

Can Music Provide a Healthy Learning Environment for Biomedical Science in a Middle School?

Bench to Bedside Action Research Proposal 2015

(University of Florida CPET)

Roosevelt Community Middle School

Medical Sciences Magnet Programs

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Abstract

It has been known that music can play a major role in the way we think, speak or act. It does not matter what age a child is, they will always have headphones on their ears listening to their favorite tunes. Music helps the students with creativity and critical thinking skills. Wolpert-Gawron stated in his article from Edutopia.com, "Music can help control a classroom environment..." I believe it is the type of music. Certain genre of music can create a relaxing environment while other genre may create chaos in the classroom.

In my research, I would like to answer the following questions; does music impact our students and the way they learn in a medical science class? Which genre of music (if any) increases learning gains: classical or hip hop? Can we improve our lowest level students with test taking? I will conduct this study for a year using my advanced class, my average class and my lower level class.

Rationale

As a teacher and parent of middle school students, I realize music plays a major role in their education. It does not matter what subject they are doing. I also find myself as a teacher educating my students through music. For example, they will watch or listen to music videos pertaining to the learned material. When I teach about certain systems, I introduce cheerleading techniques or a rap song and dance for them to understand the physiology of the system. Since the students are medical science students, I like to incorporate the movie, "Gifted Hands: The Ben Carson Story" directed by Thomas Carter. In the past, the movie impacted my students of all cultures. It is my way of building encouragement and welcoming the students. The movie is beneficial for this study because Dr. Carson listened to Classical music throughout his life as a student and a physician/surgeon.

For my research, I decided to conduct a study with three different sixth grade classes. I will use two types of music; classical and hip hop. I chose Classical music because studies has shown it helps stimulate the brain cells and alleviates anxiety that children may have. Engel was convinced through her study, "Students who listened to one hour lectures with classical music playing in the background scored significantly higher on tests." Multiple studies in several states concluded Classical music increases the dopamine secretions that is needed for learning and memory. The class listening to classical music will be encourage to play the Classical playlist at home while doing their homework.

I chose the genre hip hop because majority of my students listen to it. This genre of music, can make learning fun. Today's hip hop music has been

incorporated with remembering the body’s systems, identifying a cellular functions, and remembering certain formulas. Blackman was right when she stated, “Hip hop is a very powerful educational tool...” We live in a world in which children of all cultures are enjoying Beyonce and Jay Z.

Description of teaching unit/module

For the 2015-2016 school year, I will be playing two genre of music. The first is classical and the second will be music the students select in the beginning of the year. Prior to creating the student’s selection, I will be reviewing the content of the musical selection to make sure it is appropriate to play in a school setting. The music will play while the students receive a bell ringer and prepare for the lesson they are learning for the day. I will then dim the music as I give a verbal review of the bell ringer and yesterday’s objective. Prior to the lesson of the day, I will turn the hip hop music into instrumental version and lower the sound of both genre. During the days we have labs, I will increase the volume of the music. Our labs consists of computer activities, hands on labs and a questionnaire as feedback for the learned lab skills. The selected classes will have a rotation of music. My goal is to see if there are learning gains from playing music in the classroom. From this study I will distinguish whether or not I should continue to play music in my class as an effective learning experience. Research studies have been conducted by teachers across the globe. Classical music in the classroom was considered a successful if it was allowed by the administrators. Most schools offered band classes in which they would learn to play classical music.

Data Collection and Analysis

I teach both low and high level students. I teach approximately 110 students in a day. I am analyzing the effects of music in a biomedical science class. I will be using three different classes. In my research, the classes will have an opportunity to listen to classical, or hip hop music. There will be one group that will not listen to music at all during the studied 9 weeks. In this study I will rotate the music every new quarter. For example:

First 9 Weeks	Second 9 weeks	Fourth 9 weeks
Advance Class: Hip Hop	Advance Class: No Music	Advance: Classical
Average Class: Classical	Average Class: Hip Hop	Average: No Music
Lower Level Class: No Music	Lower Class: Classical	Lower Level: Hip Hop

The third 9 weeks will have a pause in the study. The reason is because of the state examinations the students have to take.

