

Spring 4-18-2013

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THE EFFECT OF BACKGROUND MUSIC IN THE CLASSROOM

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HONORS PROJECT

Submitted to the University Honors Program  
at Bowling Green State University in partial  
fulfillment of the requirements for graduation with

UNIVERSITY HONORS

April 22, 2012

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## **The Effect of Background Music in the Classroom**

### **Abstract**

Research shows that music can improve performance, learning, and emotional states of people. I wanted to test just how much music will affect a child's academic performance and mood. For my project I had second grade students take a mood questionnaire after lessons for a week to assess their feelings after a lesson. At the beginning of the week they took a pre-test, then at the end of the week they took a post-test to measure their academic growth through the week. The next week the teacher played background music during independent practice. Again the students filled out mood questionnaires to assess their feelings after the lesson with music. They also filled out another pre-test and post-test to assess each child's academic growth.

### **Introduction**

This study was completed to assess the effect background music played in the classroom has on students. Studies have shown that music activates the right hemisphere of the brain which is related to more creative processes. The left side of the brain though is related to more logical and orderly thinking. When both hemispheres of the brain are activated, cerebral cortex activity is improved (Reimer, 2004). For this study I wanted to compare student's learning with background music to that without background music. In this way I could see if music did optimize their learning in this way. Activating both hemispheres through background music and teaching also improves memory (Reimer, 2004). Therefore playing music in the classroom will help students remember the lesson the teacher is giving by activating both hemispheres of the brain.

Music also evokes emotion. Once students are in a good emotional state they work more productively (Matuliauskaite, 2011). When music is played, positive hormones are released in the body and can lower stress (Yehuda, 2011). I created a questionnaire to assess how the students in my study felt after each lesson (both with and without music) to determine if the music effected their emotional state.

Overall studies have shown that musical cognitive functions share neural systems with nonmusical neural functions which “provide access for music to affect general nonmusical functions, such as memory, attention, and executive function” (Thaut, 2010 p. 281). Music also affects temporal ordering, spatiotemporal reasoning, attention, and auditory verbal memory (Thaut, 2010). Based on these studies playing background music in the classroom will increase the cognitive functioning of my students.

### **Materials and Methods**

This study took place in a second grade classroom with sixteen student participants. The study lasted two weeks long and took place during math lessons. At the beginning of the first week students were given a pre-test, and then given that same test as a post-test at the end of the week to assess their growth. After the lesson and independent practice each day students were given a questionnaire to assess their mood. This procedure was repeated the second week during math instruction but this time soft music was played during math independent practice. After that practice with music students completed their questionnaire.

The pre- and post-tests were the teacher’s tests that coincided with what the students were learning that week and were given to assess their growth. The questionnaire was six questions long. The questions were:

1. How do you feel after this lesson?
2. How easy was it to focus during this lesson?
3. Was the information easy, hard, or in between to learn?
4. How easy will you be able to remember what you learned?
5. How did the music/silence make you feel?
6. How did the music/silence affect your ability to learn?

