

What is the Effect of Listening to
Classical Music on Students' *Performance*,
Motivation, and *Focus* in Math?

An action research project by

Cynthia Cope

Fifth Grade Math Teacher

Rutledge H. Pearson Elementary School #95

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What is the Effect of Listening to Classical Music on Students' Performance, Motivation, and Focus in Math?

Abstract

The purpose of this study was to determine the effects of playing classical music on student performance, motivation and focus in math. I was a departmentalized math teacher (teaching *Investigations in Number, Data and Space*) to three separate fifth grade classes at Rutledge H. Pearson Elementary School during the 2004-2005 school year. During the study, I played classical music (Mozart) during independent and group work and unit tests in two of the three math classes, rotating the control group with each math unit. I continued the study for the period of three math units so that each class was, during one of the units, the control group that did not listen to music.

To collect data, I compared student *performance* on unit assessments. I sought to determine if there was any significant difference in scores between the units when each class did listen to music and the units in which they did not. I assessed *motivation* in two ways. I recorded the percentage of students completing daily homework. I also had all of the students complete a Likert survey at the beginning of the research and then after each unit of study in order to determine whether or not each class's motivation changed between the units

in which they listened to music and that in which they did not. To assess *focus*, I tallied daily in each class the number of teacher prompts needed to maintain focus. I compared the level of focus within each class between units in which they listened to music and that in which they did not.

After collecting the data, I graphed and compared the results for each math class from each unit to determine the effects, if any, the music had on the *performance, motivation* and *focus* of the students. In this target group, there were no significant changes in any of the three areas studied in any of the three classes. I would like to do further research in this area, especially regarding the relationship between listening to music and motivation and focus. I will perhaps experiment with other types of music and with other subject areas or different target groups of students.

Contact info:

904-757-5039

copec@educationcentral.org

Focus Statement

My favorite school subject has always been math. I love the sense that there is typically a correct conclusion to any given problem. When I began teaching math to others, I was shocked to hear that many students do not enjoy math, or have strong dislike and anxiety about it! In my experience, this lack of confidence contributes to many students' lack of success in math courses.

Being a musician, I was intrigued when I first heard about a connection between music and success on math-related performance tasks. With my 50 math students in mind, I became curious as to the effects music could have on my students' performance in math.

The purpose of this study was therefore to determine the effects of listening to music on students' motivation, focus, and performance in math classes. This study was important because of the chronically low math FCAT scores at my school. I think one aspect of the problem is the students' lack of confidence, focus, and performance in class. I wanted to see if strategically adding music to the background of my math class would increase the students' confidence and focus and therefore help them to perform better in class and ultimately on the FCAT test.

Literature Review

Math Anxiety

As I began to research this topic, I discovered that a wealth of information exists related to what is called 'math anxiety.' Math anxiety is something with which many people struggle. In fact, through an introductory scenario that sounds all too familiar, one website suggests that it is *popular* to struggle with math. In fact, it claims that within American culture, there is an implicit message that no 'ordinary person' would ever be good at math. Math has a bad reputation in our society, and to make matters worse, "alarmingly, many school teachers – even those whose job it is to teach mathematics – communicate that attitude to their students directly or indirectly" (Coping with Math Anxiety, 1997, pp.2-3).

One reason for math being so disliked is the way it has been taught in the United States for almost a century. The focus on rote memorization and repetition has bored and disappointed students. There is hope, however, in the new math reform that focuses more on the concepts behind the techniques (Coping with Math Anxiety, 1997). The adopted math curriculum in Duval County at this time is one of these programs; It focuses more on concepts than techniques and teaches that there are many ways to solve a problem.

More hope lies in the psychology of behaviorism and conditioning. Although human beings, especially over a certain age, are more complicated than animals, such as rats or dogs, many people have been 'conditioned' to be anxious about math. Therefore, maybe through conditioning, anxieties can be diminished. In an article explaining stress and anxiety, one author asserts that

although you may have developed a problem, that doesn't mean you are helplessly destined to continue having it. "It does mean that, compared to others, you may require more effort – relaxation or practice or desensitization or correcting [your] thinking – to overcome your [anxiety]" (Theories Explaining Stress and Anxiety, 2004, p.2).

Relaxation through Music

Dalloway (2000) claims that,

The more proficient individuals are in being able to relax, the greater control there is over stress response. In situations that would ordinarily trigger the stress response, relaxation techniques can be applied to alter stress to a peak activation level (p.1).

Music can relax a person and relieve stress. Music can alter one's mood and increase one's energy. It is the rhythm of music that relaxes us since, in the womb, we could steadily hear our mothers' heartbeats. The first physical reaction to music is deeper breathing, followed by accelerated production of serotonin. "Playing music in the background while we are working...has been found to reduce...stress" (Music Therapy, 1998, p.2).

The Mozart Effect

At Windhill Primary School in Southern Yorkshire, England, the students are exposed to music throughout the school day. The style and tempo change depending on the desired activity level of the students. According to the data

collected during this pilot study, the students are benefiting from the program and performing better in math classes (Thomas, 1997).

Where did the idea originate? Although music and math have been associated together throughout history (Peterson, 1996), research on what is now known as the Mozart Effect began in the 1950's in France. Dr. Alfred Tomatis experimented with sound as stimulation for children with communication problems (What is the Mozart Effect?, 2002). In the 1990's in California, psychologists Drs. Gordon Shaw and Fran Rauscher performed an experiment based on the work of Tomatis with 84 college students. They exposed one group of students to Mozart's *Sonata for two Pianos in D Major* for 10 minutes. The other two groups were exposed to meditation/relaxation tapes or silence (Monks, 2000). The students were then given a test that measured spatial-temporal reasoning. The Mozart group showed a temporary 8-9 point increase in scores over the other two groups (Carroll, 2002).

This experiment resulted in a hypothesis that,

...Complex music with several moving lines in a pleasant key stimulates the neural pathways in the brain. It helps individuals to be more efficient in performing mental tasks such as scientific reasoning, figuring math problems, solving puzzles and conceptualizing ideas requiring dimensional thinking (Monks, 2000, p.1).

The Mozart Effect now generally refers to the use of music to improve memory, awareness, and the integration of learning styles (What is the Mozart Effect?, 2002). Proponents of this theory use music to enhance imagery, visualization, creativity, listening, and attention and to reduce anxiety and stress

(What is the Mozart Effect?, 2002). In the case of the Windhill Primary School, increased test scores have suggested to administrators that Mozart's music is especially helpful during math lessons. The head teacher, Doulla Simon, thinks that the 'complicated note patterns stimulate mathematical thinking' (Thomas, 1997).

Critics of this research, and there are many, quickly ask, "Why Mozart?" According to The Mozart Effect Resource Center, Mozart's music is not over-stimulating or overly emotional (What is the Mozart Effect?, 2002). Don Campbell, an expert on the Mozart Effect, claims that Mozart's music is emotionally consistent and is well organized (Monks, 2000).

The critics, however, claim to appeal to common sense when refuting Campbell's assertions.

...The whole structure of [Campbell's] argument collapses under simple common sense. If Mozart's music were able to improve health, why was Mozart himself so frequently sick? If listening to Mozart's music increases intelligence and encourages spirituality, why aren't the world's smartest and most spiritual people Mozart specialists? (Carroll, 2002, p.3)

Others critics point out that the results have not been successfully duplicated by further studies (Carroll, 2002). For example, in a study at the University of Nebraska at Omaha that intended to replicate and expand upon the earlier experiment, the music "had no statistically significant effect on the math scores" (Manthei, 2004, p.1).

