

Running head: USING BACKGROUND MUSIC IN THE CLASSROOM

Using Background Music in the Classroom to Effectively
Enhance Concentration Within the Learning Environment

A Thesis

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By

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ABSTRACT

Educators may encounter many challenges within the classroom when it comes to the distractions that students face. Not all students come to school with a clean slate that enables them to be willing, able, and ready to learn. Yet society still expects the teachers to teach all students and for all of the students to learn. Research has shown that music may be an effective tool at breaking down some of these barriers of the learning process. When music is properly used as a background enhancer, a learner's ability to concentrate within the classroom environment increases. This researcher used quantitative data to try to support an increase in concentration due to background music that is being played in the classroom environment.

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CHAPTER 1

INTRODUCTION

The application of background music in the classroom may open up a new era of learning possibilities. For centuries, educators have used music as a learning tool that connects the concept to be acquired with a catchy song or rhythm. Beginning in elementary school, students learn their ABC's by singing the Alphabet Song. But budget cuts and decreased funding for high school fine arts programs have limited the exposure older students receive to music. The only music left in the secondary classrooms involves students who have an increased interest in playing music and are able to join the band or by being involved in the school choir. According to research evidence, the value of music within the classroom is continuing to be uncovered. Students seem to have already realized its benefits. For years, students have combined doing their homework with listening to music. This researcher demonstrates that teachers need to learn from their students and work to incorporate more music into the classroom environment as a tool to enhance concentration.

Music was first introduced into the classroom environment as a tool to aid learners in the 1930's. Its potential and possibilities were immediately recognized. Music establishes an environment that relaxes the body and prepares the mind for stimulation. Music has the ability to make the mind like a sponge that is ready to absorb everything that is going on in the surrounding environment.

Today's biological research suggests that it is the arts that lay the foundation for later academic and career success by building creativity, concentration, problem solving, self-efficacy, coordination, attention, and self-discipline. Music can be thought of as a tool for usage in at least three categories for arousal, as a carrier of words, and as a primer for the brain.

For some students, the experiences of school can be difficult, painful, and often humiliating, because to them school has become associated with a defeat due to concentration difficulties they possess. It is essential to find truly effective and creative solutions to complex problems of learning. Sometimes it takes one distraction to overcome another. Research conducted by West (1997) showed that music served as Albert Einstein's only positive distraction. It put him in a peaceful state of mind, which enabled him to concentrate on the task at hand.

Using music as a tool for concentration may represent a significant turning point in our educational thought processes for this century. In this study, concentration was examined in subjects who listen to background music while completing an in-class assignment. The subjects were given a survey to complete after the experiment concluded. The results of the survey were analyzed using SPSS. It was hypothesized that background music increases the concentration of students while they are completing an in-class assignment.

Purpose

The purpose of this study was to examine the effects that background music has on the concentration of high school students while they are working within a classroom setting.

Hypotheses

Null Hypothesis: There is no change in concentration when high school students listen to background music while completing an in-class assignment.

Alternative Hypothesis: Background music increases the concentration of high school students while they are completing an in-class assignment.

Definition of Terms

Arousal- An increase or decrease in attention neurotransmitters.

Background Music- Music that is intended to be heard, but not actively or purposely listened to.

Concentration- To bring exclusive attention to one object.

Delimitations and Limitations of the Study

This study was limited by several possible factors. The limitations that were the result of the subjects included sample size and personal bias for or against the selected music style. Personal characteristics of the subjects such as distractibility due to ADHD, hearing difficulty, and psychological responses to the music also limited the study. The survey was limited by the variety of responses.

CHAPTER 2

REVIEW OF LITERATURE

There has always been a significant use of music in different background situations to bring about desired effects in people. Shopping malls use music to stimulate people to spend money, doctors rely on music to soothe nervous patients, and employers use music to relax employees. The use of background music in the classroom is a relatively new concept. What is not new is the fact that many students complete homework while listening to music. Teenagers and music go hand-in-hand. Cantril and Allport (1935), conducted a study on students and music. They found that sixty-eight percent of students do school work with the radio on. A similar study conducted later by Beentjes, Koolstra, and van der Voort (1996), still showed that students regularly combined their homework with listening to the radio. With the introduction of CDs, MP3 players, many more radio stations, and expanded music technology, it would only make sense for that practice to continue. It becomes important then for parents and educators to understand the effects music has on the student's learning process and concentration.