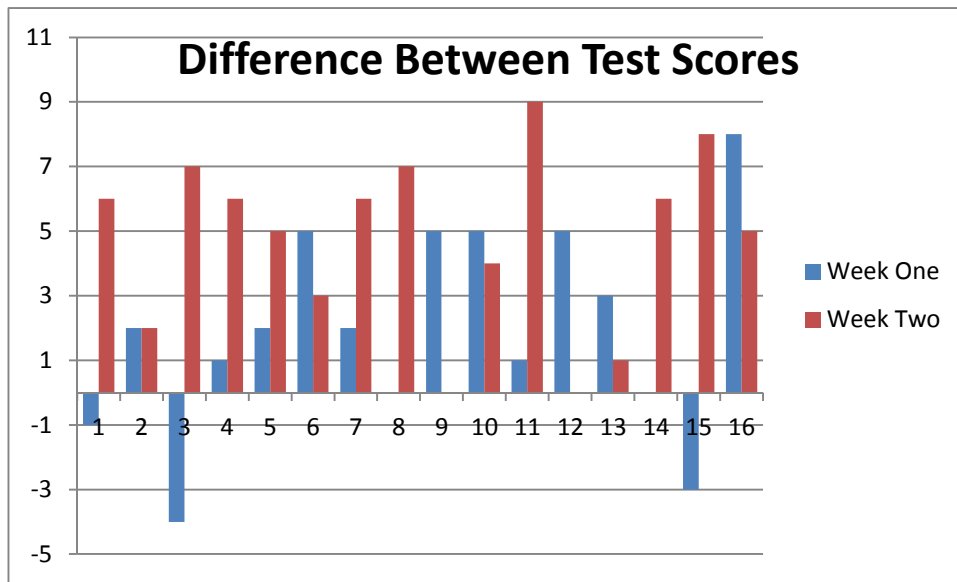
A Likert-Scale was used for students to assess how they feel in response to each question. There were three options. The first a smiling face, the second a neutral face, and the third a frowning face. Students would circle the one they thought most reflected how they felt at the time.

### **Results**

The results from the tests and questionnaires were collected and the tests and questionnaires were placed in the order it was completed by each student. To assess the growth over the first week I compared the students' pre-test score to their post-test score for each week. I found the difference by subtracting their pre-test score from their post-test score which would give me the growth they made over the week from the material they learned.

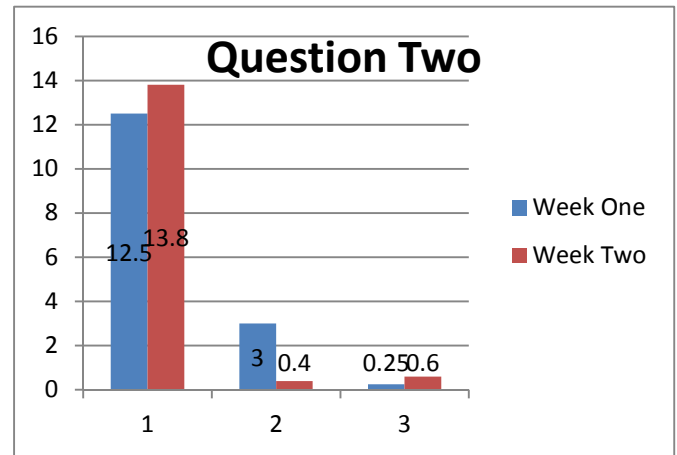
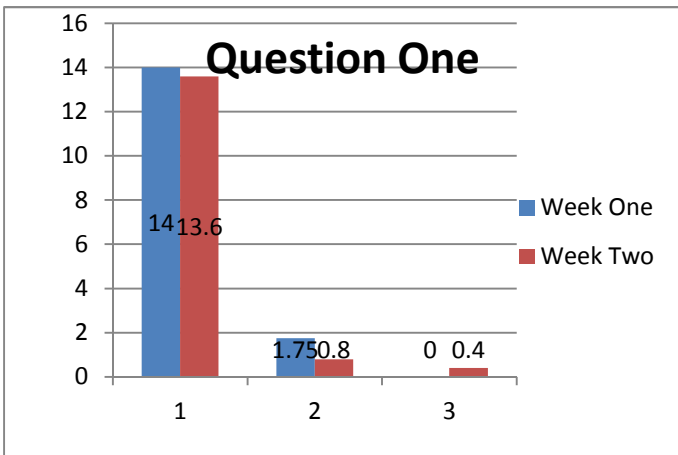
Student Number	Pre-test 1 (out of 16)	Post-test 1 (out of 16)	Difference	Pre-test 2 (out of 12)	Post-test 2 (out of 12)	Difference
1	12	11	-1	5	11	6
2	11	13	2	4	6	2
3	10	6	-4	1	8	7
4	11	12	1	4	10	6
5	10	12	2	6	11	5
6	5	10	5	2	5	3
7	12	14	2	5	11	6
8	8	8	0	4	11	7
9	7	12	5	abst	12	n/a
10	6	11	5	3	7	4