Even Shaw and Rauscher, the scientists who experimented with the Mozart Effect in the 1990's, admit themselves that the results of their work have been exaggerated. The media has taken the results and made wide-spread generalizations such as "Listening to Mozart makes you smarter." (Carroll, 2002) Campbell asserts, "It may not inspire 'instant genius' but the music of Mozart prepares the mind and body for learning, creativity and rest....The music builds a healthy environment where children can learn, listen, relax and create at their very best." (Campbell, 1997, p.1)

Motivation and Homework

One indication of a student being academically engaged and motivated is his consistent completion of homework assignments (Libbey, 2004). Since this is the case, I will be using the percent of students completing daily homework assignments as one measure of student motivation.

T Tests

A T Test is used when comparing data between control and experimental groups. The test is used to determine the likelihood that the difference in the data is caused by chance. In general, if the T score is less than 0.05, then the difference is considered significant, and not simply caused by chance (Uitenbroek, 1997).

Variables

I was the math teacher in a departmentalized fifth grade team at Rutledge H. Pearson Elementary School for the 2004-2005 school year. Pearson is an urban, Title I school, with mostly minority students. According to the state of Florida, Pearson's school grades have been an F, a D and a D in the three previous school years. The students' performance on the math portion of the FCAT test has been one of the major contributors in the school receiving such a low grade.

Because of the results of my research examining the relationship between music and math, I decided to conduct an intervention in order to determine the effects of playing classical music in the background during my math classes. I decided to specifically examine the areas of performance, focus and motivation. I wanted to assess student performance to see if I could replicate the results of the original Mozart Effect experiment in my classroom setting with my populations of students. I decided to also focus on motivation and focus because the research indicated to me that these areas might be most greatly affected by the music.

All three of the fifth grade classes rotated to me throughout each school day. For my intervention, I had two of the classes listen to music during their math seatwork (independent and group work) and during tests. The other class was a control group with no music playing during that unit. I rotated the interventions for classes so that the control class was different each unit. During the study, I measured the students' performance, motivation, and focus.

Questions

- What is the effect of listening to classical music (Mozart) on student performance in math?
- What is the effect of listening to classical music on student motivation in math class?
- Will the music relax the students and soothe anxieties related to math?
- Will more relaxed students perform better on class assignments?
- Will more relaxed students perform better on unit tests?
- What is the effect of listening to classical music on student focus in math class?
- Will the music distract the students?
- Will the music cause the noise level in the class to rise during group work?
- Will students enjoy math class more with music playing in the background?

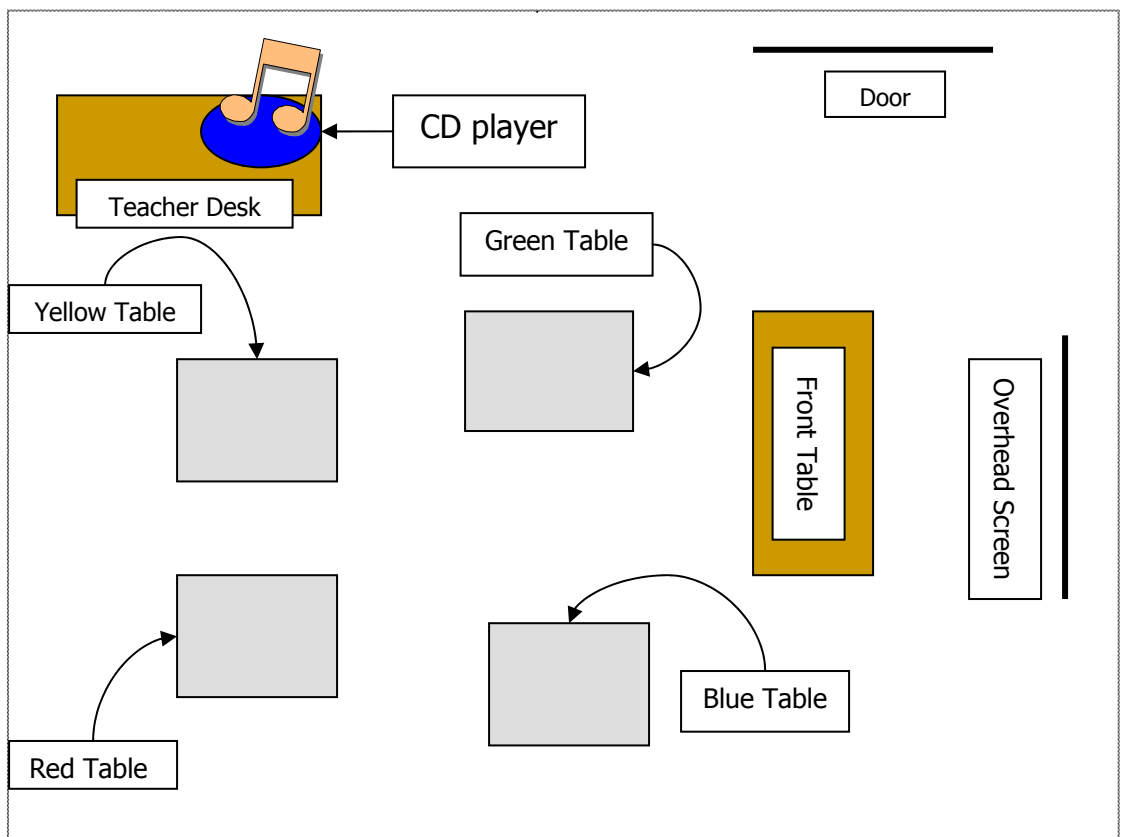
Intervention

The intervention I performed was playing classical music. I played the music (Mozart CDs) in the background in two of my three fifth grade math classes during independent work, group work, and during unit tests.

Membership

I was the only teacher performing this study, but with my three different fifth grade math classes. I will share the results with my colleagues and encourage them to implement any successful interventions themselves.

Classroom Diagram



Permissions

I received permission from my principal to perform this research in my math classes. I got photo and video release permission from the parents for any pictures I decide to take for my display or for sharing my action research.

Timeline

Summer/Fall 2004: Planned action research project in teacher leadership course at UNF. Reviewed current literature and wrote up proposal.

January 2005: Gave Likert survey pretest to assess beginning motivation. Began implementing research study in two of the three math classes. Completed student focus tallies daily throughout study.

January/February 2005: First math unit. Assessed student performance with unit test at the end of the first math unit. Assessed motivation with Likert. Switched control group.

February 2005: Second math unit. Assessed student performance with unit test at the end of the second math unit. Assessed motivation with Likert. Switched control group.

February/March 2005: Third math unit. Assessed student performance with unit test at the end of the third math unit. Assessed motivation with Likert.

March 2005: Analyzed results of unit tests, Likert surveys and focus tallies. Wrote up results.

Data Collection

Performance

At the end of each unit, I gave all students an assessment. I graded the tests then determined an average for each class. After all three units were

completed and tests graded, I compared each class's performance between units to see if there was any marked difference between when the music was included and when it was not.

