

Musically Inclined

NM Supercomputing Challenge

Final Report

2017

Team Number: YWIC-3

School: YWIC

Area of Science: Neuropsychology

Computer Language:

Team member emails:

Hailey Himelright (7th) haileymeihimelright@gmail.com

Verity Summers (9th) veritysummers90@gmail.com

Louis Pate (7th) louisbate@gmail.com

Mentor email:

Patty Meyer pmeyer2843@gmail.com

Analyssa Martinez whiteytiger97@gmail.com

Table of Contents

Summery

Problem

Hypothesis

Goal

Steps to Goal

Material Creation

Conducting the Test

Recording Data

Results

Conclusion

Significant Achievement

Acknowledgements

Models/Graphs/Docs

Links

Summery

In the world of a adolescent teenager that's on the edge of insanity between towering social pressures, daunting school work, and yelling parents, a very popular way to deal with stress is to listen to music. One of the most popular demands in the schools today, at least from my personal experiences, is to be able to listen to music while studying. To this request most teachers either deny us the ability, or just put on classical music. These experiences have caused me to really question whether either of these methods actually work. So we tested it.

Our big idea all started with a simple question, "Does listening to music while studying affect test results?" This question later expanded into our project and we started thinking about how we would conduct this experiment. We had decided that we would have three types of sound to compare. Silence, instrumental, and lyrical choice where the types of sound that we had decided upon. These represent the three sounds that students were exposed to or wanted to be exposed to.

We got three groups of our peers, grades 6-8, to conduct this test. We created a Pre-Test, a Study Guide, and a Test for our volunteers to take. The Test, as it will be referred to as, was on Vlad the Impaler. This man is the supposed inspiration for the notoriously known character Dracula. This particular person was chosen because we wanted to have a engaging and informational subject that volunteers could use their critical thinking skills for. In the test we used a compare/contrast mean, a venn diagram, which is seen as critical thinking.

The Pre-Test included some knowledge measures for us to know how much the test takers know from previous information given to them. We also included some basic information like gender and grade level to later compare if any of these things matter.

Besides creating, conducting, scoring, and putting our data together we also have contacted people about our project. We have done extensive research about our topic and also our test subject. For example asking Dr. Kodi (former UNM professor) a few questions.

Problem

Our whole problem, or rather question, is, "Does listening to music while studying affect test scores?"

This all developed from our curiosity that we had towards personal experiences we've had in school. Many times have we witnessed people ask their teachers if they could listen to music during class, all of those times the teachers either put on their own music or would just say no. We decided to test whether any of us were right. The students or the teachers.

Hypothesis

Based off of some research that we've done, we have hypothesised that the students who listen to classical music and silence will do better than the students who do lyrical choice. This is because the lyrics can intercept the mind's ability to receive the data that their reading. Since both languages are being processed at once it can be viewed as multitasking, which has been proven as an ineffective method to studying. Your brain can't actually do two things at once, instead it just rapidly shifts between the two. This can be especially hard for you to do when you're doing things that include the same type of information that your brain has to intercent. In this case language.

Goal

Our goal throughout this whole project has been to complete all the necessary tasks that have been asked of us and also to find some significant data. We also strived to find creative ways to interpret our data and to be able to present to the best of our abilities.

Steps to Goal

The first and foremost order of business was to research. From YouTube videos, to books, and even to collage reports, we went through them all. Some examples of the things that we researched include: multitasking, neuroscience, listening to music while studying, listening to music while reading, Vlad the Impaler, Dracula, and the Mozart Effect. During this time we

learned many new and interesting things about how music affects us and how our project might turn out.

Later we came up with a hypothesis. We felt that classical/instrumental and/or silence will have a significantly higher performance level rather than choice. Seeing as much research as proven that listening to music with lyrics can be distracting.

After making our hypothesis, we had to finalize our idea, how we were going to conduct it, who was going to do what, how much time we had for everything, ect. We figured out our question and had a basic idea of what we were going to be doing and the age group, 6th-8th, was established.

From the get go we knew that we wanted to write the study guide ourselves. We wanted to be in control of the amount of information that volunteers would be getting. This would also control how we presented it to them to insure that it could be understandable.

The pre-test was a ten question easy measure of what the volunteers knew before they read the study guide and took the test. It asked questions such as, "Are you familiar with the name Dracula?" and "Have you ever read the book Dracula?". It also included questions about mood, and gender, and sleep habits.