11	12	13	1	1	10	9
12	8	13	5	abst	11	n/a
13	5	8	3	6	7	1
14	15	15	0	6	12	6
15	11	8	-3	2	10	8
16	3	11	8	1	6	5



By looking at the graph you can see that nine out of sixteen students had more growth the second week when music was played than the first week when no music was played. One student (number two) had the same amount of growth between the two weeks. Student number nine and student number twelve were absent for the pre-test the second week and so their data can not be used to assess growth for the second week to compare to the first. Four students had more growth the first week when no music was played compared to the second when music was played. Therefore the first week when no music was played showed more growth for four students compared to the second week when music was played when nine students showed more growth that week. One student had the same growth each week.

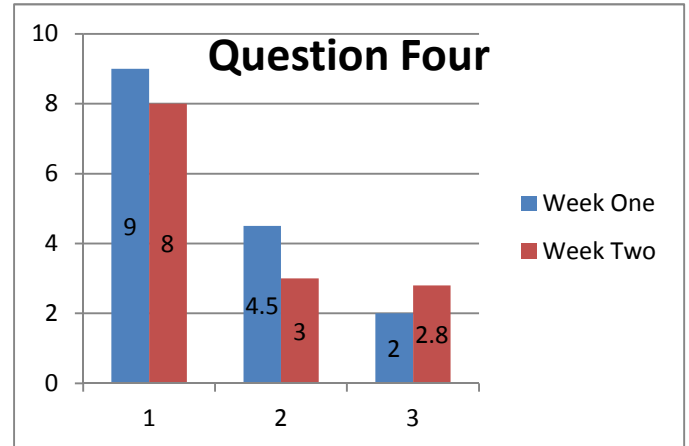
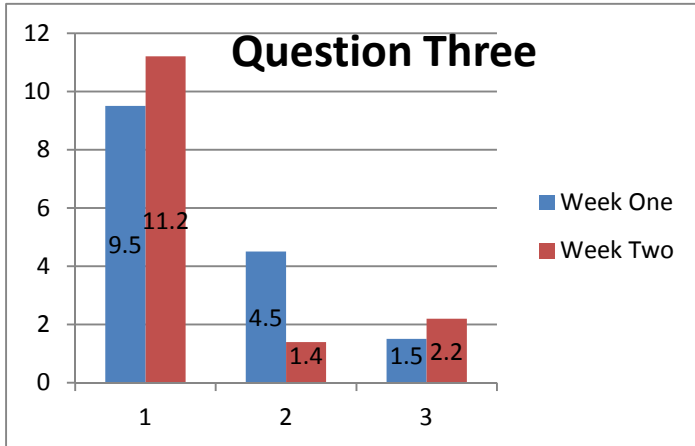
To assess how students felt emotionally and about how they are learning they each filled out a questionnaire after every lesson. The questionnaire was a Likert-scale questionnaire where they circled one of three faces that represented how they felt. To compile the data I assigned each face a number. The smiling face was assigned a one, the neutral face was assigned a two, and the frowning face was assigned a three. Then I counted the amount of ones, twos, and threes each question received during the first week then again the second week. The students did not have a math lesson the Wednesday of the first week when no music was playing. To keep the data even between the weeks I divided the total number of ones, twos, and threes each week by the number of days they were in school that week. The graphs then represent the average number of ones, twos, and threes from the week for every day.



The first question on the questionnaire was “How do you feel after this lesson?” By looking at the graph of question one we see that students have a higher number of ones and twos (more positive responses) during the first week when no music was played. They had a higher number of threes the week music was played. This shows that they felt better after the lesson where no music was played.