Validity: These performance tests were very similar to the way the students worked in class during the unit, therefore, they will be a valid assessment of student performance in math class. One external factor in student performance was the level of difficulty of the different units. I addressed this by switching the control groups each unit and by having two experimental classes in order to facilitate comparisons between classes.

Reliability: All three classes were given the same test.

Ethics: When grading these assessments, I had students write their names on the back of the tests and I did not look at the names ahead of time. I graded page by page all tests so that my standards were the same for each student. This kept grading standards consistent between students.

Motivation

I measured motivation in two different ways. One way was by tracking the percent of homework assignments that were completed within each class on a daily basis.

The second way I assessed students' motivation was with a Likert survey. At the beginning of the project and after each unit I gave students the survey to measure their motivation in math. I gave each level answer a numerical value (0-4) then I averaged the answers for each class. I compared the overall motivation

levels of each class and also broke the results down further to each Likert question. I compared the results from each unit to that same class's motivation in the other units, using a bar graph. Included at the end of the Likert survey was an open-ended question asking how students feel in general about math class. I looked for patterns or themes in the answers students gave and wrote about them.

Validity: This Likert survey measured how students felt about math class; how relaxed or anxious they were, and how confident they were that they would do well. Since it was the student's opinion that was being measured, the only issue of validity is whether or not the student tells the truth, which I do not have a lot of control over.

Reliability: All students were given the same Likert survey and they had the opportunity to answer an open-ended question, so they could express themselves freely.

Ethics: The students were not asked to give their names on the Likert surveys so they would be more prone to be honest.

Focus

I kept a tally chart of each time I had to prompt students to be on task during independent or group work. At the end of each unit, I added up the focus tallies per class and compared the classes' degrees of focus. *One important thing to note here is that, when looking at the various graphs, this was the only one in which high values of incidence will indicate poor results in the research.*

Obviously, the more the teacher has to redirect the students, the less focused they are.

Validity: Since I did an objective measurement of the number of times I had to prompt students that will be a valid assessment of focus.

Reliability: I had to be careful of my prejudices due to how much I enjoy one class over another because of student personalities and behavior. I had to be careful to keep my feelings in check and be objective in my evaluation of focus.

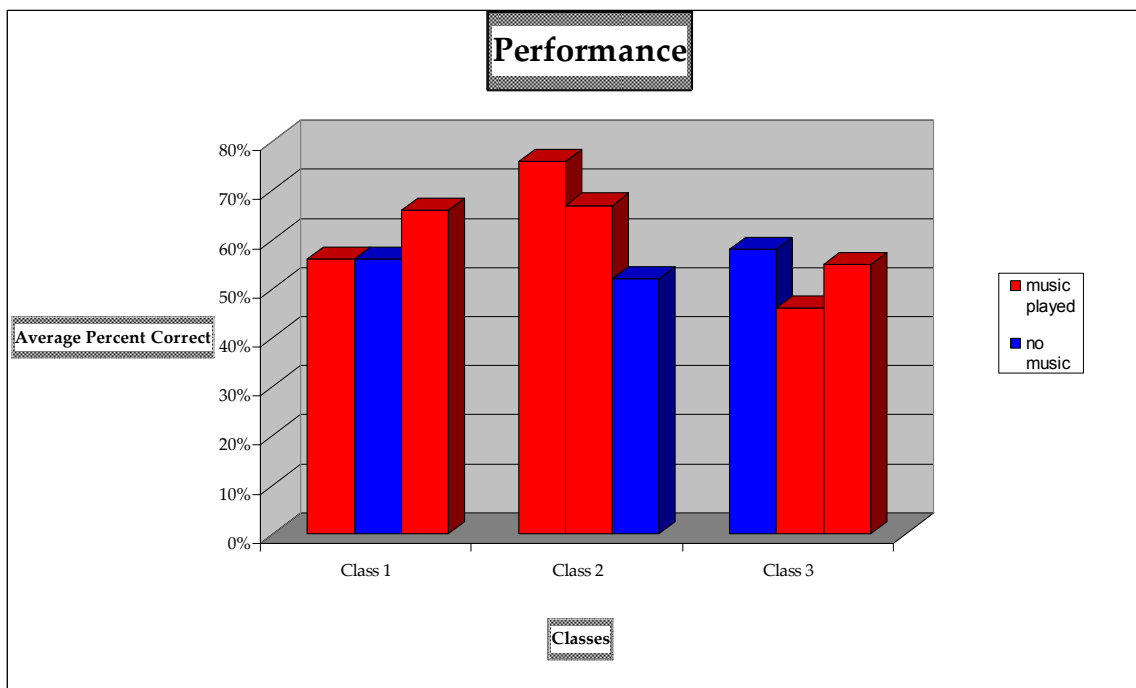
Ethics: I did not use individual names of students in my focus tallies.

Data Analysis

Performance Results

T Scores Comparing Percent Correct on Performance Tasks Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
0.729	2.716	-1.1337

Figure 1



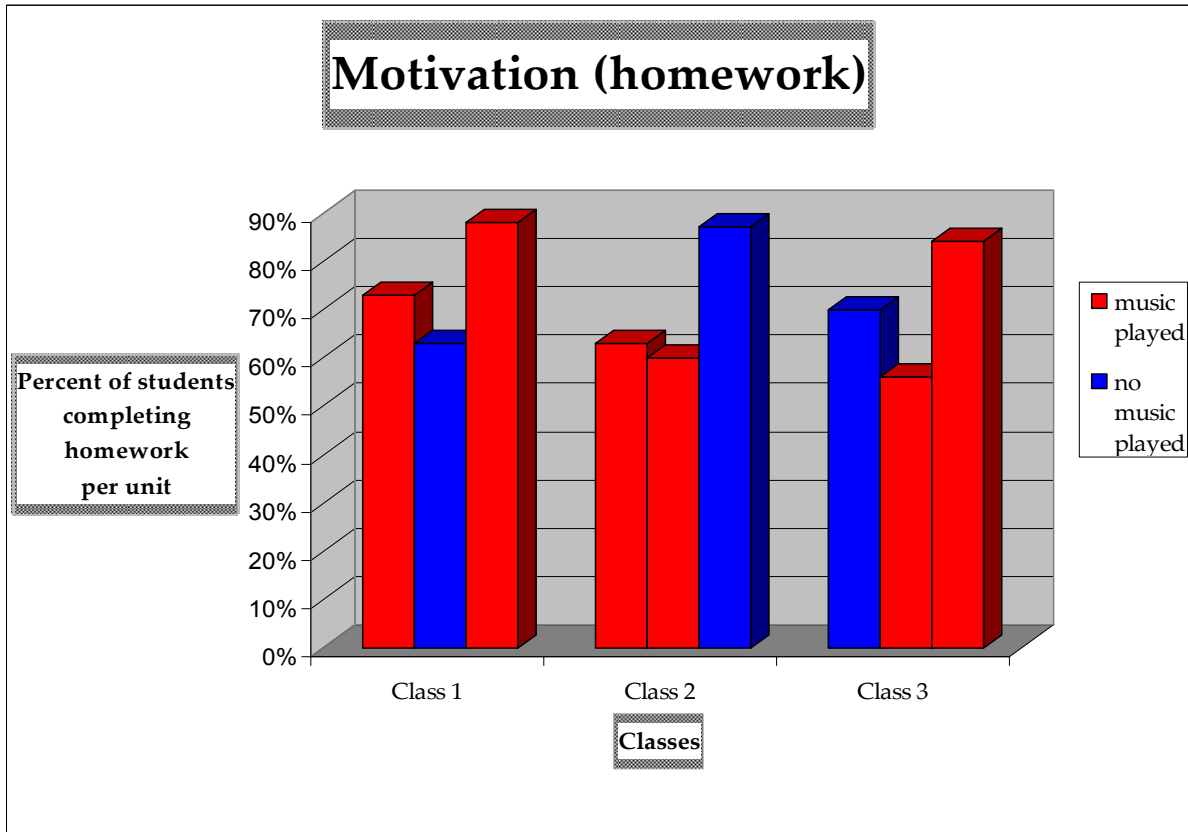
In the area of performance, there were not any significant differences between music and non-music weeks in any of the three classes. There did not even seem to be any consistent patterns either within each class or between the classes. In the music weeks, Class 2 appeared to perform better, on average. Class 3, on the other hand, did the best in the week they did not listen to music. Class 1 did equally well in a music week and a non-music week.

