

Learning to the Beat of a Different Drum

MUSIC AS A COMPONENT OF CLASSROOM DIVERSITY

by Greg Crowther

When I was a biology student, I would occasionally write science-related songs to amuse myself and a few like-minded friends. Often these were parodies of well-known pop hits—for example, “Insecty Things,” sung to the tune of the Hot Chocolate song, “You Sexy Thing,” and, “Help Me Rhombus,” sung to the tune of the Beach Boys’ “Help Me, Rhonda.” As I made the transition from student to teacher, I sang a few of these songs in the classroom and found that they captured students’ attention very effectively, which led me to examine the literature on educational uses of music and to experiment further with the incorporation of songs into my lesson plans. This article is a brief summary of what I’ve learned so far.

Music reflects and promotes diversity

When considering the possible use of music in non-music courses, at least three important diversity-related points should be noted. The first is simply that different students have different learning styles; therefore educational songs are likely to benefit some students but distract or irritate others. My own class survey results (Table 1), while generally encouraging, reflect this range of responses. To avoid alienating the anti-song students, I use a limited number of songs during class time while providing additional music as optional “homework” for those who want it.

A second, related point is that preferred styles of music may vary greatly among students and instructors. While instructors tend to expose their students to music that they themselves enjoy, some consideration of student tastes can be helpful. For example, the two songs mentioned in the

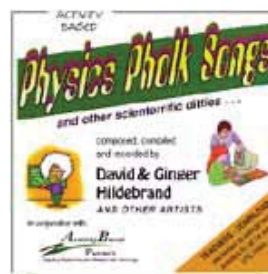
first paragraph are unfamiliar to many of today’s students and thus might not engage them as readily as a more contemporary song would. One student emphasized this point on my anonymous class survey by offering the following evaluation of my songs: “Interesting, but go easy on the 80’s remixes.”

A third and final point is that injecting music into subject areas such as science may help combat negative stereotypes about these subjects. Many students believe that science consists of memorizing formulas and making tedious measurements, with little or no room for creativity or emotion. Singing about a particular scientist or scientific problem is one way to convey the “human” side of science—the mysteries, excitement and humor that are as much a part of the discipline as washing test tubes and calculating densities.

Music enhances learning

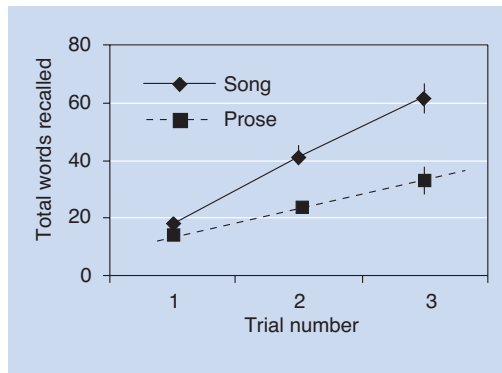
It is well established that setting words to music can improve recall of those words. This is particularly true when the resulting song is heard more than once (see graph) and includes rhymes,¹ an easy-to-sing melody,² and a consistent rhythm.³ Furthermore, musical cues can trigger the recall of unique information that is difficult to retrieve using nonmusical cues.⁴ Songs can thus facilitate the retention of facts that simply need to be memorized.

Music has other potential educational benefits as well. There is preliminary evidence that regular music practice improves mathematical and spatial reasoning skills as well as overall IQ.⁵ Music may create a classroom climate conducive to learning by reducing stress levels and putting students at ease.⁶ Finally, if the music is both enjoyable to the students and relevant to the material they are study-



Several covers of “science songs” albums, available on <http://www.science-roove.org/SSA/resource.html>

Recall of song lyrics by college students, as reported by McElhinney & Annett (1996). Students listened 3 times to either a recording of the Billy Joel song “You’re My Home” (Song) or a recording of an unaccompanied male voice speaking the lyrics (Prose). After each trial, they wrote down as many of the song’s words as they could remember. Values shown are means \pm standard errors.



ing, it may spark students’ interest in that material.⁷ While these assertions are rather speculative, I think they’re plausible and likely to be true at least in some contexts.

Integrating with non-music classes

The research summarized in the previous section, along with my own personal experiences and those of others, suggests that educational songs may indeed be useful to students. However, it is also clear that no single method of integrating songs into a curriculum will be appropriate for all classes under all circumstances. In light of this, I offer the following practical suggestions:

1. *Don’t be discouraged if you yourself are not musically talented.* There are cheap and easy ways to present musical material. Performing a rap eliminates the need to sing a melody; singing a cappella (unac-

companied) or with karaoke accompaniment eliminates the need to sing and play an instrument at the same time; playing a prerecorded song or enlisting a musically adept colleague eliminates the need to perform altogether.

