

Science throwdown

Rapping up the content

BY BRIAN HEISEY

Music is powerful, no matter the genre. It pulls the listener in through words, beats, vocals, and lyrics that attract our attention and get “stuck” in our heads. Creating raps or songs about difficult topics in science helps students master the content. Over the past six years, I have been creating raps and music videos to both engage and promote student learning within my life science classroom. As a result, student achievement has improved on assessments and increased engagement and interest in the class.

Background

An article by Cheri Lucas notes that music has been found to stimulate parts of the brain, and “studies have demonstrated that music enhances the memory of Alzheimer and dementia patients” (in a study conducted at UC Irvine entitled “Music for the MIND”). Further research conducted by Donna Governor (2013) shows that music, specifically content-based music, has a definite place in science educa-

tion. She notes that as a teaching resource, songs are more than a mnemonic device because they engage students in different ways and help them build understanding of science concepts.

Getting started

While driving to work one morning, I was trying to think of a creative way to teach my students how to make dry and wet mount slides when one of my favorite songs from my teenage years started playing on the radio. As I began to tap the beat on the steering wheel and sing the words, an idea came to me: Create a catchy rhyme about my content and merge it with a beat that students would like. Two days later, I had created my first science rap: “Dry Mount vs. Wet Mount Slide” (see sidebar). To create this rap, I downloaded a royalty-free beat from the website Soundzabout (see Resources). I then used my computer webcam to record myself rapping the lyrics over the beat.

iMovie for Apple computers is the easiest program to start

working with. Windows Movie Maker and Wondershare Filmora are comparable programs for PC-based users. Once I have the beat that I will be using downloaded onto my computer, I import it into iMovie. With a pair of headphones plugged into the computer, I then record myself rapping the lyrics over the beat. I use headphones so that I do not hear the echo of the beat while I am rapping the science lyrics. In addition, I also activate the computer’s webcam while I am rapping if I want to include myself in the rap. By using iMovie, I can create either a rap that is only a sound file or one that includes video. I also created a YouTube channel and uploaded the raps to make it easy for my students to view and share them. I always make my videos public so that anyone can see them (see Resources). My hope is that other educators will find my raps and incorporate them into their classrooms as well.

Now if you are thinking that this sounds great, but at the same time are wondering how to create something to rhyme with the

word “mitochondria,” do not feel discouraged. The process of creating some of my raps took up to three weeks, to make sure that the content was clear and correct and had an appropriate beat to go with the lyrics. Free online rhyming dictionaries, like Rhymer, are helpful when trying to find lyrics to match those “hard to rhyme” words. Because students may mistake the presentations as “mere entertainment,” I make sure that the content that is being presented in the rap or song is correct and that the end product will be a valid teaching tool. It is helpful to get feedback from colleagues before premiering a rap with students. It is always valuable to get feedback from other teachers before finalizing a project. Most of the raps that I create stem from either topics that are more difficult for students to learn or from a creative idea about a topic that comes to mind.

When I start the process of creating a rap, I begin by first finding or creating background music. Having the beat and the rhythm of the music gives a better idea of what the flow of the words should feel like within the rap or song. As already noted, websites such as Soundzabound and Bensound have royalty-free music that can be used for these projects. Both of these websites contain many genres and styles of music. It is important to keep in mind the tempo of the music when searching for a beat to match with the rap. In general,

the faster the beat, the more quickly you will have to speak the lyrics. I am careful to choose a tempo that matches the ability and speed at which I can speak the lyrics. Additionally, I have discovered that most students like the rap or electronic beat genre of music, to which I set most of my raps.

The next step is to present the rap or song to students. Since I have started using raps within my classroom, these projects have evolved from me just rapping in front of a camera, to having pictures move across the screen, to using a green screen to create some cool effects (e.g., rapping with different backgrounds, images appearing/disappearing, moving images), and finally to making a full-scale music video. Using a green screen is a fairly easy technique. It requires a green background (either a painted green wall or a green sheet) that you film yourself in front of. You can then use iMovie to edit your video and add some interesting effects over your video (see Re-

Drymount slides rap lyrics

Drymount slides are easy to create
You need two glass slides and an item to investigate.
Take one slide, place the item on top,
But at this point please, please, please don't stop.
Place another slide on top of everything;
Now you got a D-Mount slide with a lot of bling!

Never, never, never use high power
When looking at a drymount slide my friend.
Never, never, never use high power
When looking at a drymount slide my friend.
'Cause if you do, the slide with break,
The object will bust—a mistake you will make!