Motivation Results

T Scores Comparing Motivation as Indicated by Percent of Students Completing Homework Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
2.0727	-3.0736	-0.0651

Homework

Figure 2



There was no significant difference in the percentage of students completing homework between music and non-music weeks in any of the three classes. All three classes completed the least amount of homework in Unit 2 and the most homework in Unit 3. This is most likely more closely related to the

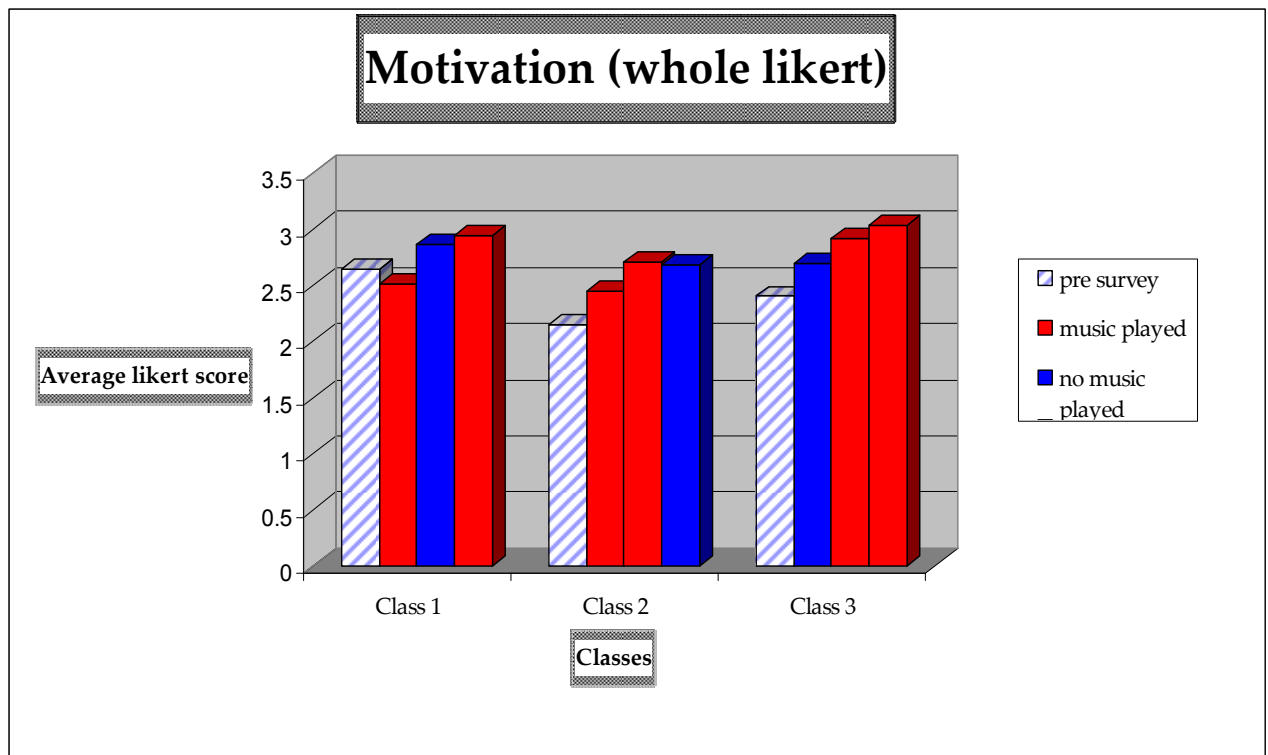
difficulty and interest levels of the subject matter rather than the music and its affects.

Whole Likert

T Scores Comparing Motivation as Indicated by Likert Assessment Scores Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
-0.7004	-0.4574	0.9498

T Scores Comparing Motivation as Indicated by Likert Assessment Scores Between Pre-Test and End of Intervention		
Class 1	Class 2	Class 3
1.287	2.0729	1.6706

Figure 3



Although the graph of the overall Likert averages showed a general increase in motivation throughout the experiment, statistically, there was not a

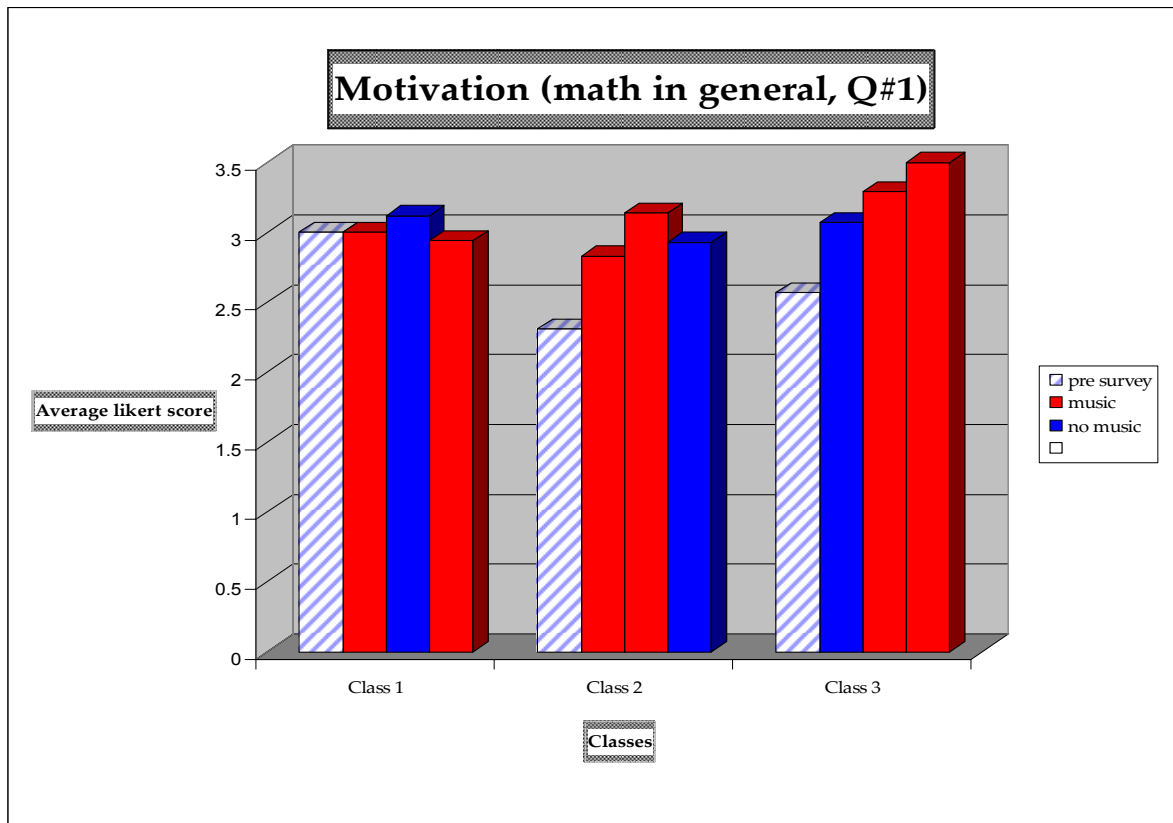
significant difference in motivation between music and non-music units in any of the three classes. There was also not a significant difference as indicated by the Likert between the students' motivation between the pre-test and the end of the intervention.