We then moved onto writing the study guide. At first it was just a information dump, so I tried to break it up into a more readable, and condensed version. I added some bulleted points, pictures, and vocab boxes. There was the main title, Dracula: Fiction or Real?, and also subtitles to break up the information. Due to the time crunch there wasn't much I could add about Dracula, but in the end it all turned out well.

The test included three multiple choice questions, two long answer questions, and one venn diagram. I asked simple questions for the multiple choice, such as, "Where did Vlad live/rule?", which progressively got more and more complicated and then went to the venn diagram. In the venn diagram they were required to have three facts and each section.

With all of these components done and ready, I was finally able to start testing. I had reached out to two of my teachers, Anna Suggs and Nicole Bowen of Zia Middle School, to be allowed to test their classes. The first class that I thought was Mrs. Bowen's first period Leadership class. They were instructed on what they would be doing, what it was going to be used for, and told that everything was going to be anonymous. (link the procedures down below) This process was repeated to Ms. Suggs 1st and 3rd period classes.

Mrs. Bowen's class did the classical music test, Ms. Sugg's the choice (1st period) and the silence (3rd period). For the classes with music I just had them listen to music while studying for the test, not during the pretest and test.

After all of these tests were conducted the tests were graded, and we put all the data from the test and the pre-test into microsoft excel. It was during this time that we pulled them all together to make graphs on the tests.

Material Creation

During the process of writing the study guide, the pre-test, and the actual test many things were taken into account. For example, we had considered making the whole test computerized. This would be an interesting component to add in for future testing, but as of now we decided to stick to what we know better. This was shortly ruled out seeing that different variables would have to be included for the computer aspect.

The whole idea of Vlad the Impaler being the focus of our topic was built around the interesting subject and the fact that he ties in with the character Dracula. It has been long since speculated that the myth behind Dracula is Vlad the Impaler. This fact would allow us to tie in some critical thinking elements such as a venn diagram which includes compare and contrast elements which is then considered critical thinking.

Within the project we tried to break down the study guide and make it more readable for the volunteers. We did this by including vocab boxes of words they might not be familiar with, breaking down the text into bulleted lists, and sectioning the information off with subtitles. These are all techniques that our teachers have used with us to make our reading seem less tedious and intimidating. This also helped sort the information we gave and made it flow better.

In the pre-test we wanted to measure, at least to an extent, the students prior knowledge on the two characters (in this case Vlad and Dracula). We asked simple questions about their knowledge on the two and if they have ever read the book Dracula by Bram Stoker. To add onto this we also decided to cut out some components that could define the outcomes by asking questions about mood, health, sleep, and other things that have been shown to increase/decrease the likelihood of them getting a good grade.

The test that we curated included three different sections of questions. The first was three multiple choice questions. This was to give them some easy “warm up” questions to start off with. They were directed to just circle the correct answers. The next was two long answer questions, this made them pull in elements that they remembered from the test. They were told to give reasoning for their claim on both questions. The last was the venn diagram where they were asked to give three facts for each section. All of the questions were based off of their readings.

Conducting the Test

After completing all the components of the test, we talked to two teachers and Zia Middle School to see if they would be willing to let us test three of their classes (combined not each). The first class that was taught was Mrs. Bowen's first period Leadership class. This is where we tested with the classical music on Pandora. Music throughout the whole experiment have only been played during the studying time period and not during the pre-test and test. It was disclosed what this data was being used for and that it would be anonymous before the pre-test.

To make the test a little bit easier, because the students don't get the ability to study this for a longer period of time like teachers usually give, I allowed the students to review the questions on their own for a minute. After that I recollected the test and gave out the study guide. They got the same amount of time for the study guide as they did for the test. This was kept consistently throughout the whole testing processes. (more information will be included in my section). For students who took the test listening to choice music they were told to write what type of music they listened to on top of their tests.

After the test was over I thanked them and asked to have a small chat where they could give me feedback on future projects.

Recording Data

It was after this where we started recording the data and creating graphs and other such things for our project. The students had the ability to receive twenty points total for the test. This was based off of simple study skills we are taught in school, such as restating questions and making a claim and evidence to support that claim.

We also recorded the pre-test data and made some graphs based off of that. This whole process was pretty simple, but ended up being pretty tedious. It was here that we also created all of our graphs/models.

Results

The final conclusion is that lyrical choice got the lowest out of the three options. The results weren't that surprising seeing as numerous articles had stated that lyrical music would cause problems when doing language tasks like reading. Choice averaged a shocking 10/20

questions correct. While on the other hand silence averaged 14.6/20 questions correct and classical music 14/20 correct.

