items are being tailored for, and tested in, diverse populations of students representative of the 800,000 students taking introductory statistics each year in the United States. Project UPLIFT collaborating institutions are Ohio State University, University of Texas at El Paso, and Georgia Perimeter College." The PIs from this trio of universities are a subset of the 11-author team of Lesser et al. (2013). At the time of Lesser (2013a), Project UPLIFT had reported on its first year and was preparing for its second year.

3.1 Qualitative Data

Qualitative data (including transcripts of six one-on-one student interviews as well as field notes and/or transcripts from five entire class meetings) have been collected from a Spring 2013 course and analysis of the data is in progress to identify patterns and themes from one instructor's use of various types of fun in an introductory statistics course.

3.2 Quantitative Data

After researchers reached consensus on identifying 14 particular items from the CAUSEweb.org fun resources collection as aligned with existing content objectives of their university's respective multi-section introductory statistics course, those items were enhanced by embedding them within a mini-reading in the course management system, with half of the students receiving the same mini-reading without the "fun insert", in the spirit of the randomized experiment design of Garner (2006).

Then at two institutions about a week into the fall 2013 semester, students were asked to take two pre-tests: the SATS-36 (Survey of Attitudes Toward Statistics; Schau, Stevens, Dauphinee, & Del Vecchio, 1995; <http://www.evaluationandstatistics.com>) and the SAM (Statistics Anxiety Measure (Earp, 2007)). (As an aside, we note that fun is one of the

strategies discussed by Lesser (2013b) for reducing statistics anxiety.) Near the end of the fall 2013 semester, students will take a post-test of these same two measures to assess any changes in attitudes and anxiety. Also, student performance on content items (embedded on regular course exams) related to the selected fun items will be assessed as a measure of student achievement. In spring 2014, quantitative data will be collected from the third institution, but using a design that randomizes over items instead of over students.

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