This research will include a reflective journal about the student's daily activities. The reflection will be done 5-10 minutes before class end. I will be looking for feedback to see if the music is a distraction or if it was helpful. The students will give a short summary about the learned lesson and activity. They will also include their weaknesses in references to an assignment. At the end of the week, it will be collected for an ungraded evaluation. At the beginning and ending of the study I will have a survey in regards to the effectiveness of music in the classroom.

Connection to Bench to Bedside Summer Institute:

I will incorporate information from Team Based Learning. This is important because during certain lessons and activities, the students will be grouped into teams. They will compare and contrast their findings. One of the major lessons the students will be learning from B2B is Pharmagenomics. In all of my classes, I will introduce the website www.23andme.com. The students will actively understand the importance of their genetic background. They will complete the worksheet "What is Pharmacogenomics?" given by B2B Summer Institute. The students will also perform a hands on activity called Modes of Inheritance (Nature's Dice). Before I perform a hands-on activity the students will have the background knowledge so they can successful understand its purpose and know the possible outcomes. The purpose of learning about pharmagenomics is because of a recent study. University of Helsinki indicated a certain gene is used for developing learning skills. They state, "Playing music enhances the activity of genes." The students will understand the role of genetics. This will allow them to investigate their cultural background and find out what causes their neurotransmitters to "turn up" when it is time to learn.

Proposal differs from what you normally teach (New Pedagogies)

Generally when I teach, there are no music in the classroom. Sometimes when the students are performing hands on labs, they request music. Depending on the class behavior I would play soft music. I opt against the music of their choice because some of it is not age appropriate. This is why I am requesting a playlist so I can review it and make the final decision of the type of music that I will play.

Last year, I discovered my lower level students were behind in lessons by several weeks. It did not matter if there was a Power Point, board written information, computer based learning or hands on labs. The students were not

understanding or processing the information. Most of the students had IEP. Every time I saw them it was a challenge. I had to develop creative ways of teaching this class. I am hoping classical music can provoke the brain cells and give them an “ah ha” moment.

Budget

I have a small budget for this research. Most of the materials used for this research is free. I have a Youtube account in order to put together the two playlist. The activities the students will have are virtual, and some hands-on activities. Most of the needed supplies are coming from University of Florida CPET Equipment Locker. My budget for this research is the amount of: \$310.00

Supplies	Cost
Tubes	\$0.00 UF Locker
Vortex	\$0.00 UF Locker
Centrifuge	\$0.00 UF Locker
Pipette	\$0.00 UF Locker
Thermal Cycle	\$0.00 UF Locker
Nature’s Dice: A Genetic Screening Simulation Autosomal Recessive Trait Classroom Kit	\$310.00

Citation

Wolpert-Gawron, H. (2014, March 28). 8 Ways to Use Music in the Language Arts Classroom. Retrieved from www.edutopia.org

Engel, A. (2014, December 5). Studying for the Finals? Let Classical Musical Help. Retrieved from News.usc.edu

Hellweg, E. (2005, August 11). Hip Hop Helps Teach Everything from English to Algebra. Retrieved from www.edutopia.org

Yliopisto, H. (2015, March 13). Listening to Classical Music Modulate Genes that are Responsible for Brain Function.