Word..Verse 2

The wet mount slide is next in line.
We add water this time—don't forget my rhyme!
Slide comes first, object next...
And add two drops to that mess!
A little square slide called a cover slip
Goes right on top for the perfect fit!
Now this review is about to end—
Thanks for listening to this rap, my friend.

sources). When selecting images for my raps, I try to find pictures that represent the content that I am rapping about but also have a comedic side to them. It is important to note that when I am searching for images, I always take copyright laws into consideration. Using Google and selecting “free to use or share” for any images that I use ensures that no infringements occur. This keeps students’ interest and builds appeal while they are viewing the rap. When I choose to film a music video, I vary the camera and shot angles to keep viewers’ attention.

Student engagement and involvement

Initially, my rap creations were solo projects, but then I began to include students in the creation of the raps as well. Now every time that I announce that I will be creating a new rap, students know that I will offer them the chance to contribute lyrics and possibly participate in the filming of the content. The process of writing lyrics creates a further opportunity for students to review content in a creative way, because they turn the information over in their minds again and again as they seek to create a “catchy” rhyme. Students that enjoy filming or editing a video are invited and encouraged to make recommendations on how or what should be included in the rap. Thus, students have a double benefit: Their active participation in creating and preparing the raps enables them to be better active learners and their learning the material with the aid of rhythm, rhyme, and music en-

ables them to retain the material. If students will be appearing in the videos, I also make sure to get parent permission, especially because the videos are posted publicly to YouTube. It is important to get the permission slip signed (Figure 1) and returned before any filming begins.

Before I began to incorporate the raps, I was finding that most students were able to be successful in completing the laboratory exercises, but when it came to assessments, they had difficulty applying the ideas and concepts they had learned. Upon reviewing the assessment scores after raps were added into the same units that I was teaching, I discovered that unit test averages had increased between 5 and 10%. These increases were present within almost all subgroups within my classroom: special education learners, students with 504 plans, and English language learners. The entire class was clearly benefiting from the inclusion of the raps. Because

of the lyrical content that is included within the different raps, students are able to retain more information, just as I experienced when my radio was blaring with my favorite song. I do encourage my students to create their own raps about science content if they are interested. This is a great option for end-of-unit projects that allow for voice and choice in project selection.

When students that I had in my classroom come back to visit, they are still able to recite words from the raps and explain topics that we discussed in class. By including science raps within my classroom, not only is a different level of engagement achieved, but student retention of the subject matter increases as well. I have noticed that there is higher student engagement when students are watching my raps over other educators that they might search for online.

Conclusion

It can be both exciting and challenging to create content-based raps and songs for the science classroom. Student engagement in my classroom has increased, as well as students’ understanding and long-term retention of the science content. As I move forward, I plan to incorporate cross-curricular connections between science and English/language arts as well as science and music. I have worked with English/language arts teachers to create raps about parts of speech and punctuation, as well as, with commu-

FIGURE 1: Permission slip

Mr. Heisey is requesting that _____ has permission to film, record, or be in a rap project that he is creating for his science classes. By signing this permission slip, you are allowing your student to help and/or be in the video. This video may be posted to public video sites, such as YouTube, and will be live on the internet.

Parent/Guardian printed name

date

Parent/Guardian signed name

date

nity businesses to support events that they are sponsoring. In an era in which educators have to compete with engaging students on different levels competing with technology, video games, and social media, why not take a chance with something that students already have an interest in: music! This method has the power to promote learning in an interesting way and enable students to be even more excited about science content. ●

REFERENCES

- Governor, D. 2013. Teaching and learning science through song: Exploring the experiences of students and teachers. *International Journal of Science Education* 35 (18): 3117–40.
- Lucas, C. [2012]. Boost memory and learning with music. Education.com, www.pbs.org/parents/education/music-arts/boost-memory-and-learning-with-music

RESOURCES

- Bensound—www.bensound.com
- DNA [Just Replication] Rap—<https://tinyurl.com/DNAhizrap>
- Dry Mount vs. Wet Mount Slide Rap—<https://tinyurl.com/hizslides>
- How to Use Green Screen in iMovie—<https://mediacommons.psu.edu/2017/11/15/10840>
- Mr. Heisey's Science YouTube Channel—<https://tinyurl.com/hizscichannel>
- Mr. Heisey's Rap Playlist—<https://tinyurl.com/heiseyraps>
- Rhymer—www.rhymer.com
- Soundzabound—www.soundzabound.com

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