

**Title of Session:** Music Across the Curriculum - Physical Science

**Moderator:** Leo LaBarge

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Room: Arts Sites Group

**BJB2:** Welcome to today's Music Across the Curriculum discussion.

**BJB2:** The topic for this discussion is Music and Physical Science

**BJB2:** As always, let's start with introductions, please

**LoraAB:** middle school math and science teacher Northern NJ

**FredK:** I am a literacy tutor in SE Oklahoma

**LeoL:** My name is Leo LaBarge. I'm a musician from NJ, currently teaching social studies in a special ed school

**JaneOst:** I teach ESL at Middlesex County College in NJ. also a student in ed tech program at NJCU

**DavidWe:** I'm David Weksler. I'm a HelpDesk volunteer and I lead a math education and technology discussion in Tapped In. I'm in northern New Jersey, near New York City

**StephaniK1:** HS math teacher, but I integrate/team teach w/ a Physical Science teacher

**DanaHa:** I'm Dana Haeger, 6th grade science teacher in Memphis, TN

**BJB2:** perfect, Stephanie!

**DavidWe** agrees with BJ

**BJB2:** looks like a super audience, Leo and Lora!

**RichardWH:** I'm Richard Hayman, 8th grade science teacher in Memphis, TN

**BJB2** hands the virtual floor over to Leo

**BJB2** . o O ( with a bada boom! )

**LeoL:** Thanks BJB

**DavidWe** smiles

**LeoL:** I'm a drummer. I hit things with sticks. How I wandered in front of this august crew I haven't figured out yet

**LeoL:** Stealing liberally from Lora,

**LeoL:** let's look at this

**LeoL:** One of the main topics of physical science is sound. Since music is made of sound waves this makes physical science and music extremely compatible for cross curricular activities.

**LeoL:** I figure to look at music as a common language

**LeoL:** between math and music

**LeoL:** science and music

**JaneOst:** for many subjects

**LeoL:** We can look at it in terms of phenomena... what actually happens

**LeoL:** The commonality I see first is waves and periodicity

**LeoL:** many subjects true that Jane

**LeoL:** Who does the team teaching? Is that you Richard?

**StephaniK1:** me

**LeoL:** whoops. First of many mistakes for me tonight

**LeoL:** Thanks Stephanie

**StephaniK1:** no problem =>

**RichardWH:** sorry, had a child needing attention...no, teach alone...

**LeoL:** math . and science yes?

**StephaniK1:** algebra 1 and physical science

**LeoL:** How (if I may) do you construct your lessons? Is it completely together or 1/2 science...1/2 math?

**DavidWe . o O ( 1/4 math + 3/4 science = ... )**

**LeoL:** I mean ( I think) are both of you in front at the same time?

**StephaniK1:** welllllllllllllll..... that's a loaded question. => I wish we did more than we do, hence partly why I'm here. We try to cover similar topics at the same time. We have the flexibility in our schedule to team teach.

**LeoL:** can you find, or see a place where you two are both talking about the same phenomena, but using different vocabularies?

**StephaniK1:** we could be both in front at the same time... we could do smaller groups... etc

**DavidWe:** I don't mean to hijack the conversation - but if anyone is interested in a very cool math/science/technology high school curriculum, I know a school...

**LoraAB:** sounds familiar Leo

**DanaHa:** yes David

**StephaniK1:** we try to use the same vocab as much as possible

**LeoL:** got a link David? ( it will go in the transcript and we'll all have it)

**DavidWe:** Yes...it's the Dwight-Englewood school (private) in Englewood, NJ

**DavidWe:** I know a bit about it, but it's impressed me for over 7 years

**DavidWe:** <http://www.d-e.org/dwightenglewood.aspx?pgID=979>

**LeoL:** What I'm looking at is trying to explain the same phenomena, or ... I just made up a word...

**LeoL:** meta-phenomena

**LeoL:** in terms of different disciplines

**LeoL:** an example of met-phenomena is wave construction

**DanaHa:** in my science classes, I use labs with practical math application, i.e. bar graphs, line graphs, sampling

**LeoL:** waves are sound... acoustics... music...

**LeoL:** they are also energy moving through matter, like a spring

**LeoL:** sampling!!!

**DavidWe:** good idea, Dana

**LoraAB:** You can use line graphs to show pitch of a melody

**LeoL:** so you could sample a phenomena like temperature thru a period of time yes?

**RichardWH:** I want to see where Leo is going, but I agree, Dana, that practical cross-curriculum connections serve middle schoolers best