Examining the brain processes is the best way to understand how music influences a person. Every individual's brain wiring is unique due to all of the different stimulations we each receive. New neural connections are made when the brain is stimulated by external environmental factors such as music. The more neural connections the brain has, the better the cells within the brain can communicate and

promote learning (Jensen, 1998). Music affects the state of the learner, which in turn affects the entire learning process. A study conducted by Hodges (1980) showed that listening to music influences a person's physiological responses. It was shown that music can alter brain waves, heart and pulse rate, blood pressure, respiration rate, and muscular responses.

The type of background music played has a dramatic influence on the reactions of the listener. Certain rhythms and beats stimulate particular responses within the brain. "Classical music pieces, such as Haydn and Mozart, have clarity, elegance, and transparency. They can improve concentration, memory, and spatial perception" (Campbell, 1997). Research conducted in the early 1990s by Frances H. Rauscher, Ph.D., and her colleagues examined the impacts of Mozart's music on college students. Thirty-six undergraduates from the psychology department at the University of California listened to ten minutes of Mozart before completing a part of the Stanford-Binet intelligence test. These students scored eight to nine points higher on the spatial IQ test. The researchers concluded that even though the effect lasted only ten to fifteen minutes, the relationship between music and spatial reasoning was strong enough to show the correlation that simply listening to music could make a difference (Campbell, 1997). After the studies conducted by Rauscher and her team, it was found that a number of public schools introduced Mozart pieces as background music and reported improvements in their pupils' attention and performance (Campbell, 1997).

A study conducted by Savan (1999) also supports the idea that using Mozart as background music promotes learning. Savan's study showed that when pupils who had special educational needs, emotional problems, and behavioral difficulties listened to

Mozart selections during a science lesson there was a significant change in physiological parameters and an increase in favorable behavior. When all else fails with special needs children, perhaps the best thing to do is try the unorthodox approach. West (1997), believes that learning to think in some really unusual way or under special circumstances may actually be easier for some people.

Background music played properly in the classroom can create a positive environment and promote learning. Hallman and Price (1998), found that calming music can have an impact on the performance and the behavior of hyperactive students, like those students who suffer from ADHD. Improved co-operation and a reduction in aggression were also observed following the lesson. Hall (1952), who was also interested in the possible uses of background music in schools, found out about the significant impact that background music has on reading comprehension. The study conducted on two hundred forty-five eighth and ninth graders who were taking the Nelson Silent Reading Test, showed a fifty-eight percent improvement rate when background music was playing. “The important thing to remember is that most kids function very well with music in the background, and that the right music at the right time can make them less stressed, more relaxed, happier, and more productive”(Giles, 1991).

A long held belief about background music is that it is a distracter to student learning and concentration ability. Furnham and Bradley (1997), showed that some distractions created by music can be a result of the subjects' liking or complexity of the music played. Other influences may be linked to the speed or tempo of the music, and if the music is orchestral or has lyrics. According to Pool, Koolstra, & van der Voort (2003), persons rejecting the idea of music within the classroom are considered to be

Limited Capacity Theorists. Their beliefs are that background media inhibits homework performance because people have only a limited pool of mental resources for processing information. The information from two or more tasks completed at the same time may exceed attention capacity of the person, which in turn means that only part of the relevant information may actually be processed.

The majority of the evidence tends to support background music due to its positive implications. Cool, Yarbrough, Patton, Runde, and Keith (1994) conducted a study that proved radio noise generally was considered to be somewhat helpful to students while studying. It kept them focused and on task. Howard Gardner, a Harvard graduate, wrote, *Frames of Mind*, in the early 1980's. It has since become one of the most influential books for education. Gardner believes that music creates a positive and relaxing environment in the classroom that allows for sensory integration to take place and improves concentration abilities. Sensory integration is essential for establishing long-term memory. He has also seen background music successfully used to mask outside traffic sounds, release stress before an exam, and to reinforce subject matter (Campbell, 1997). Jensen (1998) reported that music can deliver as much as sixty percent more content in five percent of the time usually taken to deliver the same material. Furthermore, students maintained a ninety-seven percent retention rate when music was involved in the classroom environment. All of these findings suggest that background music is a positive tool to introduce into the classroom. "Music has charms to soothe a savage breast, to soften rocks, or bend a knotted oak"-William Congreve (quoted in Giles, 1991).