Kanduri, C. (2015, March 27). Genes Involved in Memory & Learning Activated when Professional Musician Performs. Retrieved from www.neurosciencenews.com

SINGLE LESSON PLAN

Teacher: Trina L. Comacho-Rorie		Content Area/Grade: Medical Sciences 6-7	Date: 2015-2016
Unit Name:	Preventative Medicine		
Unit Goal What unit goal does this daily lesson address?	Standard(s)/Benchmark(s) What standard(s)/benchmark(s) does this daily lesson address?		
The unit goal is to promote a healthier lifestyle using Pharmagenomics and through proper food selections and food proportion.	<p>08.01 Describe strategies for prevention of diseases including health screenings and examinations</p> <p>08.05 Explore the need for proper nutrition (www.myplate.gov) and water intake to maintain wellness</p> <p>4.03 Recognize the role and use of terminology and abbreviations used in various health occupations.</p>		
Students will understand that... What should the students understand by the end of today's lesson?	Essential Questions What essential question(s) does this lesson address?		
<ol style="list-style-type: none"> Students will be reminded of the digestive system and medical terminology associated with it. Students will understand the importance of Pharmagenomics and a healthier lifestyle. Students will understand the importance of Preventative Medicine. 	<ol style="list-style-type: none"> How can I apply Pharmagenomics with a healthier life style? Why is Preventative Medicine important to learn? 		
Connecting Concepts How will you review yesterday's content and connect today's lesson to it?	Organizing Students for Learning How will students be organized today for the lessons activities?		
Disease and Disorders of the Digestive System will help introduce practicing preventative medicine. It will also give the students a better understanding of genetic contribution to the way they eat.	<ol style="list-style-type: none"> Review of vocabulary and medical terminology Compare and contrast data from their family members about their cultural habits Group students together with similar background to come up with a theme for campaigning for a healthier lifestyle 		

LEARNING EXPERIENCES, INSTRUCTION AND RESOURCES

Lesson Sequence		
Activating Prior Knowledge	I will review the lesson from the day before through an oral quiz. Depending on the feedback, I will count the quiz as a grade.	<input type="checkbox"/> ABC Brainstorming <input type="checkbox"/> KWL <input checked="" type="checkbox"/> Anticipation Guide <input type="checkbox"/> Card Sort <input checked="" type="checkbox"/> Think-Pair-Share
Explicit Instruction	Students will receive information though a visual lecture (power point, whiteboard, or virtual). They will be asked open ended questions in regards to the relationship of pharmagenomics and preventative medicine.	<input checked="" type="checkbox"/> Motivational Hook <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Demonstration Note-taking Guide

Lesson Sequence			Resources and Materials
Group Processing of New Information	1. The students will be in groups to compare and contrast their cultural background. 2. The students will talk about promoting a healthier life style using their medical terminology and the learned information. 3. Students will create plates from www.myplate.gov	<input type="checkbox"/> Jigsaw <input type="checkbox"/> Reciprocal Teaching <input type="checkbox"/> Concept Attainment <input checked="" type="checkbox"/> Think-Pair-Share	<input type="checkbox"/> Lab / Inquiry Activity <input checked="" type="checkbox"/> Computer <input checked="" type="checkbox"/> LCD Projector <input checked="" type="checkbox"/> Paper <input checked="" type="checkbox"/> Pencils <input checked="" type="checkbox"/> Whiteboards <input type="checkbox"/> Markers <input type="checkbox"/> Butcher Paper <input type="checkbox"/> Response Cards <input type="checkbox"/> Post-it Notes <input checked="" type="checkbox"/> Video Clip(s): <input checked="" type="checkbox"/> Website(s): <input type="checkbox"/> Lab Materials:
Elaborative Questioning	1. What food from your country is consider as a natural food remedy? 2. How can you influence your family and friends to eat healthy? 3. How does genetics play a role in your eating habits (if any)?	<input type="checkbox"/> Inferential Questions <input type="checkbox"/> Analytic Questions <input type="checkbox"/> Philosophical Chairs	
Demonstrating Understanding	1. Students will complete the worksheet "What is Pharmagenomics?" given by University of Florida Bench to Bedside Summer Institute. 2. Students will perform a hands on assignment, Modes of Inheritance (Nature Dice). 3. Students will use both lab assignments to understand the genetic aspect of Pharmogenomics. 4. Students will be tested on the learned materials.	<input type="checkbox"/> Graphic Organizers <input type="checkbox"/> Picture Notes <input type="checkbox"/> Flow Charts <input type="checkbox"/> Concept Maps <input type="checkbox"/> Mnemonics <input type="checkbox"/> Graffiti	
Reflection	Students will write in their journal about the daily activities. They will give feedback about their strengths and weakness of the lab activities.	<input checked="" type="checkbox"/> Reflective Journals <input type="checkbox"/> Think Logs <input type="checkbox"/> Exit Ticket (Student Learning)	
Daily Progress Monitoring Assessment	The journals will be assessed daily. Also, there will be learning scales. My learning scales are through forms of traffic lights. Red: Please stop, I do not understand at all Yellow: Can you please explain it a different way or give me more examples? Green: I am confident in what I learned, you can test me and move forward.	<input checked="" type="checkbox"/> Quiz <input checked="" type="checkbox"/> Journal <input type="checkbox"/> Exit Ticket (for Content) <input type="checkbox"/> Response Cards	
Based in the results from your Daily Progress Monitoring Assessment, what concepts need to be revisited in the next lesson?			

