



HOME FIND/ADD SONGS LESSON PLANS QUIZZES BLOG OTHER STUFF

• Search This Blog

Search for:

Search

• Blog Archives

Blog Archives

Select Month ▼

• Blog Categories

Blog Categories

Select Category ▼

• Other Sci-Music Blogs

- [Genetic Music Project](#)
- [Science Ditty Friday \(realscience.us\)](#)
- [Science With Moxie](#)
- [Science With Tom](#)
- [Songs About Science](#)
- [Sounds Of Science](#)
- [The Science Songbook](#)

• Meta

- [Log in](#)
- [Entries RSS](#)
- [Comments RSS](#)
- [WordPress.org](#)

← [New science music projects from Master Tom and Doctor Eva](#)

STEM songster interview #19: Professor Lesser

Posted on [February 18, 2016](#) by [crowther](#)



November 2015: Larry Lesser prepares to play "The Gambler," one of his winning entries in the 2015 Museum of Mathematics (MoMath) song contest.

One of the only people in this world who devotes as much time as me, or more, to writing educational STEM songs and thinking about how to use them effectively is [Prof. Lawrence M. Lesser](#) of The University of Texas at El Paso (UTEP). After years of occasionally corresponding with Larry via email, and reading his papers, I was excited to meet him in person for the first time when he recently visited Seattle — a visit which led to the following interview.

Sing About Science & Math: *This interview, conducted via email, is an extension of a conversation we began in Seattle. Larry, visiting me was NOT your primary reason for coming to Seattle. Please tell our readers what you were doing out here.*

Larry Lesser: Hanging out with you was icing (actually, ice cream) on the cake, but I booked my Seattle trip to participate in the 2016 Joint Mathematics Meetings with 6100 folks in the mathematical sciences. I co-organized an evening of mathematical poetry and art (the art supplied by Seattle-based painter Michael Schultheis) and I gave a [talk](#) on my two current NSF [National Science Foundation] grants related to the use of educational fun (especially songs) in helping college students learn introductory statistics.

SAS&M: *I am always impressed when people are able to get grant money for projects on educational music. Can you tell us a bit more about these proposals? Why do you think they were successful at a time when the vast majority of NSF proposals are turned down?*

LL: Those of us exploring the pedagogical use of fun sometimes hear the sentiment that you need special talent to use fun effectively. Fun would be of limited value if this were true, so Dennis Pearl (Penn State) and John Weber (Perimeter College at Georgia State University) and I wrote an NSF grant (Project UPLIFT: Universal Portability of Learning Increased by Fun Teaching) to implement a randomized experiment in the virtual environment of a learning management system, thus taking teacher effect or special talent out of the picture. The study's statistics students were all given access to a dozen self-contained mini-readings on various pieces of content, with half of the students randomly assigned to also have a "fun insert" (e.g., song or cartoon) in each of their readings. There were no significant differences between the two groups in terms of attitude or anxiety, but it was interesting that the experimental group did significantly better on the embedded midterm items that were related to the six fun inserts that were songs. This past September, we landed a second NSF grant (Project SMILES: Student-Made Interactive Learning with Educational Songs for introductory statistics) that lets us focus on songs and on how interactive they are. I'm happy to say that during the fall 2015 semester, a diverse collaborative of internal and external professionals with working knowledge of both statistics and music created 21 content-rich songs — high in aesthetic and pedagogical quality — purposefully designed with places for students to supply examples or concepts, loosely inspired by the Mad Libs word game. Later, we'll conduct a randomized experiment to see if students have greater learning gains and anxiety reduction when they encounter readings without song inserts, readings with a completed song inserted, or readings with an interactive song they help complete. I'll conjecture that reasons our grant proposals were funded include: the rigor of the randomized controlled experiments, our [track record of publications and creativity in the field](#), and the potential of our model to have broad impact given nearly 1 million annual introductory statistics students and given how readily our model could transfer to other STEM disciplines as well.

SAS&M: *So, in this latest grant, is your hypothesis that students will learn the most from the interactive songs that they help to complete, rather than the completely pre-written songs?*

LL: Basically, yes. We conjecture that the interactive songs may yield a greater quantity and/or quality of student engagement which in turn may yield more learning gains. We'll see!

SAS&M: *OK. Let's back up to the stage at which you yourself first merged music and math. What was your mathematical training and musical training like up to that point, and what prompted you to combine them?*

LL: I had some guitar lessons as a kid, but learned at least as much from my more musical friends (now I learn from YouTube!). I became a math major and began writing songs after my first year of college (Rice), writing several dozen before I finally took a class in music theory to understand why certain chord progressions worked better than others. In college, my songwriting was more of a raw vehicle for personal growth than as art to share, but while obtaining my graduate degrees (MS in statistics, PhD in mathematics education) at UT-Austin, I began to explore the craft and business of songwriting. I served as Austin Songwriters Group Vice-President, released a (cassette!) album of 9 original songs, interviewed a major-label artist, and had some local airplay and song contest awards. Then I began teaching college classes and was hungry for ways to engage my students and make math class more interesting. While teaching a precalculus class at Southwestern University in 1992, I created a project in which student teams explored mathematical connections in the structure of music. While teaching calculus at the University of Northern Colorado in 1994, I wrote and performed in class my first math song, a parody (of an Eagles song) called "Take it to the Limit." The surprisingly positive response to those initial efforts encouraged me to do more of it.