**LeoL:** musicians sample sounds at regular periods of time... that's how CD's get made

**LeoL:** all digital music

**RichardWH:** sampling is good

**DanaHa:** garage band is a great connection there

**RichardWH:** scientists sample, as well

**LeoL:** in fact ( and here's an example of a meta-phenomena) an analog event

**LeoL:** temperature for example

**LeoL:** transferred into digital form

**LeoL:** yeah Dana Garage band is a great example

**StephaniK1:** what do you mean by garage band?

**DanaHa:** it's a computer program where users can cut sound clips and put them together to make music

**LeoL:** lemme find a link

**LeoL:** <http://www.apple.com/ilife/garageband/>

**DanaHa:** .another thing I'm interested in integrating is a drum circle to discuss a multitude of science phenomena including team/classroom relationship building

**LeoL:** there are some other types too

**LeoL:** GREAT !! Classroom culture building

**CathleneB:** I have Garageband, but haven't found a use for it ..... yet

**LeoL:** the coca cola site has a music creation software program on it

**LeoL:** pretty cheesy, but it works enuf to get the composition across

**DanaHa:** how bout any ideas for dancing w/ hip hop rhythms and science? anybody?

**RichardWH:** keeping time, and the "movement" of an atomic clock??

**LeoL:** <http://www.physicsclassroom.com/Class/sound/U11L5a.html>

**LeoL:** if you google /stepping/ you'll find a good one Dana

**LeoL:** let me see if I can find the one I saw last night

**CathleneB:** long ago, when I was the math and environmental science teacher at a small independent school, we sang folk-y songs. Polyester doesn't grow on trees was a calypso hit with middle schoolers.

**CathleneB:** And science always got more time than pre-algebra. More time for application.

**LeoL:** <http://www.musicmixer.coca-cola.com/mm/MusicMixer.jsp>

**LeoL:** not stepping yet..

**LoraAB:** You can use rational numbers to determine scales

**LoraAB:** and create new scales

**DanaHa:** well, my buddies teaching math have been implementing discovery activities once a week that are hands on w/ manipulatives

**LeoL:** <http://students.washington.edu/pbskl/step.htm>

**LoraAB:** also music frequencies are based on ratios

**RichardWH:** I confess to not being nearly as creative as many of you. however, in order for an abstraction or cross-curriculum connection to really work, shouldn't the segue from one topic to another be just that? falling straight into one topic from another, without a complicated transition?

**LeoL:** you can start looking for hip hop/dance stuff here

**DanaHa:** ohh Lora...true true

**DanaHa:** good guiding motivation to start a lesson

**LeoL:** Richard, if I do it right, the transitions don't really exist

**LeoL:** fer instance...

**LeoL:** I was talking in class one day about music and architecture

**RichardWH:** I agree...I would stick with something more like amplification, attenuation, power...

**LeoL:** drew a staff on the board projected a skyline on the board

**LeoL:** put notes on the tops of the buildings, turned the projector off

**LeoL:** and was left with a melody

**RichardWH:** cool...

**LeoL:** once some thing is graphed you can turn it into any darn field you want

**LeoL:** the meta-phenomena is manifest in the graph (this time)

**RichardWH:** I'm seeing more clearly now...

**LeoL:** (btw the whole meta-phenomena thing?? It's about 10 minutes old)

**RichardWH:** grins

**LeoL:** ( I'm a jazz drummer. I make stuff up as I go along)

**LeoL:** drives admin nuts

**LoraAB:** but makes for an interesting class

**LeoL:** has anyone checked out the list of links?

**DavidWe** smiles

**LeoL:** Richard.. attenuation...

**LeoL:** (from Lora, Acoustics is another aspect of sound and music. In a music hall acoustics are very important. Here students can determine the acoustics of a room by using area and time.

**LeoL:** What materials would improve the acoustics and what materials would be used to absorb sound. Then they could design a theater.