The second question was “How easy was it to focus during this lesson?” The second week when music was played had more ones and threes while the first week when no music was

played had more twos. This shows more students could focus during the second week, but there were also more students who had trouble focusing the second week when music was played than the first.



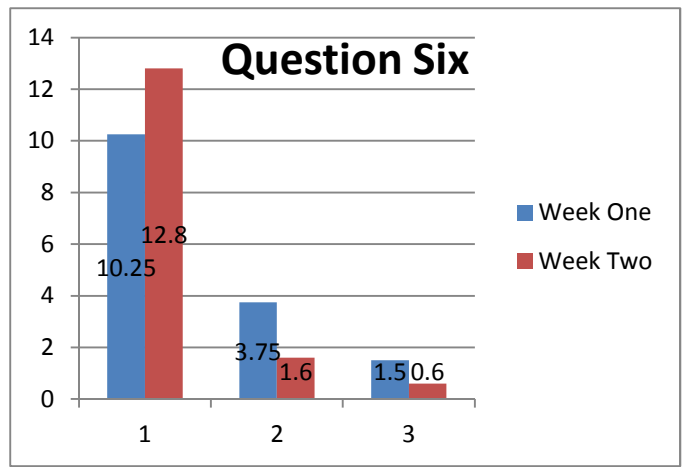
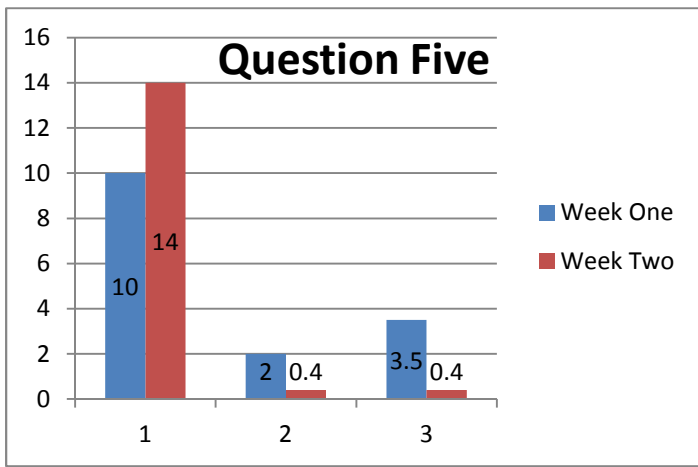
The third question was “Was the information easy, hard, or in between to learn?”

Students had more ones and threes again for the second week than the first week. The first week had more twos though. This shows, just like the second question, that while more found the information easier to learn when music was playing, there were also more students who found the information hard to learn with music playing. The week with no music playing had a higher amount of twos.

The fourth question was “How easy will you be able to remember what you learned?”