To take a more detailed look, I then examined the results of each individual question on the Likert to see if any specific area of motivation was affected by the intervention.

Math in General

T Scores Comparing Students' Feelings About "Math in General" as Indicated by Scores on Question #1 on Likert Assessment Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
-0.51	0.1388	0.8622

Figure 4

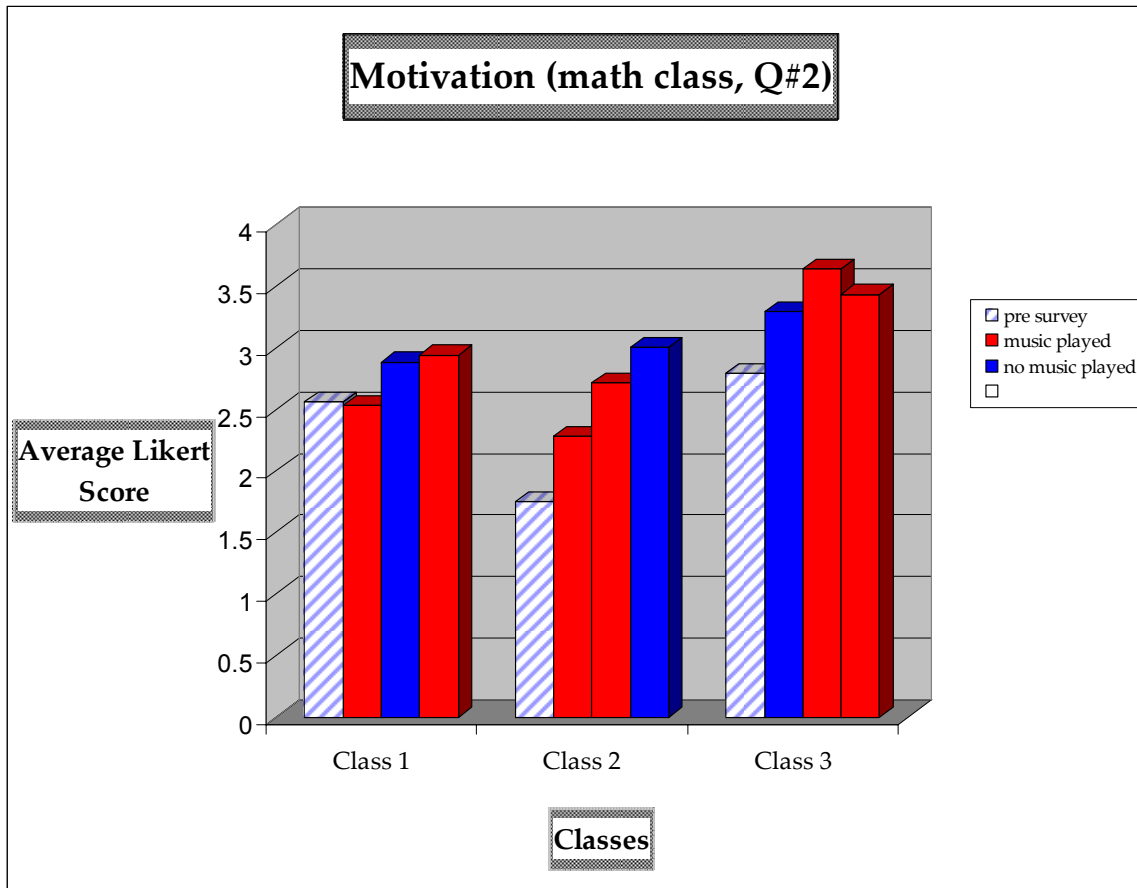


Question number one on the Likert survey asked students how they felt about math in general. There was no significant difference between student responses to question number one between music and non-music units.

Math Class

T Scores Comparing Students' Feelings About "Coming to Math Class" as Indicated by Scores on Question #2 on Likert Assessment Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
-0.0512	-1.7847	1.0341