SAS&M: *Since then, you have written many parodies as well as original tunes. From a teaching perspective, what do you see as the most important pluses and minuses of each of these types of songs?*

LL: Great question! I explain in [Journal of Mathematics Education](#) that most of my mathematics songs are parodies because “they are quicker to write and easier for listeners to follow (since familiar melody and structure are already in place), and have the dimension of added humor based on what changes to the lyric are made (or not made).” That said, I have found certain math topics just can’t be readily put into a song parody (I’m picky about making sure the song being parodied is not unduly profane, sacred, or obscure) and in those cases I embrace the challenge to write a song from scratch and I think many students appreciate that their instructor is trying something with greater risk and revelation. By the way, when I do parodies, I don’t feel bound to preserve the entire length of the original song. As I say in [Journal of Mathematics and the Arts](#), “Because class time is precious, it is preferable to streamline songs rather than indulge in a parodied song’s extended introductions, solos, or a large number of verses and choruses.... This approach suffices to evoke the original song, while focusing more on mathematical content than on musicianship.”

SAS&M: *Among the many STEM songwriters that I know of, you are very unusual in publishing many of your songs in peer-reviewed journals, rather than simply posting them online. Why do you do this? That is, what do you and/or others gain from this more formal route of dissemination?*

LL: In a parallel universe, I’ve had the time, talent, and resources to put out many albums and I’m a rich, nationally-touring star! But in the universe I actually live in, the next best thing has mainly been just getting many lyrics published in outlets more visible and enduring than my homepage. (And the lyric is all you need for parodies to visualize the song since the music is already familiar.) Another benefit of periodically placing a lyric in a regular periodical in the field is that it can get the attention of many readers who might not otherwise ultimately become aware of the existence of a critical mass of discipline-specific songs to enhance instruction and outreach. Some material I’ve published has attracted some neat invitations or correspondence from people that might not have ever stumbled upon my website. And then there are the general benefits of going through peer review (even when the review is not an external double-blind review) in that I’ve often used peer feedback to improve my lyrics just as I do to improve my articles, and having the lyric published in a journal that has a vetting process gives the lyric (and perhaps STEM songwriting in general) a bit more legitimacy in many people’s eyes.

SAS&M: *Speaking of revision, tell us about a song that you are really proud of, but that took you a long time and/or a lot of effort to “get right.” What was problematic about your early versions, and how did you improve them?*

LL: “Taking a long time to get right” is an interesting and humbling thing because sometimes I write a song and think it’s as good as it can be and then years later (sometimes prompted by prepping the song for performance or publication), I think of a lyrical improvement that the song should have had all along. One concrete example is [“The Gambler”](#) (my lottery outreach song parodying the same-titled signature song of Kenny Rogers), in which my initial version had too many verses and a chorus that did not do as good a job of incorporating the setting of buying lottery tickets and mimicking the phrasing of the original song. Sometimes I get caught up in the cleverness of an idea or try to stuff in as much content as I can and forget that it’s often true that “less is more” when it comes to songwriting (and teaching!). Another example is that my first version of “American Pi” not only lacked the “Prologue” section but also had inadvertently used a different rhyme scheme from the verses of “American Pie.” I’m glad these (and other things) are fixed in my [“current final version.”](#)

"The Gambler", live at the National Museum of Mat...



SAS&M: *Yes, I agree that it's easy to lose sight of "less is more." Some of my own early song parodies were essentially attempts to cram lots of puns, funny rhymes, etc. into a small space. (Ironically, this was true even of a [song in which I used the phrase "less is more."](#)) In any case, you and I are both more skilled as songwriters than as performers. If you could hire anyone in the world to include one of your songs on their next album, which song and which artist would it be, and why?*

LL: Fun question! Well, as a (totally unrealistic) daydream, I'd fantasize that one of my parodies gets covered by Taylor Swift or any of the other megafamous artists whose songs I've parodied, or maybe by all-time parody king Weird Al Yankovic. Or I'd dream that one of my songs gets covered by an artist or band (They Might Be Giants, Trout Fishing in America, etc.) that has their own "regular" repertoire but also releases albums of educational music, so there would be a market niche in place. Of course, my immediate goal is not fame and fortune, just an effective quality product, and my region is blessed with many quality (but still affordable) musicians I can tap to make solid recordings as needed. Indeed, my NSF-funded Project SMILES we discussed earlier taps the talents of my university's amazing music majors and state-of-the-art recording facility. That said, I'd never want to give up my occasional performing because it's fun and helps keep me honest and sharp as a songwriter! As G. K. Chesterton said, "If a thing is worth doing, it is worth doing badly." Don't we want our non-major STEM students to feel similarly empowered to enjoy and learn our subject even if they don't master it fully or perfectly?

SAS&M: *Indeed! Any final thoughts on the future of teaching STEM with music?*

LL: I predict the current interest in using the arts to turn STEM into STEAM will yield many neat innovations and attract more people to learn content in our discipline. It's an exciting time to be in this intersection, now that there is an emerging critical mass not only of high-quality STEM songs (and not only songs for children) but also of papers on their usage. But it's nice that we're still small enough that it's not too hard to keep up with what our talented kindred spirits are doing in their respective areas. And I want to express my appreciation to you, Greg, for honoring me with this interview and for all you do to promote and organize STEM songs for the benefit of all. I invite readers wanting "more Lesser" to visit [my math song website](#).