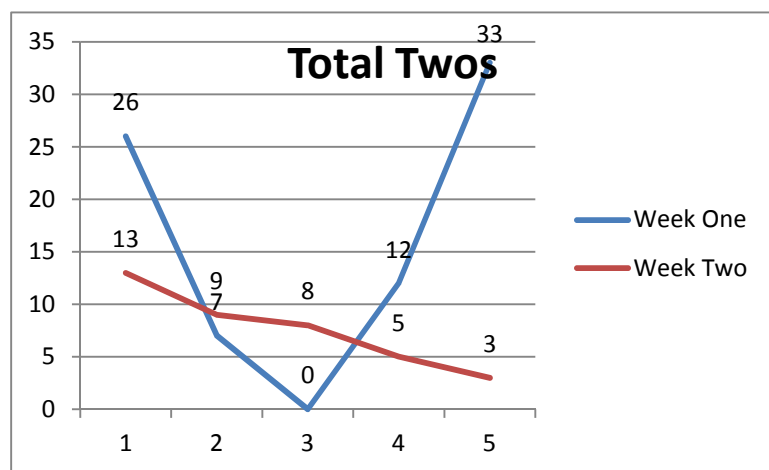
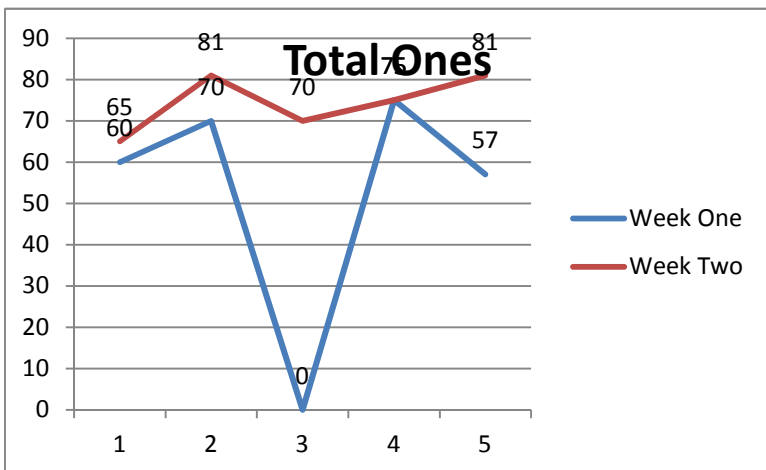
Students rated the first week as having more ones and twos than the second week with music. Students had a more positive response to being able to remember what they learned when the music was not playing. The second week had more threes, so the students thought they would have a harder time remembering what they learned the second week with the music playing.

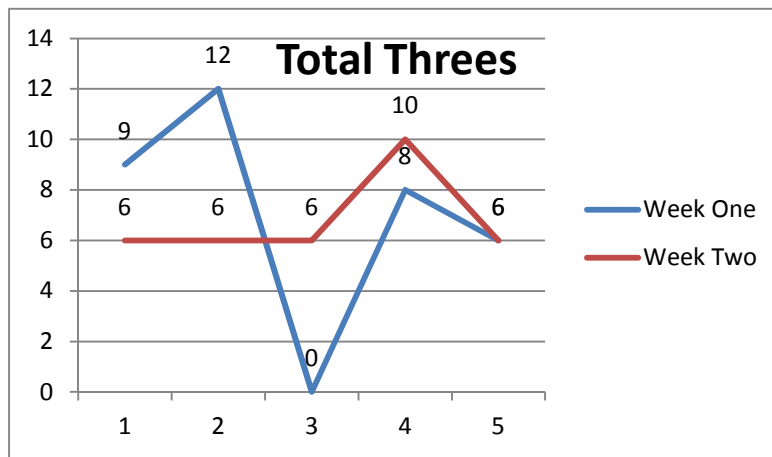




Question five was “How did the music/silence make you feel?” Students had more ones the second week with the music than the first week. The silence the first week was rated with more twos and threes than the music was. This shows the students found the music made them feel better than the silence and they circled the smiling face more than the neutral and frowning face. They also rated the silence as making them feel worse, circling the neutral and frowning face more than they did the second week with the music playing.

The sixth question was “How did the music/silence affect your ability to learn?” This question had similar results to question five. More students gave a positive response to the music and its effect on their learning. There were more ones the second week than there were the first. There were more twos and threes for the effect silence has on the student’s perceived ability to learn. This shows the students feel that their ability to learn is higher when music is played than when it is silent in the classroom.





Overall as a comparison between the two weeks there were equal to or more ones, the smiling face, given by students the second week with the music playing than there was the first week where the classroom was silent. There was one day the second week had more twos, but for the other days the first week had more student give out twos, the neutral face, than the second week with music playing. Comparing threes given each week we can see that the weeks are split. The first week received more threes, the frowning face, the first and second day while the second week received more threes the fourth and fifth day. When looking at these line graphs it is important to remember that there was no math lesson the third day of the first week so the chart reads zero.