**RichardWH:** yes...

**LeoL:** that would attenuate the various lows and highs

**LeoL:** the whole study of acoustics is all about the influence of various substances on sound

**RichardWH:** good! I can see it when described, but my brain wouldn't conceive of such things on its own...I don't think

**BJB2:** a ton of links, Leo and Lora!

**LeoL:** that's Lora...

**RichardWH:** was told: don't let your mind wander, it's much too little to be left out on its own...

**LeoL:** she did most of the work for this one

**LeoL:** so here's a game for us...

**LeoL:** find something in your immediate area...

**LeoL:** "picture" in your mind's ear what it would sound like if you hit it with a chopstick.

**LeoL:** then get a chopstick, hit it, and see what you guessed was close

**LeoL:** you've got hypothesis, ... arrrgggghhh... scientific method Lora??!!

**LoraAB:** very good Leo

**LeoL:** what are the steps for the scientific method?

**LoraAB:** identify problem

**LoraAB:** form hypothesis

**LoraAB:** experiment

**LoraAB:** draw conclusion based on results

**LeoL:** collect data

**RichardWH:** observation first

**LeoL:** right right

**LeoL:** I make stuff up as I go along, cuz I can't remember squat

**LeoL:** yeah like I said

**LeoL:** "take a guess, hit it with a stick see what ya got"

**BJB2** nods solemnly...very scientific, Leo

**StephaniK1:** clever application

**LeoL:** so there is a way to teach scientific method with a bunch of kids whacking stuff at random

**BJB2** . o O ( as long as they're not hitting each other )

**LeoL:** thank you Bj Your solemnity is very authentic

**BJB2** winks

**LeoL:** someone was asking about drum circles earlier

**LoraAB:** that's why you chopsticks instead of sticks

**BJB2** nods to Lora

**LeoL:** simply playing "telephone" with a rhythm is a good way of teaching wave propagation

**BJB2** listens to learn about drum circles

**LeoL:** I've used slinkies to demonstrate waves

**RichardWH:** that's a good wave demonstration, Leo

**LoraAB:** what are drum circles

**LeoL:** well Bj you could go around in pairs Q & A

**LeoL:** Looooooooorraaaaaa..... a bunch of kids in a circle with drums

**LoraAB:** I'm losing it



**LeoL:** Ahhh

**LeoL:** I lost it a number of times. You've been kind enuf to find it for me

**LeoL:** Ok Ok what else do we have??

**LeoL:** <http://www.iit.edu/~smile/ph9317.html>

**LoraAB:** you can make instruments using vibration and pitch

**LeoL:** [http://www.pbs.org/safarchive/4\\_class/45\\_pguides/pguide\\_701/4571\\_brain.html](http://www.pbs.org/safarchive/4_class/45_pguides/pguide_701/4571_brain.html)

**LeoL:** Lesson plans for science of pitch and build instruments based on pitch.

**LeoL:** this one has the bottles of water thing...

**LeoL:** and the straw pan pipes

**RichardWH:** I have to run, but this has been interesting. hope to see you folks here again...

**LeoL:** Richard in the Arts Site room there are some docs

**LoraAB:** also xylophones or pan pipes

**LeoL:** you might want to look

**LeoL:** nice to meet you

**RichardWH:** thank you, Leo, and nice to meet you, as well!

**LeoL:** also in my office... rummage around

**FredK:** Thanks Leo I will also look around

**LeoL:** Jane

**RichardWH:** ok, I've found the arts site...will find your office. g'night, all.

**LeoL:** Are you a student?

**FredK:** I'm looking for instructions to make a theramin

**LeoL:** yeah Fred, make yourself comfortable

**FredK:** thanks

**LeoL:** there is a site for electronic instruments

**LeoL:** I'll see if I have it. It might point you right

**JaneOst:** Thanks

**FredK:** yes?

**LeoL:** [http://www.obsolete.com/120\\_years/](http://www.obsolete.com/120_years/)

**FredK:** later. thanks

**LeoL:** <http://www.falstad.com/fourier/>

**FredK:** I put in a page for you

**LeoL:** where's Bj's wiki?

**LeoL:** wiki? [Ed Note: <http://tappedin.wikispaces.com/> BJB]

**LeoL:** Jane is there anything you wanted to bring up?

**JaneOst:** Just taking it all in

**LeoL:** or any questions from anyone?

**JaneOst:** Thanks again.

**StephaniK1:** Thanks for the info Leo... have a good night!

**BJB2:** thanks, Leo and Lora

**LeoL:** I want to thank all of you, esp Lora and BjB...

**FredK:** Time to call it a night

**LeoL:** cuz now I feel like teaching again

**FredK:** Bye