This shows that our hypothesis is correct and that the lyrics in the choice music distract you from intaking the language in the reading.

For future projects it would be more reliable data if we did this on a larger scale, this would decrease smaller variables like mood, hunger, time, ect. But from our results I can say that lyrical choice music might not be your best route to go if you want to listen to music while studying. If you want to listen to any music at all it would be good to listen to classical/instrumental music.

Conclusion

In conclusion our project has been a huge reward for us to do. We have learned many new and exciting things that we can there expand and share with our peers in future references. We can only hope to enjoy this further sometime in the future and later evolve this simple idea and spread it to other areas of interest. We have completed the study guide, pre-test, test and have conducted and recorded the data given from this project. Overall, this project was a exciting challenge that we would like to continue doing in the future.

Significant Achievement

I would like to say that our significant achievement is sheerly getting this project completed. Every single step was difficult, but we made it through in the end! It has been such a long and taxing year and it had been a huge and challenge project to complete especially on top of our normal, everyday lives. Being one of those adolescent teens on the edge of insanity, I can say that just getting it done was truly an amazement. It really did take a village to get this done and over with, but in the end I can say that it was really well worth it. The whole experience of doing a science project, never personally being in any science fair or anything of that sort, it was a wonderful thing to be apart of. During this time you really learned along of teamwork and managing and how to get tasks done.

Acknowledgments

We would like to thank all of the people that supported us including: our mentors, our parents, some friends, and our teachers. We would also like to give a big thanks to Mrs. Bowen and Ms. Suggs of Zia Middle School for letting us steal their classes for a little bit to test them. Of course all of our volunteers, who were such great sports in dealing with us making them take yet again, another test. Dr. Kodi, was also a huge help. He went over the interim with us and gave us some wonderful insight. The whole YWIC team is truly wonderful, and have supported us and given us a place to meet every week. And finally, to future Supercomputing kids who will continue to keep on this legacy for many years to come!

Models/Graphs/Docs

Choice

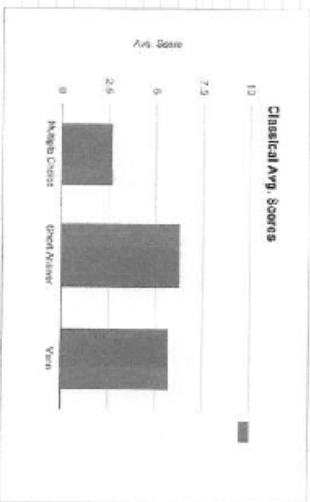
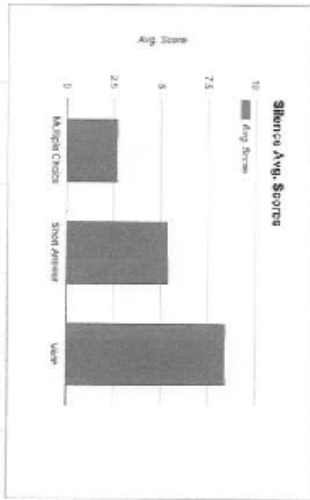
	multiple choice	Short answer	venn
avg. score	2.7	3.8	4.8



Music of choice was significantly lower than the silence and classical.

Models/Graphs

Silence				Classical			
Multiple Choice	Open Answer	Open Answer	Open Answer	Multiple Choice	Short Answer	Open Answer	Open Answer
2.7/3	5.4/3	3.4/5	8.4	2.7/3	5.8/5	1.7/9	5.7
Multiple Choice	Short Answer	Open Answer	Open Answer	Multiple Choice	Short Answer	Open Answer	Open Answer
2.7	5.4	8.4		2.7	5.8	1.7	5.7



*type of C
 Multiple Choice
 Short Answer
 Open Answer
 3 since did not have
 None

How Graded:

Multiple Choice Questions are worth 1pt each

Question 4 is worth 3pts

- For restating the question
- Giving a reason
- Having the correct reason

Question 5 is worth 5pts

- For restating the question
- Giving a claim
- 3pnts for every reason

Venn Diagram is worth 9pts

- Three for Vlad's side
- Three for similarities
- Three for Dracula

Total amounts of points possible are 20

Vlad the Impaler: The Real Dracula TEST

Circle the correct answers for questions 1-3

1) What character was based off of Vlad?

- a) Frankenstein
- b) Boogeyman
- c) Dracula
- d) Wolf Man

2) What time period did Vlad rule?