Figure 5

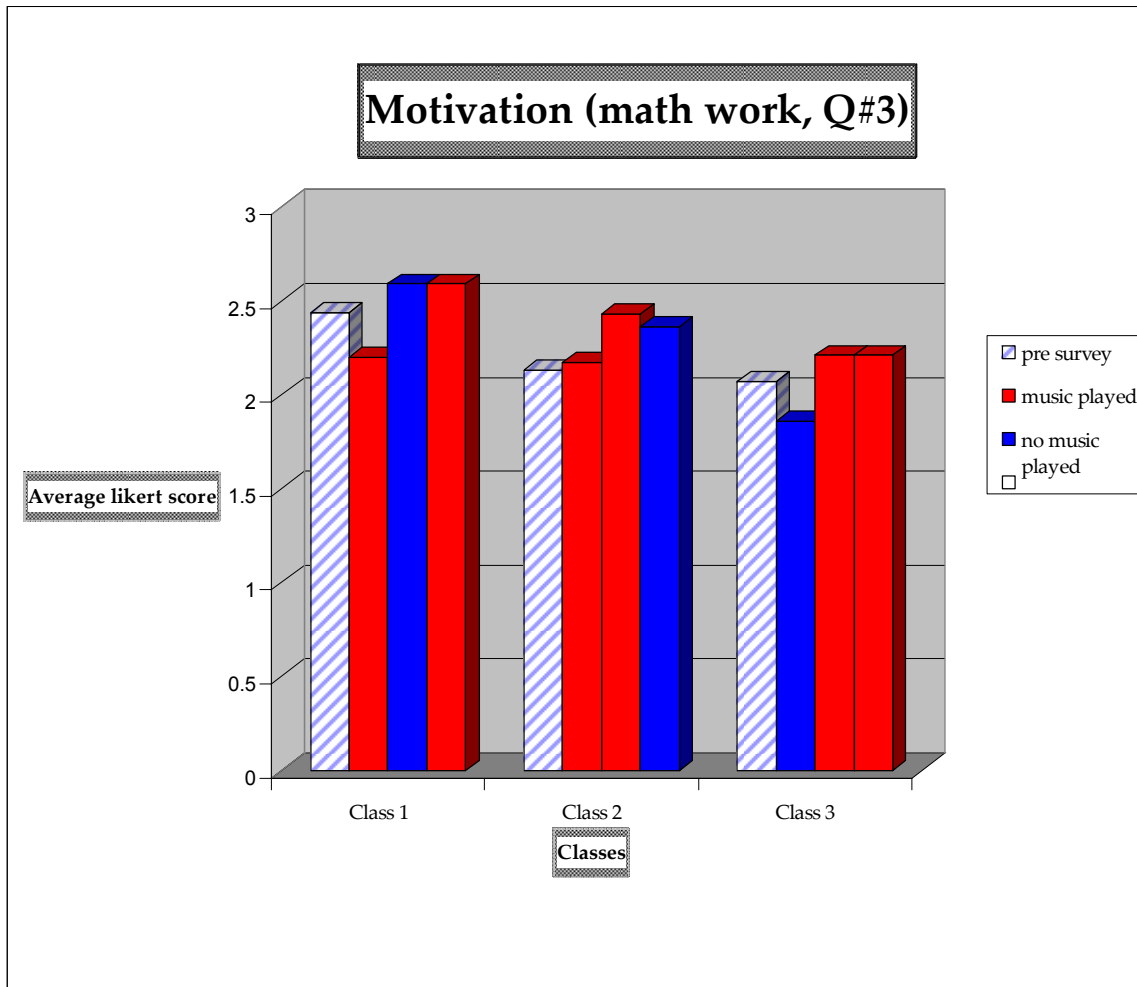


The second question on the Likert survey addressed how students feel about coming to math class each day. There was no significant difference between student responses to question number two between music and non-music units.

Math Work

T Scores Comparing Students' Feelings About "Math Work" as Indicated by Scores on Question #3 on Likert Assessment Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
-0.7716	-0.2986	1.2118

Figure 6

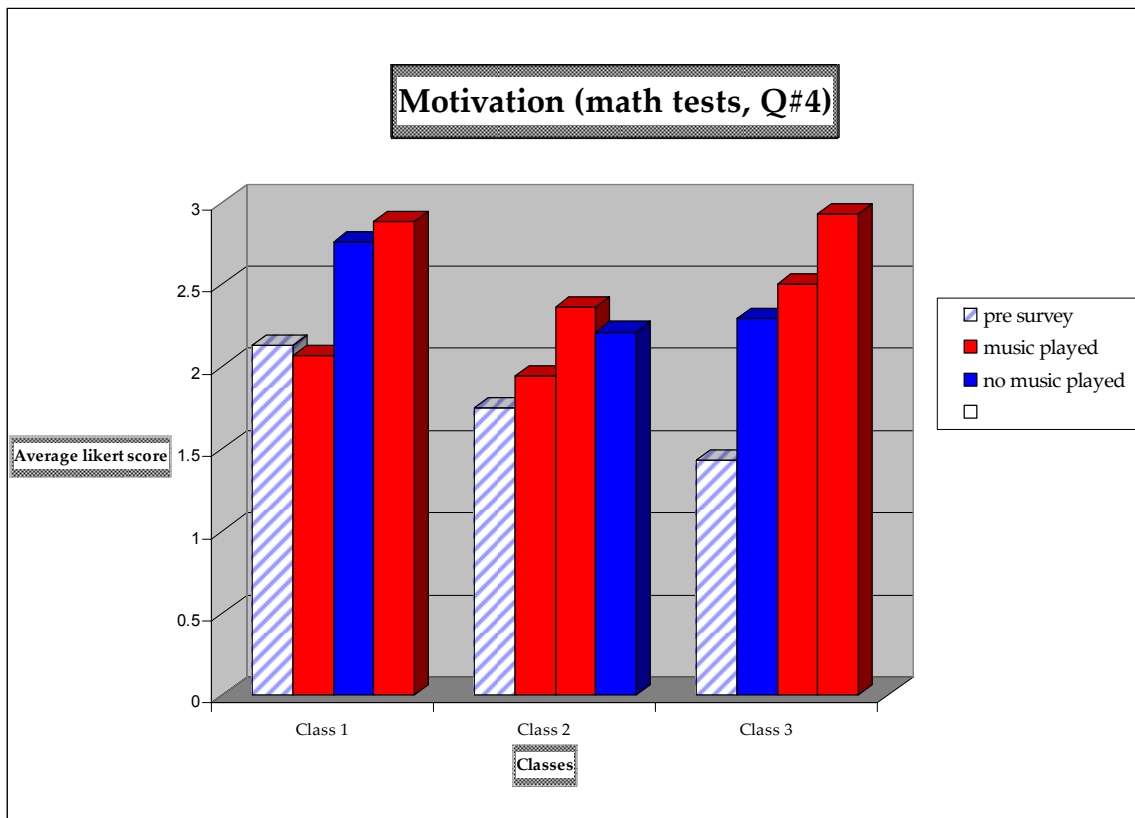


Question number three on the Likert survey asked students to rate the level of difficulty of their math work. The higher the score, the easier the work was for them. There was no significant difference between student responses to question number three between music and non-music units.

Math Tests

T Scores Comparing Students' Feelings About "Math Tests" as Indicated by Scores on Question #4 on Likert Assessment Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
-0.7173	-0.218	0.9725

Figure 7

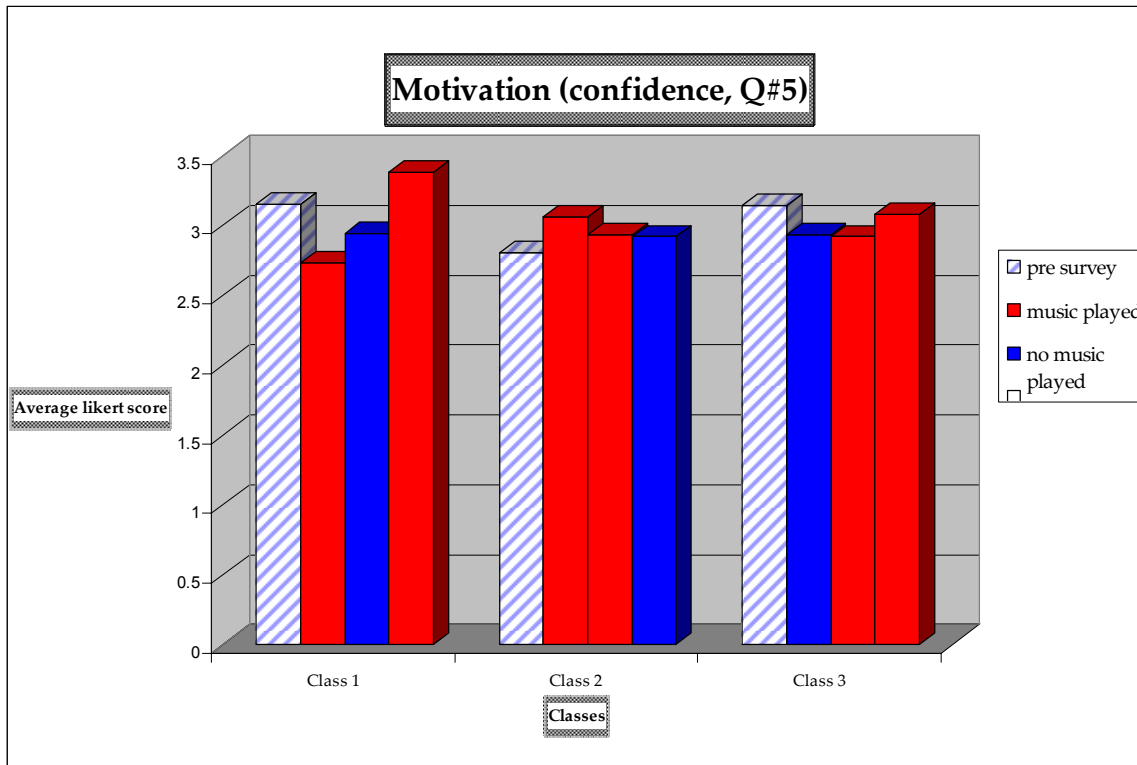


Question four on the Likert survey asked students how they feel when faced with a math test. A higher score indicated that the student feels relaxed, whereas lower scores indicated more anxiety. There was no significant difference between student responses to question number four between music and non-music units.