CHAPTER 3

METHODS

Study Design

This study used quantitative research to explain a relationship or correlation between background music and concentration in the classroom. Based upon the Donald T. Campbell and Julian C. Stanley (1963) categories, this research was a true experimental design that consisted of a pre-test, post-test, and a control.

Procedure

The research was conducted in the two science classrooms at the Washington County Career Center in Marietta, Ohio. The subjects consisted of Junior and Senior year Integrated Science students. The researcher gave the subjects a normal in-class assignment to complete. This assignment was a chapter study guide that consisted of multiple choice, short answer, and essay questions. After fifteen minutes of working the pre-test survey was handed out and completed by all participating students. Once the survey was completed, the students resumed working and at this time the Mozart background music was introduced into the environment. After fifteen minutes, the music was stopped and the subjects completed the post-test survey. The same procedures and time frame was followed for the control group, with the only difference being that the Mozart background music was not introduced into the classroom environment.

Instruments

Subjects completed a pre-test and post-test survey that used the Likert scale.

Results were analyzed using the SPSS 11.5 statistical program.

Reliability

The reliability of this research was established through:

- Ensuring the questions on the survey were clear and unambiguous to all subjects.
- Administering the survey in a consistent manner to all test groups.
- Controlling the environment so that each subject experienced the same conditions.

The experimental groups listened to the same background music selections and worked on the same in-class assignments.

- Ensuring internal consistency.
- Using a panel of experts to verify questionnaire.

Validity

The validity of this research was supported through:

- A nominal scale of measurement.
- Procedures for recording data were checked to fit the research questions and hypothesis of the study.
- An instrument that contains an accepted scale of measurement.
- Research produced conclusions from the sample being studied.
- Checking for 10% response rate.

Data Analysis Procedures

The collected data was calculated using inferential statistics program SPSS and a t-test.

Preliminary Results

The researcher expected the data to show that students perceive background music to be a positive influence on the classroom environment. The subjects demonstrated through the surveys that background music did not statistically increase their ability to concentrate while working on an in-class assignment.

Potential Ethical Issues

In order to eliminate possible ethical issues the researcher made sure that the subjects remained anonymous, subjects under eighteen obtained parental permission, and that the usual classroom environment was not sacrificed for the sake of the study. Permission for the study was also obtained from the assistant director and director of the Washington County Career Center where the research was conducted.

Timeline

December 16, 2004-Completion of Chapter One, Two, and Three.

January 2005-Initial meeting for 690, set up meeting for human subject review board,
sent home study consent forms with subjects.

February 2005-Began writing of Chapter Four, Conducted research on subjects.

March 2005- Began writing of Chapter Five, Analyzed results.

April 2005-Finished and submitted thesis.

Budget

There were no expenses incurred as a result of this research.

Preliminary Chapter Four and Five Outline

Chapter 4-Results

Identify Data Options

Record and Administer Data Collection

Analyze Data

Represent Findings

Chapter 5-Discussion

Report on Data

Interpret Findings

Future Implications

CHAPTER 4

RESULTS

The purpose of this study was to investigate the effects of background music on concentration levels within a science classroom setting at the Washington County Career Center. The sample was comprised of thirty-one high school science students between the ages of sixteen and eighteen. Permission was obtained through a parental consent form for all students under the age of eighteen (see Appendix A). A survey was distributed to each student that used the Likert scale to rate their personal feelings about the background music upon their concentration level. The data was analyzed using SPSS 11.5 statistical computer software.

A comparison of the means was done in Table 1 using a paired sample t-test. This was prepared to show if the correlations between the pre-music survey and the post-music survey were significant. To be considered significant, the value had to fall below .05. The only correlation that could be considered statistically significant according to the table is the comparison of the concentration value before and after the background music.