- a) Mid 1400's
- b) Late 1500's
- c) Early 1400's
- d) Early 1500's

3) Where did Vlad live/rule?

- a) Scotland
- b) Japan
- c) England
- d) Wallachia

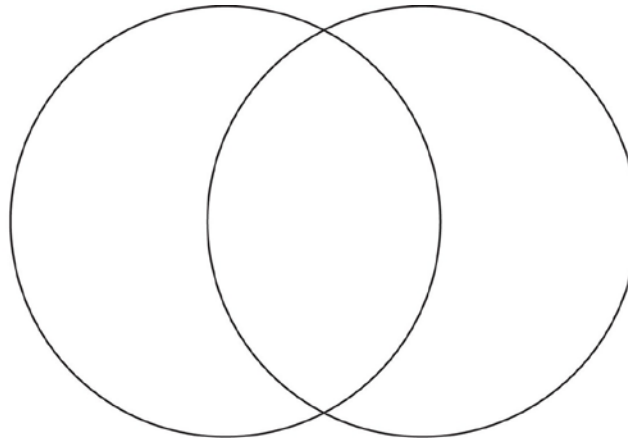
Answer questions 4- 5 in complete sentences (unless said otherwise).

4) Why was Vlad called Vlad the Impaler?

5) Do you think that Vlad deserved to die the way he did? Please give three examples examples to support your claim.

Fill out the Venn Diagram in bullet points. List three or more facts in each section

6) Vlad the Impaler Same Dracula



PRE-TEST

Please answer ALL questions TRUTHFULLY. Circle your answer

1) On a scale from one to ten (ten being the most) how tired are you?

1 2 3 4 5 6 7 8 9 10

2) About how many hours of sleep did you get last night?

0-3 4-6 5-7 8-9 10+

3) Are you familiar with the name *Dracula*?

Yes

No

4) Have you ever read *Dracula*?

Yes

No

5) Are you familiar with the inspiration behind the character Dracula?

Yes

No

6) Do you feel sick/unwell?

Yes

No

7) How are you feeling right now?

Neutral

Happy

Sad

Hungry

Stressed

Angry

Other:

8) What grade are you in?

6th

7th

8th

9th

9) Are you a :

Male

Female

10) On a scale from one to ten (ten being best), how efficient do you think you are at studying?

1

2

3

4

5

6

7

8

9

10

ANSWER GUIDE

1. C

2. A

3. D

4. He Impaled people.

5. *this answer varies

6. * this answer varies

Links

- **The book of blood by HP Newquist (129-30)**
- **Vampire by Manuela Dunn Mascetti (117-143)**
- **In the footsteps of dracula by Steven P. Unger (87-192)**
- **www.livescience.com/48536-vlad-the-impaler-dark-secrets.html**
- **www.livescience.com artical title- Dracula's castle up for sale**
- **A Wicked History: Vlad the Impaler The Real COunt Dracula by Enid A Goldberg & Norman Itzkowitz**
- **<http://www.pbs.org/frontlineworld/stories/romania/dracula1.html>**
- **Vlad the Impaler by Enid A. Goldberg & Norman Itzkowitz**
- **<https://www.britannica.com/biography/Vlad-the-Impaler>**

- **<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1281386/>**

- http://lrs.ed.uiuc.edu/students/lerch1/edpsy/mozart_effect.html#Introduction
- <http://www.bbc.com/future/story/20130107-can-mozart-boost-brainpower>
- <http://www.mindthesciencegap.org/2012/10/08/does-music-help-you-study/>
- <http://college.usatoday.com/2012/09/10/should-you-listen-to-music-while-you-study/>
- <https://gradeslam.org/blog/does-listening-to-music-help-with-studying>
- <https://www.youtube.com/watch?v=J1WxMyEmUv4>
- <https://www.youtube.com/watch?v=fDfVsFxJXms>
- <http://www.jessicagrahn.com/research.html>
- <http://www.uwo.ca/bmi/research/featured/grahn.html>
- <http://news.mit.edu/2015/neural-population-music-brain-1216>
- <http://www.inquiriesjournal.com/articles/762/the-impact-of-listening-to-music-on-cognitive-performance>
- <http://old.biz.colostate.edu/mti/tips/pages/Students-Think-They-Can-Multitask---Here's-Proof-They-Can't.aspx>
- <http://www.criticalthinking.org/pages/glossary-of-critical-thinking-terms/496#glossary-c>