Confidence

T Scores Comparing Students' Confidence That They Will "Do Well in Math This Year" as Indicated by Scores on Question #5 on Likert Assessment Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
0.2436	0.2251	0.173

Figure 8



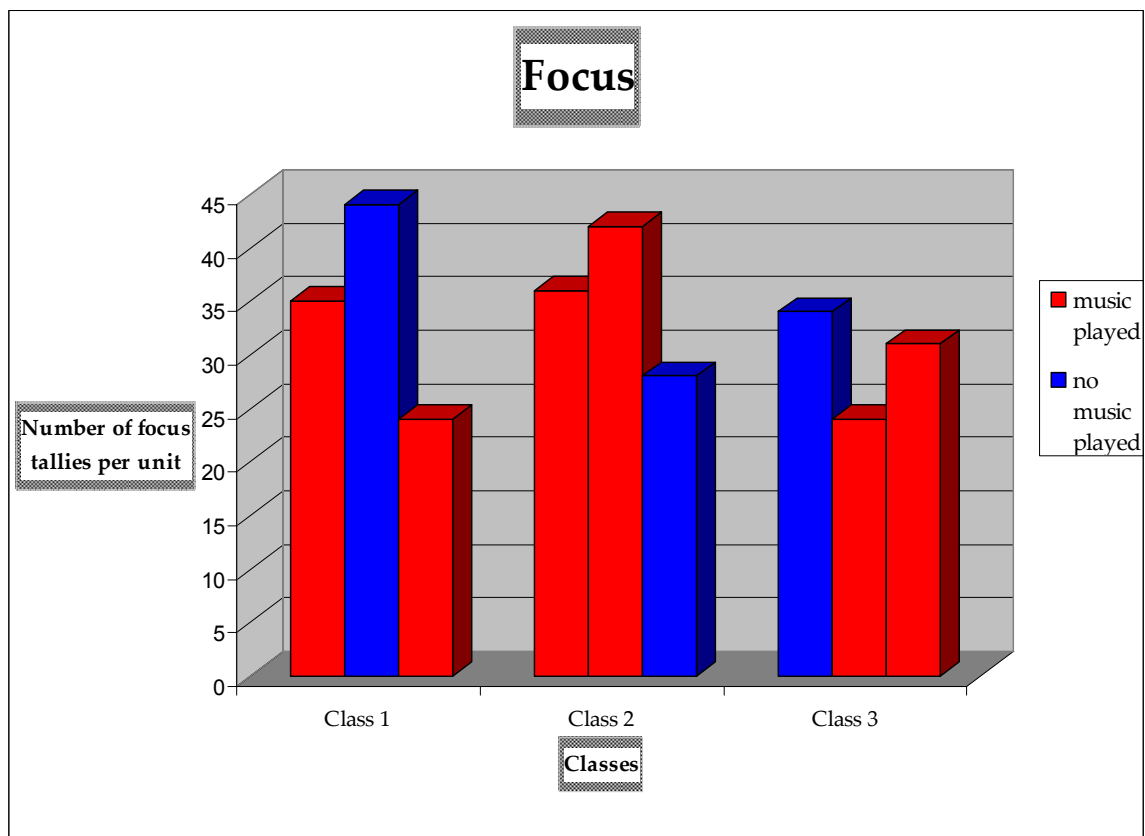
Question five asked students to rate their confidence that they will do well in math this school year. A higher score indicated more confidence. There was no significant difference between student responses to question number five between music and non-music units.

Focus

T Scores Comparing Focus as Indicated by Number of Focus Tallies Between Music and Non-Music Weeks		
Class 1	Class 2	Class 3
-1.519	1.0262	-0.857

[*Note: in this graph, the *higher* the # of tallies the *worse* the focus]

Figure 9



A higher measure in Figure 9 indicated that more teacher prompts were required to redirect students to focus. There was no significant difference between student focus between music and non-music units.

Conclusion

The results of the research were inconclusive in answering any of the questions I had when setting out to conduct this action research process. Each class seemed to have its own patterns coming out in each of the areas addressed. After performing T Tests to assess the statistical significance of the results in each studied area, I concluded that listening to classical music did not affect students' performance, motivation or focus.

Action Plan

Playing Mozart during mathematical activities did not significantly affect performance, motivation or focus in my math students. I would like to do some further research in this area on the relationship between music and math, because I do continue to find it very interesting. I would like to experiment with various styles of music, as well as different ages and populations of students. I have included a sample of some student reactions to this action research project in Appendix C.

Materials

The resources needed were:

- Mozart cds
- Cd player
- Focus and Homework tally sheets
- Likert surveys
- Unit assessments
- Online T Test

Reaction

This action research activity has truly been life and career changing. I am more motivated than ever to perform action research studies in my classroom to improve my practices. I am inspired for the first time in a couple of years to truly make a difference in my students, not just go on doing the same things I've been doing and expecting them to bring about different results. Thanks so much for making me take the time to really study my practices and try some new things. What a difference this has made! I am so thankful for the inspiration and the time and the resources (encouragement, education, collaboration) that these classes have provided.

Credits

Special thanks go to:

- Dr. Carolyn Girardeau and the Jacksonville Urban Systemic Initiative (JUSI),
- A grant from the National Science Foundation,
- Dr. Paul Eggen, a very helpful and knowledgeable advisor,
- Dr. Marianne Barnes, our facilitator in action research,
- Dr. Faiz Al-Rubae, Dr. Lehman Barnes, Dr. Cathy Cavanaugh and Rachel Raneri, along with all of the MURMSI resources and support,
- And all of the members of our wonderfully supportive and collaborative cohort.

MURMSI

I truly enjoyed and benefited from my participation in the MURMSI project. It was very helpful to be able to collaborate with others who were also in the midst of action research projects. It was beneficial to have a forum in which to

talk through my data collection plan and get input from other professionals in my field. I also profited from the experiences of others as they shared their processes and results with the group as a whole.

The MURMSI facilitators were a great resource as well and were so eager to help! What a wealth of knowledge and experience in that wonderful group of people! They were energetic and resourceful, encouraging and persistent in getting me the help I needed to complete my project.

I especially enjoyed the benefit of the blog forum online. It was helpful to be able to review my colleagues' work at any time and get ideas for format and design. I also find it very rewarding to have my own work in an accessible place online.

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***DO NOT PUT YOUR NAME ON THIS PAPER

Math Motivation Survey

Directions: Put an X on the line in the place that best expresses your feelings.
Please answer honestly.

1. How do you feel about math?

I love it	I like it	I don't know	I don't like it	I hate it
--------------	--------------	-----------------	--------------------	--------------

2. How do you feel about coming to math class?

I love it	I like it	I don't know	I don't like it	I hate it
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3. How do you feel about your math work?

It's way too easy	It's easy	It's so-so	It's hard	It's way too hard
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4. How do you feel when you have a math test?

