

Grade 8

Nonfiction Passage for Selected and Constructed Response Questions

A Hip-Hop Experiment

By John Leland

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They are an unlikely team of educational reformers.

Christopher Emdin is a Columbia University professor who likes to declaim Newton’s laws in rhyme. GZA is a member of the Wu-Tang Clan who left school in 10th grade. When the two men met this summer, at a radio show hosted by Neil deGrasse Tyson, the director of the Hayden Planetarium, they started talking about science and education — particularly, why science classrooms were failing to engage many African-American and Latino students, who together make up 70 percent of New York City’s student body. Only 4 percent of African-American seniors nationally were proficient in sciences, compared with 27 percent of whites, according to the 2009 National Assessment of Educational Progress.

GZA, 46, who was born Gary Grice, had just finished an extraordinary round of meetings with physicists at Harvard and the Massachusetts Institute of Technology, culling ideas for a coming solo album about the cosmos. Dr. Emdin, 34, an assistant professor of science education at Teachers College, was a lifelong hip-hop fan. They discovered a shared interest in merging their two worlds: GZA by bringing science into hip-hop; Dr. Emdin by bringing hip-hop into the science classroom.

Next month, the two men, along with the popular hip-hop lyrics Web site Rap Genius, will announce a pilot project to use hip-hop to teach science in 10 New York City public schools. The pilot is small, but its architects’ goals are not modest. Dr. Emdin, who has written a book called “Urban Science Education for the Hip-Hop Generation,” hopes to change the way city teachers relate to minority students, drawing not just on hip-hop’s rhymes, but also on its social practices and values.

Rap Genius, which recently received a \$15 million investment from the venture capital firm Andreessen Horowitz, hopes to expand its site, where users annotate lyrics, into education. And GZA saw a potential hit: “You never know,” he said of their collaboration. “This could turn into something in the future as big as the spelling bee.”

On a recent afternoon in his office at Teachers College, Dr. Emdin likened the skills required for

success in science to those of a good rapper: curiosity, keen observation, an ability to use metaphor and draw connections. Moreover, he said, the medium itself provided a model that could be more effective than traditional science instruction, in which teachers stand in front of classes delivering information, then judge students by their ability to repeat it on tests.

By contrast, in what is known as a hip-hop “cypher,” participants stand in a circle and take turns rapping, often supporting or playing off one another’s rhymes.

“A hip-hop cypher is the perfect pedagogical moment, where someone’s at the helm of a conversation, and then one person stops and another picks up,” Dr. Emdin said, his checked bow tie bobbing under his chin. “There’s equal turns at talking. When somebody has a great line, the whole audience makes a ‘whoa,’ which is positive reinforcement.”

He added, “All of those things that are happening in the hip-hop cypher are what should happen in an ideal classroom.”

Starting in January, the 10 schools, with support from Dr. Emdin and his graduate students, will experiment with cyphers and rhymes to teach basic science concepts — one class per school, one day per week. The students will write rhymes in lieu of papers; the best rhymes, as judged by GZA, will appear on Rap Genius, beside the lyrics of popular hits. The program fits into a broader educational movement to use students’ outside interests to engage them in class work.

When GZA (pronounced JIZ-ah, a play on “genius”) heard Dr. Emdin’s spiel, it resonated with his own school experiences. Growing up in the Park Hill Houses on Staten Island, he was curious about the physical world but bored with school. Hip-hop became his outlet for showing off intellectually.

“It was always about crafting the best rhyme in the most articulate, witty or smart way,” he said. “For us, it was always about educating the listener.”

It took him more than two decades to develop his curiosity about science into “Dark Matter,” an album now in the writing stage, which he hopes will bring his fans to astrophysics, starting with the Big Bang.

David Kaiser, a physicist at M.I.T. who met with GZA in December and again this spring, said he was impressed. “He’s read a lot of books and asked really well-informed questions,” said Dr. Kaiser, 41, who is not a fan of rap. “It was fun to see how excited he was about science.”

More than that, Dr. Kaiser said, GZA might attract African-American and Latino students to the sciences, where they are strongly underrepresented.

“It’s a topic of steady attention at M.I.T. and around the country,” he said. “When I see someone like GZA, who is excited and has a voice and is looked up to, I’m delighted that he wants to communicate that excitement to people who might not be pursuing it.”

Dr. Emdin, too, is hoping that GZA’s presence — appearing in a video for students, possibly visiting a few classrooms, judging the students’ raps — will undercut the students’ fear of science, or the stereotype that scientists are all white people.

Grade 8

Selected Response Questions – Nonfiction

1. Based on information in the article, to what does the phrase "educational reform" refer?
 - a. Using hip hop in the classroom
 - b. Using non-traditional methods of teaching
 - c. Using different ideas to change how education is delivered*
 - d. Using people who are not teachers to help change education for the better

2. What does the word "declaim" mean as used in the opening?
 - a. recite*
 - b. sing
 - c. chant
 - d. rap

3. According to the text, what was the impetus for this type of "education reform"
 - a. Too many students were failing science
 - b. Only a small percentage of one ethnic group were passing science
 - c. An achievement gap that was large existed between groups of students*
 - d. 70 percent of the city's student body need work in science

4. Based on information in the article, what inference can be made about Professor Emdin?
 - a. He hopes to change teachers' mindsets and connections with students for the better
 - b. He hopes to raise all students science scores
 - c. He hopes to introduce creative ways to teach and learn
 - d. He hopes to get only one group of students' science scores much higher

5. How will the students receive their new science lessons?
 - a. By trying out cyphers and rhymes to teach basic science concepts*
 - b. By having the professor and his graduate students visit
 - c. By having rapper GZA visit the class
 - d. By appearing on a program with lyrics they wrote

6. What is the analogy the article makes between science and hip hop?
 - a. it is important for students to have role models
 - b. the ability to rhyme and cypher will improve science proficiency
 - c. the skill sets of a good rapper are aligned with those needed for success in science
 - d. rapping and lyrics fit naturally into science terms

7. According to the article, what how is Rap Genius involved?
- a. The professor and rapper will work together on Rap Genuis
 - b. He will visit the classroom to inspire and engage students
 - c. He announced the new program from his office at Teachers College
 - d. The website is part of the pilot program viewing the students' best science lyrics*
8. What can be inferred about the scientist at M.I.T.?
- a. He believes fears, stereotypes regarding science may be stopped so students will perform better
 - b. He was impressed with the project goals since they help all students
 - c. He noticed the rapper's enthusiasm and thought he was a good role model
 - d. He believes students' science scores will improve

Grade 8

Constructed Response Questions – Nonfiction

9. What are the advantages and disadvantages of allowing a rapper or singer to help a teacher plan science lessons? Pick one side and explain your position using evidence from the article woven into your own opinion.