

# Teacher's Guide for ODYSSEY

September 2013: Press Play: The Power of Music

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## Teacher's Note:

This guide contains project ideas, short answer, extended response, fill-in, and true/false with correction. The variation is designed to have the students think critically, as well as to test their comprehension. An answer key to the short answer sections can be found at the end of the guide.

## Extended Response: Comprehension & Critical Thinking

The questions below can be used as written, simply answered in complete sentences or easily transformed into longer essay (ELA) style questions, or even research topics. In any case, have the students support their answers with details from the text or use critical thinking skills to create a thorough and interesting answer. The questions, essays and projects have been aligned with the **Common Core Standards**. Consider the level of your students when deciding how to use the questions.

## "Why Music" p. 6-8

1. What were some of the earliest instruments found?
2. What does an anthropologist study? How does music fit into this area of study?
3. What did Charles Darwin suggest was a primary use of music among our early ancestors?
4. What attractive qualities do dancing and singing exhibit according to Miller?
5. What is the connection between musical tradition and the interactions between mothers and infants that Dissanayake believes has significance?
6. What occurs in the brain during ritual ceremonies with music that enhances bonding?

**Essay:** *Several theories have been presented in this article explaining why music exists. Which theory or combination of theories do you feel is true? Use examples from your own culture to support your answer.*

## "The Musical Brain" p. 10-13

*Choose the correct term from the word list and match the word to its definition.*

HIPPOCAMUS    VISUAL CORTEX    PREFRONTAL CORTEX    SENSORY CORTEX  
CEREBELLUM    CORPUS CALLOSUM    NUCLEUS ACCUMBENS & AMYGDALA    AUDITORY  
CORTEX    MOTOR CORTEX

1. The \_\_\_\_\_ helps you read music or look at your own dance moves.

2. The \_\_\_\_\_ lets you move while dancing or playing an instrument.
  3. The \_\_\_\_\_ controls how you move while dancing or playing an instrument, as well as your emotional reactions.
  4. The \_\_\_\_\_ controls your emotional reactions to music.
  5. The \_\_\_\_\_ controls what you feel while dancing or playing an instrument.
  6. The \_\_\_\_\_ stores your music memories, experience, and context.
  7. The \_\_\_\_\_ controls your behavior, expression, and decision making.
  8. The \_\_\_\_\_ lets you listen to sounds and be aware of various tones.
  9. The \_\_\_\_\_ connects both sides of the brain.
10. How is the pitch of a note processed in the inner ear?
  11. Explain how many parts of the brain work together when you process music.
  12. Why does much of the pleasure of music come from repetition?
  13. Explain the sentence: "Music may well be the most basic of all human languages."

### **"Music & Emotion" p. 14-17**

1. How do different types of music convey different emotions?
2. What does it mean that we experience music 'temporally'?
3. What is the result of your brain 'tracking' music?
4. How is expectancy one of the most interesting ways that music creates an emotional response?
5. How can music be healing?
6. Explain how notes, scales and tempos can create a certain mood.

**Essay:** *Using the information from this article, what does your musical taste say about you? Use specific song and experience examples to support your answer.*

### **"Peter Larsen and the Opitulates" p. 18-21**

1. Why is Peter Larsen setting organisms to music?
2. What is the definition of 'big data'?
3. What is the problem of big data, according to this article?
4. Why does Larsen believe that music might make a great storage device for big data?
5. Why is finding patterns in complex systems important?

### **"Musical Genius" p. 22-24**

1. What is 'deliberate practice'?

2. What theory does Ericsson and his colleagues express concerning talent the "Cambridge Handbook of Expertise and Expert Performance"? Do you agree or disagree? Tell why or why not.
3. Explain the 10,000 hour rule and give your opinion of that theory.
4. How does working memory factor into musical ability?
5. What do you believe is more important to musical ability...innate talent or practice?

**"So Many Ways to Press Play" p. 25-27**

1. What percentage of teens find ways to get their music for free? Are you included in that percentage? If so, how do you obtain the free music?
2. How is a CD player actually eliciting music from the CD?
3. Explain the science of psychoacoustics.
4. Why is the sound quality of a digital song file not as good as the quality of a CD?
5. What website is the world's fastest growing music library?
6. What is occurring when you press PLAY on a music video on YouTube that allows you to view/hear the song?
7. What is satellite radio?
8. How does Pandora's Music Genome Project function?
9. Why do wireless internet connections allow for almost continuous access to music?
10. How does technology shift the way we listen to music? (Past, present, and future)

**"The Music of the Spheres" p. 28-31**

1. According to legend how did Pythagoras begin to study 'ratios'?
2. How are fractions, basically the 'stuff music is made of'?
3. How did Pythagoras learn that human ears were attuned to certain sound intervals?
4. How did Pythagoras base his model of the universe based on music?
5. How did Kepler use patterns in data to make his own discovery?

**"6 Surprising Animal Singers" p. 32-35**

*Read the article in its entirety and choose the animal that the sentence is describing. You may look back at the article if necessary, and will use each animal more than once.*

**cicadas**

**toadfish**

**bats**

**mockingbirds**

**humpback whales**

\_\_\_\_\_ 1. Certain species of this animal live underground for either 13 or 17 years before coming out to mate.

\_\_\_\_\_ 2. This animal holds the record for the highest voice of any vertebrate animal.

\_\_\_\_\_ 3. This animal changes their song over time and new songs can spread quickly amongst its population.

\_\_\_\_\_ 4. This is the world's noisiest insect.

\_\_\_\_\_ 5. This animal can learn over 180 songs in just a few months.

- \_\_\_\_\_ 6. This animal uses echoes to help it 'see' its environment.
- \_\_\_\_\_ 7. This animal's special 'bladder' allows for special sounds.
- \_\_\_\_\_ 8. Females of this species tend to choose mates that know a large number of complex songs.
- \_\_\_\_\_ 9. Scientists don't know why they sing or what the haunting and screechy sounds mean.
- \_\_\_\_\_ 10. This species can hum, grunt and growl.

**"Deadmau5" p. 40-41**

1. How did Deadmau get his start in electronic music?
2. Why can electronic music be called 'performance art'?
3. What types of electronic equipment help Zimmerman achieve his sound?
4. Other than music, what else does Zimmerman like to participate in?
5. Why do you think that his concerts and world tours continue to draw record crowds?

**ANSWER KEY:**

***Musical Brain***

1. *visual cortex*
2. *motor corex*
3. *cerbellum*
4. *nucleus accumbens and amygdala*
5. *sensory cortex*
6. *hippocamus*
7. *perfrontal cortex*
8. *auditory cortex*
9. *corpus callosum*

***6 Surprising Animal Singers***

1. *cicadas*
2. *bats*
3. *humpback whales*
4. *cicadas*
5. *mockingbird*
6. *bats*
7. *toadfish*
8. *moackingbird*
9. *humpback whales*
10. *toadfish*