I'm very relaxed	I'm relaxed	I don't know	I'm nervous	I'm very nervous
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5. How confident do you feel that you will do well in math this year?

I'm absolutely sure	I'm pretty sure	I don't know	I'm not sure	I'm sure I'll fail!
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6. Explain how you feel about math and why.

Math Focus and Homework Tallies

Unit 3

HW

Class 1 (music)

Monday	
Tuesday	
Wednesday	
Thursday	

Class 2 (no music)

Monday	
Tuesday	
Wednesday	
Thursday	

Class 3 (music)

Monday	
Tuesday	
Wednesday	

Sample Student Comments:
in their own words

Student Commentary on Math in General

- I like math because it helps me count money and no one will be able to cheat me.
- I feel ok because I used to hate math because I didn't understand but now that I understand it I'm getting to like it.
- Math is one of the things I love in live I known I don't go home and open a math book I just do my work and get on the game I love it because it is numbers I like numbers for some reason.
- Math was one of my best things to do then I started to fail and 5 grade that made me put it be hide and now I think I'm going to get back at it.
- I don't like it because it is my most hateful subject, but when it comes to math test I'm relaxed instead of huffing, puffing, and sighing.
- I like it because math is the only way to get throw life
- I like it because I can relax because the why math is with numbers that one reason I like math because of the numbers.
- I think math is fun but if you don't know your multiplication you won't like math.
- I love math because math will carry me a long way when I become a docotor in 15 years. Thank you Miss Cope.
- Math is easy and very fun I like it very much.
- I hated math, now I love it?!
- I feel that math can help you and also past to the next grade if you make a high score.
- I love math because you need to know how to use money in the real world
- I feel that I like math because it is my favorite subject
- I feel great about math because you have to make a number on the FCAT.
- I like math because its ben the best subject to me kindergarden.
- I like math to a point.
- I feel that sometimes math is fun but I still like math no matter if we have times tables divition fraction I will still like math
- Math is a fun subject and is easy for me to learn.
- I like math I like adding, subtrictin, motpleying, and dividing, and some times learning That why I like math

- I like math because without math you couldn't get a job when you grow up!
- I like it sometimes when I understand it why is because math is kind of complicated to me.

Student Commentary on Math Class

- Love math class so much I get excited when Mrs. Walker says "get packed to pass class."
- I feel that math is in the middle of being liked and hated because sometime class feels stupid and sometimes it feels un stupid.
- We never have fun
- I think math is fun and easy for us but we need it to make it more better like multipulcation rap.
- I feel that math is easy but hard. I think it's bouring and sometimes fun.
- I feel good about because everytime I come to math I learn something new and I like learning new things.
- Sometimes I like math because we choose a partner. Sometimes I don't like math because sometimes I don't know how to do it.
- Sometimes math can be fun but not so fun on days I'm mad.
- I like working in partners, because I need another kid that thinks like me.
- I will love going to math cause it is fun thank you Miss Cope
- I think math class is very cool and fun because it it is fun working in groups and learning new things.
- I really think it's fun but we never get a little break
- When I go to math class I like it because you learn and review some of the things you know and I love it when we play math games (activities).
- I like in some way and I don't like in some way
- I love it because we have fun in math

Student Commentary on Work

- I'm pretty sure because the test is partly easy and some is hard and some is so-so.
- I feel that math is very easy. My reason is when I do something I feel very confident in myself.
- I like it because the work you give us is totally easy dude.
- I feel that math is a good activity for me and that I just don't like the work, I love the work. I do the multiplication clusters, times tables. I like all but everything.
- I hate math because it's hard and I just don't get some of it well most of it.
- I hate it it make me throw up I do not like the prombles the you give us and test.

- It's stupid and don't want to come back because mostly have the same homework.
- I am having a hard time doing things I don't know.
- Some days math is hard some days it's easy. But mostly hard.
- I feel that the work that my math teacher is giving us is easy for me. I love the geometry packets she give me.
- I like it cause I got to understand lots of stuff on the test we took.
- I feel that it is to hard but I need help with it a little bit.
- Kind of confused because I don't understand

Student Commentary on Tests

- I like math but I get nervous sometimes because when it is time to take a test I get very nervous.
- I do not like the math test it is very hard and I get nervous when we take the test
- I like the test
- I loved it and I was very relaxed.
- I feel like leaveing out of the class because it just make me nerves
- I feel relaxed but when I test come I am nevous
- I feel fine and relaxed now but nervous
- I love math because I am getting better and better in everything.

Student Commentary on Confidence

- I liked math and it so-so it's the way I was I was pretty sure I'll pass
- I was nervous I think I was going to fail. But I didn't.
- I'm scared because most of the thing my teacher give me and I still don't know most of it and the F-CAT is coming I'm really scared.
- I feel confedent that I'm doing good I get help from Ms. Cope and extra help from Mrs. McLaughlin and my dad.
- I wish math could be more easy for me do better in math so I can get a passing grad so I can go to the 6th grad.
- I'm scarde because some of this stuff I'm not understanding.
- I feel happy because I want to past
- I feel surprised
- I feel happy about math because I don't know a lot about math.
- I feel ready
- I feel that I will pass math because I'm very confident.
- I feel confused why is because math is not my good subject and I'm slow at it.

- I feel great because I would fail but I always make an A in math. Math is really easy
- Math is hard for me because I don't want to ask question because kids will think I am dumb because they understand it and I don't.
- I can be fun sometime but I will never get an A in math because I am not sure
- I don't like to get called on when I don't don't now the answer.
- It feel great because it is to sweet because I know everything for the fcat know
- I feel all write.
- I felt great but I just kept failing

Student Commentary on Teacher

- Ms. Cope is very nice teacher Sometimes she could be mean when other classes why she is nice cause I say she nice
- I know my work but she is trying to fail I think I don't know but I get my done.
- I love math now because she's giving us packets to help pull up our grades.
- I feel like Ms. Cope is going to fail me.
- You are the last person I like.
- I feel that math is so-so because sometimes the teacher is in a good mood so if she's not in a good I don't like math.
- I hate math because I got a mean teacher.
- I like my math teach have some easy some hard but she help use understand it.
- I don't like math because I am failing it. But I love Miss Cope.
- We lean alot because my teacher have she deserve a little respect a lot what the kids give her is not what im talking about that's coming form my heart.
- Mrs. Cope is a very good math teacher.
- I like math better than the rest of the subject because Ms. Cope make me understand it.
- I like coming to math class because my math teacher Ms. Cope let everybody in the class play math games.
- Sometimes Ms. Cope make me feel relaxed.

Student Commentary on Music

- The music makes sick and sleepy put on some Usher, Snopp Dogg cause this music puts me to sleep

- The music helps me relaxes and calm down.
- I don't like coming to math class but I like math but the music makes me nervous but when I listen to Hip Hop it makes me relaxed and do my work better
- I hate the music
- The music is stupid.
- I was calm listening to music
- I loved it a little.
- The music really helps me relaxe and it helps me feel more confident.
- The music make me sleepy...zzzzzzzzzz?!
- I like when Mrs. Cope play the music and it relaxed me.
- I like the math work but I don't like the music.
- I feel that when I get ready to do something, the music that she puts on makes me feel so relaxed.
- I don't like it because the music is bad. We need hip hop.
- The music is really getting on my nurse