		N	Correlation	Sig.
Pair 1	LEARNPRE & LEARNPRO	31	.033	.860
Pair 2	RELAXPRE & RELAXPRO	31	-.020	.916
Pair 3	THINKPRE & THINKPRO	31	.156	.403
Pair 4	CONCPRE & CONCPRO	31	.311	.089
Pair 5	CONDPRE & CONDPRO	31	-.171	.357
Pair 6	INHIBPRE & INHIBPRO	31	-.044	.816
Pair 7	PROMPRE & PROMPRO	31	.080	.669

Table 1: Paired sample correlations of variables before and after applied background music. Pair 1= Learning Before & After Music, Pair 2= Ability to Relax Before & After Music, Pair 3= Ability to Think Before & After Music, Pair 4= Ability to Concentrate Before & After Music, Pair 5= Classroom Conditions Ideal Before & After Music, Pair 6= Inhibiting Concentration Before & After Music, Pair 7= Promoting Concentration Before & After Music

A statistical comparison of the categories chosen from the survey for concentration can be seen in Figure 1 and Figure 2. The categories according to the survey were as follows: 1=Strongly Disagree, 2=Disagree, 3=Undecided, 4=Agree, and 5=Strongly Agree.

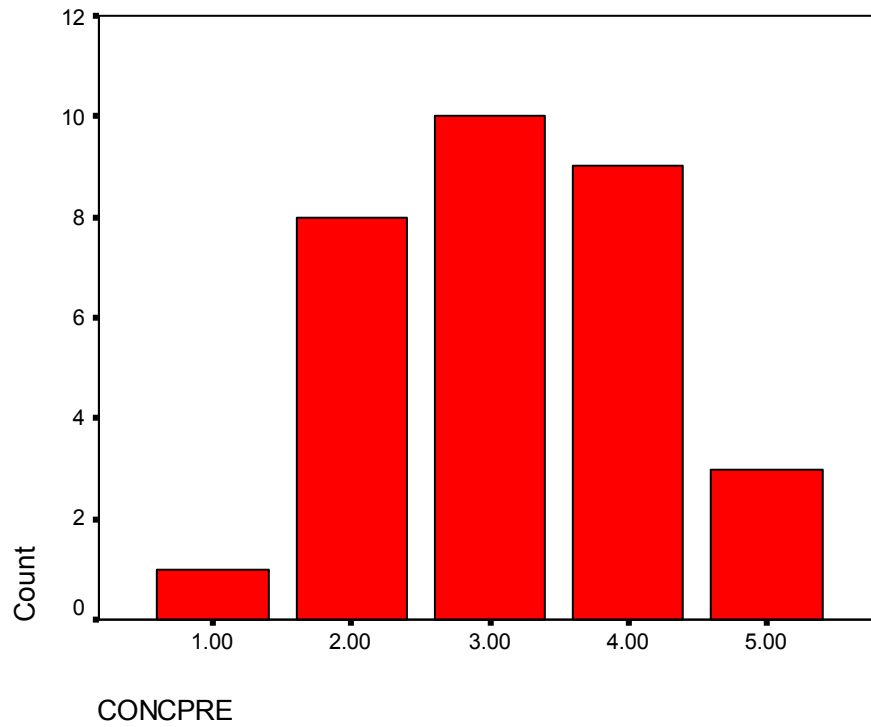


Figure 1: Concentration values before listening to background music.