UNIT PLAN	
Unit Title: Preventative Medicine and Pharmagenomic for a Healthier Life style	Content Area/Grade: Medical Sciences 6-7th Grade
Teacher: Trina L. Comacho-Rorie	Implementation Time Frame: Three to Five days
STAGE 1: THE DESIRED RESULTS	
What are my learning goals?	
Unit Goal Students will understand that...	Standard(s)/Benchmark(s) What standard(s)/benchmark(s) does this daily lesson address?
Pharmagenomic (+) Preventative Medicine= Healthier Life Style	<p>6.01 Describe how cultural and individual differences relate to wellness and quality of life and how these differences impact health problems of society.</p> <p>6.02 Demonstrate an understanding of the risk factors that contribute to illness.</p> <p>7.01 Recognize the role science has in the health field.</p>
Related Misconceptions What misconceptions are predictable?	Students will know... Vocabulary, terminology, definitions
<ol style="list-style-type: none"> The students may be bias against another culture. Parents may complain about their child telling them what types of foods to buy. Parents may not want to know about the inheritance of their health. 	<p>Vocabulary</p> <ol style="list-style-type: none"> Preventative Medicine: Focuses on the health of individuals, communities, and defined populations. Its goal is to protect, promote, and maintain health and well-being and to prevent disease, disability, and death. Pharmagenomic: is the study of how genes affect a person's response to drugs. Genomic: the study of genes and their functions Irritable Bowel Syndrome: An intestinal disorder causing pain in the belly, gas, diarrhea, and constipation. Eating Disorder: An eating disorder is an illness that causes serious disturbances to your everyday diet, such as eating extremely small amounts of food or severely overeating
Essential Questions What questions will foster inquiry, understanding and transfer of learning?	
<ol style="list-style-type: none"> What is preventative Medicine? What is pharmagenomics? How do pharmagenomic relates to preventative medicine? 	
Students will know... key facts, formulas, critical details, important events, important people, timelines	
Other Essential Knowledge: Students will have background information about the Digestive System. They will learn the most common medical terminology and abbreviations associated with the digestive system. Students will be able to identify certain disease and/or disorder and associate with the organ(s) of destruction.	
Students will be able to... Specific skills students will acquire as a result of this unit	
Campaign for a healthier lifestyle when it comes to food and their culture.	

STAGE 2: ASSESSMENT EVIDENCE

What evidence will show that my students have achieved the learning goals?

Performance tasks:

Through what specific "real-world" performance task(s) will students demonstrate their understanding of the learning goals?

Test and Quizzes (oral and written)
In house completion of labs
Selected movies

Rubric

By what criteria will "performance of understanding" be judged?

1. Oral testing will be given as a Q and A session/game show
2. Written testing in form of fill ins
3. Demonstrating the evidence of performance without constant step to step advice
4. Using critical thinking skills to analyze the watched movie through essay form of Q and A
5. Reflective journal

Other Evidence:

What other evidence needs to be collected in order to monitor student progress on these concepts and skills along the way?