2. *Make use of resources on the Web.*

Table 2 lists some song-related Web sites that I have found useful. You may even discover some free full-length online songs to which students can listen as an optional or extra-credit homework assignment.

3. *Use a song to emphasize the most important point of the month.* Students who are sung to when they’re not expecting it will remember that moment for a long time. By pairing a key topic with a closely related song, instructors can make that topic extremely memorable.

4. *Use a song to introduce a new topic and/or review an old one.* Transitions to new material can be awkward, but a strategically placed song can keep students’ attention from wandering. Ideally, a song that kicks off a new unit will provide both information (background on the new material and why it’s important) and intrigue (e.g., “What do those weird lyrics in the second verse mean? We’ll find out next Thursday!”). Similarly, when reviewing old material, a song can liven up what might otherwise be a tiresome exercise in regurgitation.



The booth for the Science Songwriters’ Association at a recent NSTA convention

TABLE 1 Results of anonymous in-class surveys of 36 students taught during the 2004–05 academic year.

To what extent did you enjoy the songs used in this course?

57%	I enjoyed them greatly.
29%	I enjoyed them somewhat.
11%	I did not enjoy them, but I did not mind them.
0%	I disliked them.
3%	I don’t know / don’t remember.

Did the songs used in this course help you learn the material?

11%	They helped a lot.
57%	They helped somewhat.
31%	They neither helped nor hindered my learning.
0%	They hindered my learning.
0%	I don’t know / don’t remember.

TABLE 2

A partial list of websites focused on educational songs.


Website	Comments
MASSIVE: Math And Science Song Information, Viewable Everywhere (www.science-groove.org/MASSIVE)	A database of over 2000 math and science songs for all ages. Searchable by song or album title, performer, writer, or keyword.
MASSIVE Radio (www.live365.com/stations/trappedinlab)	A wildly eclectic mix of science and math songs, available online 24/7. Requires a high-speed Internet connection.
Sara Jordan (www.sara-jordan.com)	Albums for sale on many different topics. Target audience: K–6.
Science Songwriters' Association (www.sciencesongs.net)	Yes, there really is such an organization. Members are active at National Science Teachers Association conferences, giving workshops and selling CDs.
Singing Science Records (www.acme.com/jef/science_songs)	Full-length MP3 files from a six-album collection of kids' songs from the late '50s and early '60s. A bit dated but still fun.
Songs for Environmental Education (www.geocities.com/RainForest/Vines/2400)	Includes articles, lesson plan ideas, and links to related sites.
SongsForTeaching.com	Aimed at K–12 students and teachers.
TwinSisters.com	Albums for sale on many different topics. Target audience: K–6.

5. *Encourage (but do not force) students to participate in songs by singing and dancing.* My mother, a first-grade teacher, notes, “I’ve found that songs that incorporate some body movement help children to remember even more, at least at the primary level. Some of us use the Macarena to help kids learn the months of the year and to count by 5s and 10s. Their enjoyment is increased too by being able to get up and move as they sing.”

6. *Provide lyrics and repetition for maximum impact.* If you want students to really understand and internalize the words of a song, you should give them a copy of the lyrics and expose them to the song multiple times.

7. *Provide follow-up activities or assignments* that ask students to use information that was presented in a song.

8. *Don’t force individual students to write or perform songs.* Optional or extra-credit assignments are great for encouraging those who really want to do this. Another approach is to assign a song as a group

project, allowing nonmusical or shy members of the group to contribute by fact-checking the lyrics or making slides to illustrate them. 

Notes

1. G. H. Bower and L. S. Bolton, 1969, “Why are Rhymes Easy to Learn?” *Journal of Experimental Psychology*, 82: pp. 453-461.
2. W. T. Wallace, 1994, “Memory for Music: Effect of Melody on Recall of Text,” *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 20: pp. 1471-1485.
3. W. T. Wallace and D. C. Rubin, 1991, “Characteristics and Constraints in Ballads and their Effects on Memory,” *Discourse Processes*, 14: pp. 181-202.
4. D. W. Stewart and G. N. Punj, 1998, “Effects of Using a Nonverbal (Musical) Cue on Recall and Playback of Television Advertising: Implications for Advertising Tracking,” *Journal of Business Research*, 42: pp. 39-51.
5. E. G. Schellenberg, 2004, “Music Lessons Enhance IQ,” *Psychological Science*, 15: pp. 511-514.
6. M. A. Davies, 2000, “Learning . . . the Beat Goes On,” *Childhood Education*, 76: pp. 148-153.
7. B. D. Albers and R. Bach, 2003, “Rockin’ Soc: Using Popular Music to Introduce Sociological Concepts,” *Teaching Sociology*, 31:2, pp. 237-245.

Greg Crowther is an Acting Lecturer in the University of Washington’s Department of Chemical Engineering, where he teaches biology to engineering students. He has also taught summer minicourses on science songs to high school students.