### Discussion

Overall more students, 9 out of sixteen, had a higher growth in academics between the beginning of the week and the end of the week when music was played during independent practice. Only four out of sixteen had a higher growth when the independent practice was silent. Three students had negative growth the first week which was silent. This means that they did better on their pre-test than their post-test. There was no negative growth the second week when music was played. The students who had more academic growth the first week than the second

week did not indicate music as having a negative effect on their ability to learn or on the way they felt.

There were seven absent students over the two weeks. One student was absent the second day of week one. Two students were absent the first and third day of week two, one student was absent the fourth and fifth day of week two. This can skew the data because it leaves holes in the statistics and the amount of students each day is different. It can also affect their knowledge growth indicated on the post-test when a student misses a day.

On the questionnaire there were slightly more students who felt better after the silent lesson than they did after the music lessons. There were also slightly more students who felt worse after the lesson with background music than they did after the silent lesson. This could be due to the difficulty of the math lesson rather than the background music that was being played. Students did better on the first week's pre-test than the second week's pre-test which could indicate the students knew more about the material the first week than they did during the second week. How students felt could then be because of the 'easiness' of the math during the first week and not because the classroom was silent. The students then may not have ranked how they felt after the math lesson as high the second week because they found they math lesson more difficult, not because of the background music being played.

More students also felt like they could focus easier the week that had music during independent practice than they did without the music. But there were also slightly more students who felt more unfocused the week background music was played than they did when no background music was played.

Students again felt mixed on how easy the information was to learn when music was played. More students felt the music was easier to learn when music was played than when music was not played. But there were more students that said the material was harder to learn when music was played than the students that said the material was hard to learn when music was not played.

Students felt overall that they would remember the material better when the room was quiet. More students felt the material would be harder to remember when music was being played than students who felt it would be hard to remember when the room was quiet.

The music made students feel better though when it was played. When asked explicitly how the music or the silence made them feel, more students rated the music as making them feel better than the silence. More students indicated the silence as making them feel worse than students indicating the music made them feel that way.

Finally more students perceived that music positively affected their ability to learn than students who thought the silence positively affected their ability to learn. More students rated the silence as negatively affecting their ability to learn than students rating music as negatively affecting their learning.

Overall students gave more positive ratings during the week when music was played each day than the week without the background music. The silent week had more neutral ratings than the week with background music. The negative rating was split where the silent week had more negative ratings the first two days then the week with background music had more negative ratings the last two days.

There are some sources of error in this study. There were several absences through the two weeks. These students miss lessons and are unable to fill out questionnaires for that day. They also may feel lost and behind the day after they come back. This may have a negative impact on their feelings and learning. There were also a few students who left blanks on their questionnaires. So I am missing some data for a few students on those days. The first week did not have a math lesson on the third day. This skews the data also because the two weeks are not as even as they would have been if they each had 5 days devoted to them. The teacher also informed me that students were very distracted the Friday of the first week when they took their post-test. This can have a negative impact on their test scores and may be why the growth was greater the following week. The students also did better on their first pre-test than their second pre-test which can indicate that the material they were learning the first week was 'easier' for the students to learn than the material the second week. The differences between the two weeks could then be associated with the difficulty of the math lesson and not the background music that was being played. The student sample this study was completed with was very small. Repeating this study with more students will give a better picture of the effect of background music in the classroom.

The data shows that more students have greater academic growth through the week when background music is played during independent practice. Students also felt better when listening to the music when asked explicitly how the music or silence made them feel. Students also perceived the music as more positively affecting their ability to learn than silence. The data though shows that students find the material potentially easier to remember when the room is silent with no background music. This could be because the math was potentially 'easier' for students the first week based on their pre-test scores which were better the first week than the

second week. Students would then have an easier time remembering material they already know or find easier. Therefore students having a harder time remembering the material the second week may not be because of the background music being played but because the material was more difficult. The data was also more polarized when the background music was played compared to the silent independent practice. This included how the students felt, how they focused, and how easy they found the information was to learn. Again this may be because that students found the material the second week more difficult and not because of the background music that was being played. Overall though students had higher ratings and academic growth during the week music was played.

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