Self-Assessment/Reflection

How will students reflect and self-assess their learning?

They will have a journal and reflect on the their ability to understand the lesson and activity of the day.

STAGE 3: LEARNING EXPERIENCES, INSTRUCTION, AND RESOURCES

What activities will help my students achieve the learning goals?

<p>What here</p>	<p>What is expected? How will you ensure that students are aware of the learning goals? Where are your students? How will you establish your students' prior knowledge?</p> <p>The students will be reminded of the objectives daily. They will have a review of the learned lesson(s) from the past and how it will be linked to today's lesson. Depending on class participation it may count as an oral quiz.</p>
<p>Hook old</p>	<p>How will you hook students at the beginning of the unit? How will you hold their attention throughout the units?</p> <p>I will hook the unit with the final presentation of campaigning for a healthier lifestyle. They will be able to perform talk shows, music videos, mini movies, infomercials and more. They must be creative. Since the presentation is about their personal culture, they will be interested in breaking "bad habits." They also love reteaching their family members.</p>
<p>Experience Explore quip</p>	<p>What critical input experience will help students explore the key ideas and essential questions? How will you equip your students with needed skills and knowledge?</p> <p>The students will perform hands on and virtual labs provided my University of Florida's CPET Program.</p>
<p>Reflect ethink ehearsing evising efining</p>	<p>How will you encourage students to reflect and rethink? How will you guide students in the process of rehearsing, revising, and refining their work?</p> <p>Students will reflect and rethink through daily journals. At the end of the week, I will review the journal making necessary correction.</p>
<p>Exhibit valuate</p>	<p>How will you help students to exhibit and self-evaluate their developing skills, knowledge and understanding throughout the unit?</p> <p>The students should confidently use medical terminology. They should also be able to demonstrate their progress in their presentation. The reflective journal will also be used as a daily evaluation for themselves. Students will be given critical thinking questions as a bell ringer and homework assignment.</p>
<p>Tailor</p>	<p>How will you tailor your instruction to meet the different needs, interests and abilities of all learners in your classroom?</p> <p>I will use the VAK learning style in my teaching methods. VAK learning style allows me to reach my Visual students by creating a Power Point or writing on my board. The students that are auditory learners will listen to me as I give them background information, create acronyms, and create songs/rap. The students that needs to touch (kinesthetic) will enjoy the hands on activities.</p>
<p>Organize</p>	<p>How will you organize and sequence the learning activities to maximize the engagement and achievement of all students?</p> <p>The objectives will have a theme so that the students will know what is expected.</p>

Big Idea: Campaigning for a Healthier Life Style		Standard(s)/Benchmark(s): 6.01,6.02, 7.01
Unit: Preventative Medicine and Pharmagenomic for a Healthier Life style		Sample Activities
Grade: Sixth		
Score 4.0	In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.	Students was able to confidently give a group presentation using medical terminology/vocabulary, identifying the cultural relationship to disease and/or disorder processes, identifying the organ(s) it affects, and convincing audience to eat healthy. They were also passed out literature relating to “getting help” from a professional (dietician, help hotline, gyms, etc)
Score 3.0	The student: The student exhibits no major errors or omissions	Students was able to confidently give a group presentation using medical terminology/vocabulary, identifying the cultural relationship to disease and/or disorder processes, identifying the organ(s) it affects, and convincing audience to eat healthy.
Score 2.0	There are no major errors or omissions regarding the simpler details and processes as the student: <ul style="list-style-type: none"> • Recognizes or recalls specific terminology • Performs basic processes, such as: However, the student exhibits major errors or omissions regarding the more complex ideas and processes	Students gave a group presentation using some medical terminology, state the cultural relationship to disease and/or disorder processes, identifying the organ it affects, and tried to convince the audience to eat healthy.
Score 1.0	With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.	
Score 0.0	Even with help, no understanding or skills demonstrated.	