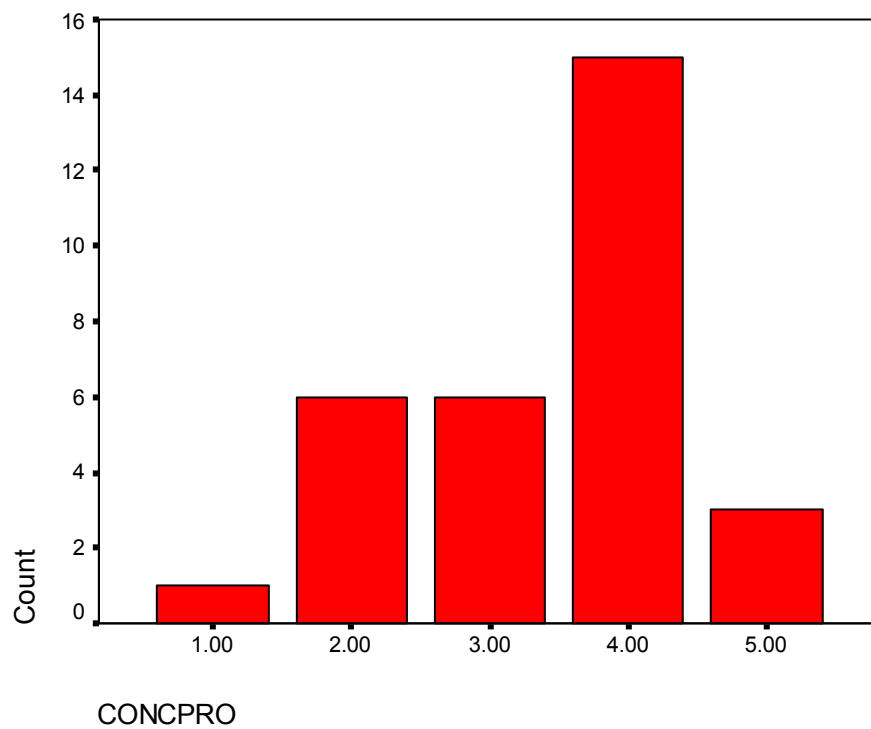


Figure 2: Concentration values after listening to background music.

CHAPTER 5

DISCUSSION

Based upon the findings of this research, the alternative hypothesis cannot be accepted. Therefore, the null hypothesis stating that there is no change in concentration levels when background music is used within a classroom setting has to be supported. In spite of finding that background music, according to this survey, does not aid in increasing concentration levels of high school students while working, there are implications that can be made based upon some of the findings.

When the data from the Likert scale surveys was analyzed, the strongest statistical validity was demonstrated in the concentration category. This was the category where the researcher hoped to show the most amount of difference and validity. This data could not be considered significant because it was not below the .05 significance level. However, overall it was significantly closer to the .05 cut off limit, falling short at .089. This could mean that if the study was conducted again and altered slightly there would be a good chance of showing that concentration can be influenced by background music.

Limitations

There are specific limitations that are identified by this researcher that could have influenced the data. For example, the small sample size of thirty-one could have led to inadequate measures of validity. Completing this study again and increasing the sample size could considerably increase the chances of the data becoming significant. Personal preference of background music type could have also skewed the results. Not everyone is a fan of classical music. Even though the literature supporting this research considered

selection by Mozart to be a calming and soothing music that could aid in increasing concentration levels, humans are individuals that hold their own beliefs and preferences.

Application

The significance demonstrated from this research about concentration and background music could be used by teachers or parents to help improve student study skills. Teachers of special needs students may especially find this information useful to keep students who are easily distracted on task. This researcher corroborated with coworkers of a vocational high school to validate and show support for their current use or possible future use of music within their classroom laboratory setting.

Future Implications

If the researcher were to complete this study again there would be a few changes made in hopes of increasing the chances of making this concept statistically valid. The researcher would begin by increasing the sample size to a minimum of fifty participants. The selections of music would be changed to simulate the type of music that sixteen to eighteen year olds are listening to, but the lyrics would not be included in the music. The time provided the participants to listen to the music and work without the music would also be increase to nearly thirty minutes each. The researcher might even consider conducting a longitudinal study that extended the testing over several days. This would be in hopes of demonstrating a significant difference between the working conditions.

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APPENDIX A
CONSENT LETTER TO PARENTS

Miss Kristin J. Sigman
21740 ST. RT. 676
Marietta, OH 45750

To Whom It May Concern:

My name is Kristin Sigman. I am the Biology and Integrated Science teacher at the Career Center. I am currently working on my Master's Degree at Marietta College. Part of the assigned curriculum requires me to complete a research study to write an experimental thesis. I am requesting your permission for the participation of your child in my research. The research will focus on the use of background music in the classroom and its impact on concentration. The subjects will be completing a survey based upon their interpretation of the background music. If you agree to allow your child to participate, please sign below and return this letter to me. Thank you for your cooperation.

Sincerely,

Kristin J. Sigman

Student Signature

Parent Signature

APPENDIX B
BACKGROUND MUSIC SURVEY

BACKGROUND MUSIC SURVEY

Circle the number that corresponds to the answer you agree with. Please answer as honestly as possible.

1. I am able to learn to my fullest potential in the current environment.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

2. I feel relaxed in the current environment.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

3. I am able to think in the current environment.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

4. I am able to concentrate in the current environment.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

5. I find the current classroom conditions ideal.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

6. The background sounds in the classroom inhibit my concentration.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree

7. The background sounds in the classroom promote my concentration abilities.

1	2	3	4	5
Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree