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The Effects of Music on Students Engaged in Reader Response Strategies

by

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This study examined the effects of background classical music on silent reading in a sixth grade class, in order to determine the amount and type of influence it would have on the reader's written response to what was read. Thirty-four suburban sixth graders from two history classes were selected for this study. The data was obtained over a period of five weeks consisting of twenty-four journal responses from eight subjects, two males and two females from each class. One history class (the experimental group) was instructed to read a short selection silently with classical music playing. The other history class (the control group) performed the reading and writing tasks in the absence of music. All students received the same prompt at the beginning of class and allowed fifteen minutes to accomplish the task. This study revealed that there was no significant difference between the students' aesthetic written responses and efferent written responses in the classical music setting as compared to the non-music setting.

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Giles (1991) states that music has the power to arouse or to relax us, to change our general moods, and even to change our breathing rate, heartbeat, and blood pressure.

According to Plato, "Music is a more potent instrument than any other for education and children should be taught music before anything else."

Reader response strategies have gained acceptance across the curriculum at every grade level, but there are questions that remain about the nature of response. Rosenblatt's work (1978) in the area of response suggest that three factors impact a reader's response to books: unique characteristics of the reader, the various features of the text, and the nature of the context from which the transaction between reader and text takes place.

Over the years, research has challenged the response theory, in an effort to isolate and identify the specific factors that play a role in the child's interaction with the text. The studies have addressed the role of the reader, the nature of the text (Guise, 1995), the wording of the task (Newton, Stegemeier, & Padak, 1999), the influence of school acculturation (Purves, 1993), and the influence of the classroom context (Hickman, 1981). The results of such studies have increased our understanding of the response theory and the factors that compromise or influence the reader's stance and comprehension.

In conjunction to such research, other studies over the past 20 years have focussed on the effectiveness of music in an educational setting. Overall results revealed that music had a significant impact on the mood and the purpose in classroom context. Classical music produce a calming effect while rap, rock and roll, or popular music stimulated the classroom environment (Towell, 1999/2000). In addition, it was found that music reduced child anxiety, aggressive behavior, and hyperactivity, as well as increases self-esteem and attentiveness (Giles, 1991).

Ostrander and Schroeder (1979) contended that programs such as Accelerated Learning, that utilized background music in the learning environment, showed marked success. The use of music helped in the reduction of stress in the classroom, which in turn allowed the brain to function more efficiently while enabling students to learn faster than usual.

Accordingly, Rosenblatt (1978) stated that when music was combined with literature, it enhanced the aesthetic stance for reader response, by stimulating cognitive and affective experiences during reading. In essence, an emotional response induced by music allowed a reader to connect with the text, to become motivated, and ultimately enlightened by the benefits of lifelong reading (Wigfield, 1997). Research into classsroom context concluded that young readers' responses

to literature were influenced by such factors such as the teacher's questions and the classroom climate (Hickman 1981).

Purves' (1993) interviews with high school students took classroom context a step further. His findings suggest that student readers have been acculturated into "habits of reading" by interacting with literature within the norms of the classroom culture, through conditioned or preferred responses. Literature teaching has confused efferent and aesthetic reading, whereby students treat literary texts as if they were social studies textbooks (Rosenblatt, 1978). This raises two important issues: Will altering the instructional environment of a sixth grade classroom with classical music have any effect on students engaged in response strategies? Does music playing softly in the background affect the reader's stance towards informational text? Supportive research findings for the use of music in the context of the classroom may be beneficial in addressing these issues.

Hypothesis

To investigate this area, it was hypothesized that there would be no significant difference in the writing response samples taken from the experimental group with classical music playing softly in the background, and that of the control group, without music. Students in the experimental group will maintain an

efferential stance to informational and fictional text, regardless of changes in the instructional environment.

Procedures

Thirty-four sixth graders from a small suburban school in central New Jersey were selected for this study. They comprised two history classes taught by the same teacher. The sample of subjects represented a heterogeneous grouping in academics and social- economic backgrounds. At the time of the study, seven of the subjects came from homes where English was the second language spoken.

Prior to the study, the students from both classes received identical prompt tasks twice a week, one of an aesthetic nature and the other of an efferential nature. A time allowance of ten minutes was given for the written responses that were kept in the students' personal journals. The classroom teacher reviewed the journal writings of each student periodically.

Data was obtained from eight students, two males and two females from each class, on ten random days over a five-week period. The morning history class was designated the experimental group. The subjects were instructed in the silent reading of a short selection, while a selection of classical music from Mozart's *Concerto for clarinet and orchestra in A major,* played on a low volume in the background. The control group was the afternoon history class, who performed the

reading and writing tasks in the absence of music. The students in both classes received the same prompt at the beginning of class. The prompt was written on the board and read, " When you are done reading pages ___to ___, write a respond to the selection in your journal." The total time for both tasks was limited to fifteen minutes.

The collection of data consisted of a total of twenty-four reading journal responses from the eight subjects, and the researcher's field notes from follow-up discussions. The journal responses that were analyzed came from three selections, *Pegasus the Winged-Horse, The Ancient World,* (Prentice Hall*), Chapter 6-Ancient Greece, and Daily Life in Ancient Greece: Reading #2-Women and Children (*Ancient Greece*).* Field notes from classroom observations were noted.

The journal entries were entered into a software program for statistics. The number of T-units (independent clauses were calculated for each of the twenty-four journal entries. The log entries were reviewed for any noticeable patterns (evidence of aesthetic or efferent response). All "personal T-units" (I or we) were located, counted, and listed within the children's log entries. The verb following the pronoun was included in the list to capture the emotional or cognitive nature of the children's personal statements ("I feel").

Results and Conclusions

As seen in Table I, the mean for the aesthetic T-unit responses from four students in the non music setting and the mean for the aesthetic T-units from four other students in the classical music setting was calculated. The means were compared and revealed a difference of 5.2 points.

Table I
Means, Standard Deviations and t of the Samples' Aesthetic T-units

Sample	M	SD	t
No Classical Music	6.75	4.79	-.98
With Classical Music	12.00	9.56	

NS

The 5.25 point difference between the means of aesthetic T-units from both samples was statistically not significant.

As can be seen in Table II, there was a difference of 1.0 points

Table II
Means, Standard Deviations and t of the Samples' Efferent T-units

Sample	M	SD	t
No Classical Music	16.25	6.99	.15
With Classical Music	15.25	11.06	

NS

The 1.00 point difference between the means of efferent T-units from both samples was statistically not significant.

In Tables III and IV, a sampling of aesthetic T-units from the three reading selections provide additional information about the students' written responses.

Table III
Sample List of Aesthetic or Personal T-units
From the Non-Music Setting

Pegasus, the Winged Horse	Daily Life in Ancient Greece	Unit on Daily Life of the Ancient Greeks
I am glad	I learned	Sparta seemed
Bellerphon was selfish	They probably	It seemed
I think	That is horrible	Athens seemed
	A girl should	I found
	I am so upset	I guess
		I can tell
		I don't know

Table IV
Sample List of Aesthetic or Personal T-units
From the Classical Music Setting

Pegasus the Winged Horse	Daily Life in Ancient Greece	Unit on Daily Life of the Ancient Greeks
I liked	I don't think	I think
It was o.k.	I think	You don't
I would	I know	
I don't think	I thought	
I really enjoyed	They might think	
I wish	You don't	
I think	I also think	
It was a happy story	I wouldn't	

The 5.25 mean score difference between the means of aesthetic T-units in the non-music setting and the musical setting along with the 1.00 point difference between the means of efferent T-units in both settings were statistically not significant and therefore support the hypothesis.

The mean difference between aesthetic written responses and efferent written responses was 3.25 for students in the musical setting, as compared to a mean difference of 9.25 for students in the non-musical setting.

After each reading response session was completed, a follow-up discussion took place in the classroom, whereupon journal responses were shared with the class. The students were not allowed to write in their journals and were instructed to put their pencils in their desks. The selection, *Pegasus the Winged Horse*, was viewed as an "easy read" by the class for enjoyment purposes. The other two selections, *Daily Life in Ancient Greece: Reading #2-Women and Children, and Daily Life of the Ancient Greeks, p. 165 and 170* were presented in a textual format. They also provoked emotional responses from many of the students in the two classes, due to the nature of the topics.

Observations were made by the researcher during the study to detect any visual evidence that the music was affecting student concentration and/or behavior. Two students were observed tapping their pencils on the desk while

reading. Four to five students during the reader response sessions were slumped back in their seats in a somewhat relaxed position. The types of aesthetic responses from both setting were similar and therefore suggesting that the subject matter might have been a contributing factor to the stance that each reader took.

After the study was completed, the students in the musical setting were asked if they were aware of the classical music playing in the background at anytime. Eleven out of sixteen students responded that they were aware of it on the first day but then they got used to it. Five students said that they never realized that any music was playing in the background.

The results from this study supported the original hypothesis, that no significant difference would be noted between the number of aesthetic and efferent written responses, from students in a classical music setting as compared to those from a non-music setting. The observations and post study discussions validated this position. Students in both settings maintained an efferential stance to informational and fictional text, regardless of changes in the instructional environment.

The mean difference of 3.25 between aesthetic written responses and efferent written responses for students in the musical setting, as compared to a

mean difference of 9.25 for students in the non-musical setting seemed to indicate that the background music had some minimal effect on written responses to literature.

The data collected from this study may be the result of the following factors, the number and selection of subjects, sample selection, prior orientation to the course, volume of the music, and familiarity with the music.

The number and selection of subjects used for this study was determined by attendance in class and length of their written responses. Perhaps a larger number of students and written samples may produce different results.

The students' prior orientation towards the subject of history may be to read for information. This might explain the efferent responses in their journals to the myth, *Pegasus, the Winged Horse.*

In order to keep the music from becoming a distraction, the volume was controlled and kept low. The low volume of the music may have eliminated both negative and positive influences on the reader's written response because it was not loud enough to impact on the students' reading performance.

Finally, the students' lack of familiarity with classical music may have allowed them to "tune out" the melodies more readily than a popular tune. This may account

for the higher number of efferent T-units as compared to the lower number of aesthetic T-units recorded in the students' journals.

Implications

Prior studies on the effects of music on students in an educational setting have revealed many contradictions. However, certain factors have been identified as contributing to a student learning and testing performance.

For the purpose of this study, such factors such as music loudness and familiarity were identified as possible distractions. The solution for eliminating these potential distractions was to play a selection unfamiliar to the students, Mozart's *Concerto for clarinet and orchestra in A major,* at a low volume.

This study could be replicated to see if a gradual increase in the music volume would increase the number of aesthetic responses from students in their journals. Another variation would be to alternate the selection of classical music more frequently to see if there is a significant increase in aesthetic responses over efferent responses from the students.

In addition, this study could be expanded to a larger sample of students from the same grade across the district, in order to collect a larger amount of data for evaluation and comparison. Another suggestion would be to use an older population of students who have more experience with writing tasks.

The observations made by the researcher revealed that the music seemed to have a relaxing effect on certain students, which may allow them to become more expressive, and less inhibited by such an assignment. Perhaps by conducting this study over a longer period of time, and more frequently, may alleviate inhibitions and preconditioned responses and attitudes towards classroom reading.

READER RESPONSE STRATEGIES: Related Research

Reading is a highly complex interactive process (Mullikin & Henk, 1985) for which many factors contribute to the acquisition of comprehension and to the reader's stance.

For decades, reading theories and models suggested that comprehension and reader's stance were linked to both internal and external factors. Rosenblatt (1978) suggested that three factors impacted a reader's comprehension and response to literature: the reader, the text, and the context from which the transaction was completed. According to Carey, Harste, and Smith (1981), the reader and the text were critical to obtaining comprehension, however, secondary factors such as the reading setting were also found to influence the individual's interpretation of text.

Researchers have conducted studies to isolate and determine the external factors that influence human performance during the reading act and other academic activities. Rosenblatt (1978) suggested that combining music with literature enhanced the aesthetic stance for reader response, referring to the cognitive and affective experiences that were triggered during reading.

In 1991, Shaw and Leng constructed a model that represented the neural firing patterns in the brain. They used a synthesizer to translate these patterns

into music. The results sounded like music, which led to them to hypothesize that listening to music could stimulate brain development (as reported by Marsh, 1999).

Lafuente (1997) contended that exposure to music while in the mother's womb would enhance brain development of the unborn child. His study revealed that infants who received prenatal music stimulation, tapes of violin sounds, performed better on a series of tests as compared to those who hadn't the same exposure. The evaluation included gross and fine motor activities, coordination, linguistic development, and cognitive skill testing. Similar research reported that music improved brain development and enhanced skills in such areas as reading and in math (Weinberger, 1998).

According to Pohlmann (2000), Harvard Medical School researchers have used magnetic-resonance imaging (MRI) to examine the brains of musicians and non musicians, and the reports showed that brain size of musicians, whose training began before age 7, were bigger than those of non musicians. The study suggested that musical training influence the physiological development of the brain.

Numerous investigations have tested the effects of background music and extraneous noise on cognitive, perceptual, and perceptual-motor tasks. The results have yielded many inconsistencies in performance ranging from notable improvement to notable impairment (Kiger, 1989).

The studies conducted on extraneous noise reported that noise distracted, limited, and even inhibited both concentration and performance (Broadbent, 1966; Robinson, 1970). As a result, the reader's attention was diverted from the text and comprehension was compromised (Dallman et al., 1978; Pauk, 1974; Wilson, 1981) as reported by Mullikin and Henk (1985).

By contrast, the use of background music in the educational setting produced both positive and negative results. Positive results were reported by Rauscher, Shaw, and Ky in 1993, in a controversial study coined the *Mozart Effect*. These researchers investigated the effects of classical musical on spatial-temporal reasoning tasks given to college students. The results revealed that 36 college students scored significantly higher on spatial-temporal reasoning after listening to Mozart's *Sonata for Two Pianos in D Major* for the first ten minutes. Those who listened to silence, a relaxation tape, a short story, dance music, or minimalist music did not produce the same results on the IQ tests (Grandin, Petersen; et al, 1998). However, the controversy lied in the fact that the positive effects were only short term, lasting ten to fifteen minutes.

Other studies using background music produced favorable results with regards to reading comprehension tasks, creative writing tasks, and mathematical tasks (Cohen-Taylor, 1980; Maor, 1979; Wolf & Weiner, 1972). According to

Mullikin and Henk (1985), there are certain types of music that can relax most learners, drown out potential distractions, and facilitate active reasoning and creativity.

The inconsistencies were attributed to the age and education of the subjects, the learning styles of the subjects, the musical characteristics of the background music, familiarity with the music, preference of music, and the type and difficulty of the performance task.

Early studies into the effects of music on academic performance date back several decades. A study conducted by Mitchell (1948) examined the effects that radio programs had on the achievement of ninety-one sixth graders during a silent reading test. The students received the IOWA Silent Reading Test for grades 4-9. The IQ's of eighty-eight students were secured for evaluative purposes. The students were divided into three groups and testing occurred on three consecutive days. The subjects participated in three testing conditions: testing with a radio musical program (*Hour of Charm* and *the Hit Parade*), with a radio variety program (*Dagwood and Blondie* and *Charlie McCarthy*) and with a radio program in the background. Children were polled to identify those who were conditioned to studying with the radio on in the background. The data revealed that the variety program adversely affected the reading achievement of both boys and girls,

whereas the musical program did not. A decremental effect was evident among those students with IQ's below 100 on their reading performance in the variety program condition. There was no significant change reported for those with IQ's above 100. The music produced a significant gain for those IQ's above 100 on their reading achievement but very little improvement was noted for those students with IQ's below 100.

Hall (1952) studied the impact that background music would have on the reading comprehension of 278 eighth and ninth graders during study hall. The results indicated a marked improvement in reading comprehension for those students who studied with music on as compared to those who did not have music.

Stainback, Stainback, and Hallahan (1973) studied the effects that background music would have on learning for educable mentally retarded students. Sixty-four students between twelve and fourteen years old were the subjects of this study. Four experimental conditions were setup: no music/no distractions, hallway noises, background music of Bach's *Air for the G String,* and a combination of background music of Bach's *Air for the G String* with a recording of typical hall noises. The results revealed a significant difference between the music and non-music groups on task relevant learning scores. Scores were the highest in the experimental condition with just background music. The evidence suggested that

music enabled educable mentally retarded students to attend to relevant stimuli, since relevant learning was increased while maintaining irrelevant learning.

Another successful study administered by Wolf and Weiner in 1972 revealed positive results for background music on performance tasks. They investigated the effects of four noise conditions: quiet, speech (an evening newscast), music (hard rock music), and industrial noise (woodworking shop sounds) on arithmetic performance of college students. Fifteen coeds were given three minutes to respond to arithmetic problems in the four situational settings. All conditions, with the exception of the loudness level, were controlled within a sound-treated room and using headphones. The findings yielded favorable results for arithmetic performance in the music condition setting. Ironically, the music was set at the second loudest level. The number of correct responses produced under the industrial noise conditions was significantly less than in the music condition, and notably less than the speech and quiet conditions. There was no significant difference between the speech and quiet conditions.

The interpretations of these findings suggested that the type and the age of the subjects as well as their familiarity with the music might have influenced the results. Many of the subjects reported that they listened to "hard rock" music occasionally while studying. Culbert and Posner (1960) reported similar findings and

concluded that habitual noises were easier to screen out than unfamiliar noises, which are potentially distracting, regardless of the loudness level (as reported by Wolf & Weiner, 1972).

Many investigative studies revealed the diminishing effects that background music had on reading comprehension and performance on tasks. Fogelson conducted a study in 1973 that combined the use of popular instrumental music (Mantovani's Favorite Show Tunes- *Hello Dolly, Fiddler on the Roof* etc.) with the taking of a reading test. Twenty-eight subjects from two eighth grade English classes were the participants. The students were selected based on the variation in IQ scores (Stanford-Binet). Both the high ability students and the low ability students were given eighty questions from the *IOWA Tests of Basic Skills, Test R, Form 4.* A group of high ability students and a group of low ability students took the test under standard conditions without music playing. Another group of high ability students and one with low ability took the exam with music playing in the background. The test results indicated that the poor performance of fourteen eighth grade students were due to the testing condition in which popular instrumental music was playing. The seven low ability students were more adversely affected by popular music playing than the seven high ability students were. The ability of the student played a significant role in the outcome of performance in

both situations. It was observed that the brighter students seemed less affected by the music, while the low ability students indicated that the music was distracting to them.

Some conclusions that were drawn from such studies were that perhaps the type of music, in this case popular show tunes, were distracting to a particular part of the student population but not for every student. Colbert's study (1961) found that musical stimulation improved the performance of some college students on certain recall tasks but not for others. In that same year, Williams (1961) investigated the effects of popular music on a mental test performance and the study revealed adverse effects. However, the introduction of classical music did not produce the same negative effect (as reported by Fogelson, 1973). Implications for the classroom would be to consider the learning styles of the students and to carefully scrutinize the type of background music to be used before its introduction into the learning environment.

Burton (1986) examined the relationship between musical accompaniment and learning style in a problem-solving task. She selected sixty-four college students that represented the four personality dimensions from the *Myer Briggs Type Indicator*. The four personality categories were sensing-feeling, sensing-thinking, intuitive-feeling, and intuitive-thinking. The music selections were light

contemporary, instrumental, pieces from *Wes* by Earl Klugh and Bob James (1982). The test, a visual problem-solving activity with two parts, was administered individually. Each part contained nine embedded-figure items. One part was done without music and other part had background music playing continually. It was believed that the sensing-feeling personality would perform better on this type of task with music accompaniment because the music would act as a relaxing agent instead of as a distracter. While on the other hand, intuitive thinking types would remain unaffected by the music because of their generally higher mental abilities. The results revealed that the performance of the sensing-feeling types showed slight improvement with musical accompaniment than without music. The intuitive-thinking types performed slightly better without music than with music accompaniment. Therefore, the evidence was inconclusive. The change in individual performances was not significant enough to make any definite determinations.

Some researchers have considered other determinants such as music familiarity and music preference as factors that might affect the academic performance of students in a classroom or testing situation. Such studies like Etaugh and Michals (1975), Hillard & Tolin, (1979), Parente, (1976), and Geringer and Nielson (1979) have addressed familiarity and preference of music.

A well-known study done by Etaugh and Michals (1975) had a two-fold purpose. It addressed the effects of preferred music on reading comprehension and it evaluated the performances in terms of the frequency in which the individual subjects studied to music. Thirty-two college students, sixteen males and sixteen females were administered two reading passages taken from a Law School Admissions Test preparation booklet. Each passage contained questions to be answered by the subjects. The testing was performed individually in which each subject was expected to read the passages in quiet surroundings (no music) and in a music environment (self-selected music). Each subject was expected to bring music of his or her own preference. Most subjects chose popular music. The music was placed at a moderate volume for all subjects. At the conclusion of the experiment, subjects were questioned about whether they studied to music frequently, occasionally, or never. The results indicated that the female subjects performed significantly better on reading the comprehension test during the absence of music. The male subjects on the other hand, performed equally as well under both testing conditions.

Some conclusions made from this study that listening to preferred music during a reading comprehension task, acted as a distraction for the female subjects but not for male subjects. It was noted that more male students studied

to music than did female students. Additionally, the study showed that the familiarity of music interfered with the performance of the female subjects and not with the male subjects. They surmised that the students who frequently studied to music were less likely to be impaired by it during a reading comprehension test than those who didn't. The distracting effect that the music had on some of the subjects was supported by similar findings from a study done by Wolf and Weiner in 1972. They concluded that unfamiliar sounds are more distracting than familiar ones. Culbert and Posner (1960) provided the explanation that habitual noises were easier to screen out than the unfamiliar ones, which become distractions.

In 1979, Hillard and Tolin concluded that reading comprehension performance, in the presence of familiar background music, produced better results as compared to a similar task performed in the presence of unfamiliar music. They randomly selected sixty-four undergraduates for the experiment. They were instructed to listen with headphones to the same music that repeated for fifteen minutes. The music selections were Petrouchka's *Three Scenes*, Stravinsky's *Russian Dance*, or Mozart's *Divertimento No.3 in E-flat Major 117, Minuetto.* Then the students were given an easy reading section and a difficult reading section to complete from the *Sequential Tests of Educational Progress*

(1957). Each test had twelve multiple-choice questions. Some of the students had the same music on their headphones while the other half had new music playing during the testing situation. A significant difference was discovered on the scores obtained from the easier sections. Those students who had the same music throughout the study scored higher than those who had received unfamiliar music throughout. There wasn't a significant difference noted on the more difficult test section of the test. This study confirmed earlier findings from Etaugh and Michals (1975) and from Wolf and Weiner (1972).

In 1982, Etaugh and Ptasnik compared the results of those students who studied in the presence of familiar music in contrast to those who preferred to study in silence. The study included forty college students ranging in age from 18 to 23 yr. Ten subjects were assigned to one of four testing conditions, each having five males and five females. Subjects in the music condition group were asked to bring a record album of choice for studying with. All subjects were given instructions to study a passage taken from a Law School Admissions Test preparation booklet for ten minutes. Half the subjects read the passage in quiet surroundings (silence condition) while the other half read the passage with their album playing at moderate volume (music condition). It was predicted that subjects who seldom studied to music would perform best after studying in silence while

those who studied with music would perform best after studying with music. The results indicated that reading comprehension of a selected passage was facilitated for those subjects who seldom listened to music if they had been engaged in the silent study condition. Overall, the students in the silence condition group performed better than those in the music condition group. This concurred with the initial hypothesis that subjects who seldom studied to music would perform best after studying in silence while those who studied with music would perform best after studying with music. A secondary purpose of the study will not be mentioned here since it is not applicable to this paper.

Parente (1976) analyzed the effects of musical preference on a performance task. He reported a difference in performance on a Stroop color-word test from three groups studied. Each group was composed of ten subjects randomly selected. The three testing conditions were no music, preferred background music and least preferred background music. The music selections ranged from country music to classical music. The music was from the following albums; *Country Girls Sing Country songs* (RCA); *Elvis-Almost in Love* (RCA); *Andre' Cluton's Beethoven Symphony No 9* (Seraphin); *Janis Joplin- Greatest & Pearl* (Columbia); *Led Zeplin-II & Stairway to Heaven* (Atlantic); *Chicago-II* (Columbia). The best performance was received from the control group who performed the Stroop tests without

background music. They were able to complete both the color-naming task and the color-word task in the shortest amount of time. The next favorable performance came from the experimental group with preferred background music. The poorest results came from the experimental group who performed the color-word tasks while the least preferred music was playing. In conclusion, it was apparent that musical preference was considered to be a factor on the performance of even simple tasks in a testing situation.

Geringer and Nelson (1979) noted that background music did not produce any significant affect on the performance of non-music students as compared to music students on a musical cognitive task. A possible conclusion would be that both groups of subjects have learned to attend to the task at hand and to screen out environmental factors. They also suggested that the novelty of the music task for the non-music students receiving background music might have prevented these subjects from being distracted by it.

Some researchers have expressed an interest in the characteristics that differentiate background music. According to Towell (1999/2000), music can be used to change or reflect mood or purpose. Certain types of music are more appropriate than other types, depending on the type of activity in question. Research has shown that classical music has a calming effect, while rap gets

children excited. Country music, jazz, and the blues are usually sad, while rock and roll or popular music can be energizing.

Smith and Morris (1976) studied the effects of stimulative and sedative music on cognitive and emotional components of anxiety experienced during a course examination. Sixty-six college students were selected for the experiment. The subjects were chosen from one of two psychology classes taught by the same instructor and placed randomly into three treatment groups: stimulative music, sedative music and no music (the control group). Prior to the experiment, the subjects filled out a musical preference questionnaire. The anxiety condition was a five-part examination with eight mulitple-choice items in each section. Each section had a five-minute time limit for completion. The musical selections that were playing during each section of the test were classical, jazz and blues, country-bluegrass, easy listening, and rock/ rock and roll. Before and immediately following each section of the test, the subjects were asked to respond to a five-item questionnaire to assess their anxiety level. The results indicated that stimulative music kept the subjects aroused and their emotions were consistently elevated throughout the test, whereas the sedative and control groups experienced a decrease in anxiety as the test progressed. Surprisingly, the sedative music did not reduce or alleviate emotionality anymore than the control group. The

assumption that a subject's musical preference of a musical selection would enhance or inhibit the effect on his emotional state was also not apparent. Smith and Morris cautioned that further research is warranted to determine if there are any positive effects to be gained from using stimulative music like sustaining cognitive activity with alertness and attentiveness.

Kiger (1989) explored another characteristic of background music that should be considered when selecting music for a classroom setting. He addressed the effects that music information-load had on adolescents during a reading comprehension task. He stated that musical selections had their own information-load such as loudness, variety, complexity, and tonal range. Fifty-four high school sophomore, twenty-seven males and twenty-seven females were randomly selected and placed in one of three experimental conditions: reading in silence, reading with low information-load music, and reading with high information-load music. The low information-load selection was Vangelis' *To An Unknown Man* (1977) and the high information-load selection was Emerson, Lake, & Palmer's *Toccata* (1973). The reading passage was 1450 words in length on Japanese history from the book, *Rapid Comprehension through Effective Reading*, Stauffer (1976). Ten minutes were given to read the passage with another ten minutes to complete the test. The test consisted of twenty true-false and multiple-choice items. The results showed

that the participants who read passages in the presence of low information-load music performed significantly better than those in either of the other two conditions. Reading comprehension scores for the silent condition came in second. The evidence suggested that low-information load music with a narrow tonal range facilitated comprehension by diverting attention from anxiety, and allowing for greater concentration on the task.

Another characteristic of background music that was explored by Wolfe (1983) was the loudness factor. He used two hundred undergraduate non-music major students. They were randomly placed into four experimental groups: task only (no music), task with background music set at 60-70 decibels, task with background music set at 70-80 decibels, and task with background music set at 80-90 decibels. The performance task mathematical computation problems selected from a text by Willerding (1969). The four instrumental selections were *For Your Eyes Only, Somewhere in Time, Endless Love,* and *Chariots of Fire.* All testing was done in the same classroom, with the same equipment, and for the same amount of time, nine minutes and fifty-eight seconds. The results from a questionnaire indicated that the subjects in the 80–90 decibel loudness group found the music very distracting. However, their math scores were not that adversely affected as speculated when compared to the other groups. The inconsistency between the

subjects' attitudes and the actual distractibility factor was justified as a discriminative stimulus or a structural prompt for attention (Smith & Morris, 1976).

Growing knowledge of the variables connected with background music have allowed both researchers and educators to make conclusions as to the effectiveness of its presence in the classroom environment. The presence of background music for studying and test taking, may make these situations less tedious, boring, and anxiety producing (Mowsesian & Heyer).

Carol Scott-Kassner, a professor of music education at the University of Central Florida, cautions that "the whole purpose of exposing young children to music is being undermined as parents and teachers start using it to promote better math grades (as reported by Green, 1998).

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APPENDICES

APPENDIX A: Reader Responses from the Non-Music Group

2/9/01

Today, in History, I read about the lives of Women and Children in Greek times. The women were treated poorly, they had to stay home starting at the age of 13 if they weren't home-schooled. The women were not allowed to leave the house, see the theaters, in the sports centers, religious festivals and Greek society. I think that is cruel then I read about women in Sparta. Women in Sparta weren't treated as badly and were allowed to attend Greek activities. I also read about the children of Athens and Sparta. Boys and girls were not treated equally. Boys were treated more better. Girls had the right to marry at 15. Girls yet had to stay home. Boys were able to have further schooling after 15. I think Boys and Girls should be treated equal. And men and women should be treated equal.

day came after school his friends and him ~~w~~ played discus in preparation for the Olypic games. (20)
In the second story it tells a tragic story of a boy from Sparta. (14) This boy decides to steal a fox and then later is caught by his sword practice instructor. (17) The instructor supposedly tore off his coat and found the boy cut up and braised by the fox. (18) Later that day the boy dies and all his relatives and friends celebrate his life. (15) I found the first story cheerful and the second horrible. (10) But I guess that's how two different city-states in ancient Greece were ruled. (14)

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pgs 159-161

Today, I read pgs 159-161 in my history book. I learned about how Athens advanced. During the Golden Age, Athens was in wealth. This allowed the government to rebuild the acropolis, a temple, and add on new one, the beautiful Partheron, dedicated to Athena god of skill. In the temple there was many ~~of~~ detailed pictures of people.

pgs. 165 and 170

Today, I read about two boys in the cities of Athens and Sparta. (13) The first story told of a rather poor sounding boy, from Athens. (12) In the morning he wakes up from his hard bed and prepared himself for school. (15) by eating his breakfast, putting on his cloak and swiftly goes out the door. (14) He left part of the

1/25/01

Pegasus the Winged Horse

Today we read the story of Pegasus and Bellerophon. (9) In the story the so-called son of Poseidon, the sea god, Bellerophon was a greedy man who wanted many things including Pegasus. (23) Bellerophon went to a temple to get help from the goddess, Athena. (12) Athena awarded him with a bridle to catch Pegasus. (9) Bellerophon found Pegasus drinking one day and captured him. (9) Bellerophon fought the Chimaera as a task and won sick and free. (12) Then he wanted to live on Mt. Olympus. (8) Pegasus did not want him there and tossed him. (9) Pegasus was rewarded and lived on Mt. Olympus happily. (9)

women

women married when they were 13 + 15 yrs. (9)
They had no money. (4)
Spartan women had more freedom than the Athenian women. (9)
Spartan women could own business and inherit property. (8)

children

Boys were not valuable than Girls (6)
The father could decide to keep or abandon baby girls. (10.)
Girls were taught at home. (5)
The spartan girls participated in sports. (6)
Spartan boys went to military school at age seven. (9)

2/7

pg 165 & 170
Athens Sparta

The Athenians had the
165 same school schedule, wooden tablets
and paper (11), train for olympics after school and was
Free and open. (10)

The Spartans had
170 No school (5) when war, practice for war
and strict. (7)

1/25

Pegasus the Winged Horse

Pegasus was captured by Bellerophon because he wanted to be Respected.(11) Pegasus was forced to bring Bellerophon to Mt. Olyimpus. As they neared Pegasus tossed bellerophon off he fell and broke all his bones but survived.(16) Then pegasus was rewarded.(4)

[redacted] 2/9/01

I learned that women in Athens had even less rights than I thought before.(14) They couldn't pick there husbands, couldn't leave the house, they were practically treated like slaves.(15) All they did all day was work, work, work.(9) They probably didn't have any friends because they didn't get out much.(12) That is horrible, simply horrible.(5) And even when there were little bad girls, the father would either decide to keep her or abandon her.(19) Many abandoned girls were found and made a slave by other families.(12) I am so upset about that.(6)

pages 165 and 170

February

Sparta seemed much diffrent than Athens from the two stories. (10) Sparta would be proud of kids having to endore pain. (10) It seemed to be much more stricked than Athens. (9) Athens seemed pretty hard to live in too. (8) The kids there had to memorize things (7) but mostly it seemed like an Athens child was more layed back. (12) There were many differences between the two citys. (8)

2/01

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1-25-01

Pegasus the Winged Horse

I am glad Pegasus got to live on Mount Olympis. (10) Bellerphon was selfish to even to think he could live with the gods. (13) I am also glad Bellerphon god punished. (7) Bellerphon should have kept his fame and fortune instead of giving it to the gods to decide what his life will end up. (30)

2/9/01

Women and Children in ancient Greece

I am very upset with how women were treated in ancient Athens.(12) They could not inherit property or vote!(7) They rarely went to theaters and were not allowed in sport centers.(12) They had to stay at home weaving, cleaning, + looking after children + slaves.(14) Women married at the ages of 13 to 15 and their father got to pick who they were to marry!(10) I think that is terrible.(5) A Girl should marry who she wants.(7)

Not only were women treated bad but so were girls!(7) Boys were treated better than the girls were.(8) Girls could not go to school only boys were.(9) Girls had to learn at home if lucky!(8)

February 7, 200

By reading the two stories of an Athenian boy and a Spartan boy, I can tell than ancient Athens + ancient Sparta are very different! The life of the Athenian kid seemed peaceful, easy, and fun. He woke up, went to school, and then had fun wrestling and throwing discusses. Yet the life of the Spartan boy seemed much harder and kind of stressful. He had to go to sword practice all the time and he got yelled at. He captured a fox and had to hide it under his cloak. I don't know why, but if he had to steal + hide it, it must be something sneaky + bad.

1-25-01

Pegasus the Winged Horse

Bellerphon was so greedy (4) He was a hero (4) he had Pegasus, and everyone loved him, but he still wanted more (12) I think that the lesson of the book is that "don't be so greedy because you might just end up with nothing! (22)

APPENDIX B: Reader Responses from the Classical Music Group

1/25/01

Dear Journal,

I really enjoyed the book about Pegasus. (7) It was a happy story. (5) In this book, there was a greedy man named Bellerphon. (10) He wanted people to worship the ground he walked upon. (10) Even when this happened, he wanted MORE!! (7) Bellerphon wanted to become a god. (6) So he had Pegasus take him up to Mt Olympus. (10) As they grew closer, Pegasus stopped. (5) He knocked Bellerphon off him, and he fell to the ground. (11) Bellerphon was sad, very sad. (5) After awhile, Pegasus was welcomed in Mt Olympus for his deed. (10) He know had a position that Bellerphon would never be able to enjoy. (13)

2/7/01

Dear Journal,

Today in History class we had to read two passages.(10) The first passage was about a boy from Athens.(9) This boy, like any child, got up, ate breakfast and left his house for school.(15) At his house everyone begins chores at a good time, not too early, not too late.(16) In Athens all the children carry wooden tablets covered with wax to write on.(14) After school, the boys watched some older kids excerce, practicing throwing a flat plate around called a discus.(18)

In the second passage, I read about a boy from Sparta.(11) This boy helped a fox, so he hid it under his cloak.(13) Even though the boy was going through terrible pain under cloak, for the fox was scratching and biting, he showed no sign of distress.(24) Later that day the boy died from his wounds.(9) In Sparta this showed that the young man had true character.(11)

2/9/01

Dear Journal,

Personally I think that there were many unfair things during ancient Greek times Especially toward women. (16) These women worked hard all day long and couldn't do ANYTHING a man could do. (15) Women in Athens aren't allowed to go out of there home without someone with them, not even to visit their families. (21) whats up with that (24) Also the women of Athens weren't allowed to vote or have anything to do with the government and its laws. (20) They couldn't even inherit property (5), I think that this is VERY harsh. (7) Actually I wouldn't have wanted to live in this time. (10) Can you imagine being abandoned because your father didn't want a girl? (17) ~~I know I sure couldn't~~

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1/25/01 (7)

I think Pegasus was a great warrior. I think Pegasus should of shown his strength before he even realized he was half a god. (17) To tell the truth I don't think that he has any god in him but since he believed he did he thought the strenght he had was a god strength. (30) I really enjoyed the story. (5) I wish it hadden end, the way it did. (9) I wish it ended when Pegasus went past the gate and because of that he was a true god. (17)

2/7/01

I think it was very cruel of that man to kill such a young boy. (15) I think the people should of done something. (8) You don't kill over still but you do punish that person for what he/she has done. (17) For example, the trainer could have made the boy clean the practice field for a week or so. (18) Didn't the boy's parents have any say in this? (9)

2/09/01

Life in Greek was pretty easy for boys.(8) On the other hand for women it was very hard.(10) I don't think it was fair for women to be treated like that.(13) They mines will have been called slaves.(7) I also think it was very harse and cruel for the father to decide to leave the girl babies to die or be raised by another family as a slave.(30) Didn't the mother have any say in that.(8) Women or shall I say girls should of been aloud to choose their own husband because they should be with someone they love and care for.(26) I think men, women, boys, and girls should be treated with respect and as a person.(16) And I don't think children should of been considered adults at the age of thirteen because some thirteen year olds can't responsable.(22) I think its a good idea you have to be 18 or older to be an adult.(17) And thats what I think of the article, Women and Children.(11)

1/25/01

I liked this book.(4) It is very exciting and has a lot of action.(10) Bellerphon tries to get Pegasus throughout most of the story.(10) But when he gets him, he becomes greedy.(8) He wants to become a god, so he tries to fly to Mt. Olympis.(14) Since Pegasus was loyal to the gods, he threw Bellerphon of him and flung him to the ground.(8)

2/7/01

These two passages are about two different thing(8)s. The first one tells how a boy goes through his daily life(12). First he wakes up, eats his breakfast, puts on his cloak and then goes off to school(17). It also tells what the boys do after school and what they have to bring to school in the morning(20). The second passage tells about a boy in Sparta. The boy is holding his stomach because he is holding something(20). It then says that his trainer discovers(15) he was hiding a fox under his cloak. The boy then dies, but he was then honored that he didn't show any pain.15

2/9/01

This passage is about the daily life in ancient Greece. It tells how women weren't treated the same as boys. The women couldn't vote, inherit property, own money, have a job, they weren't considered citizens. But, in Sparta women were more free. They were treated just like men, they even learned how to wrestle and train like men and boys. Also in Sparta, when you turned 13 you were considered an adult. But, in Athens girls didn't go school only boys did. Basically, if you were a boy life was good. But if you're a girl life was awful

(4)

The story was [illegible]. It was better than the [illegible] story (7). I liked the part when Pegasus through Bellerphon off his back (VI) I would have thought he had died. (7)

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I think it must have been hard
to get to school (11) I think that because
there were no cars (6) another thing what
did they actually have for transportation
that had wheels (13) & school
must have been stupid because
they would have to learn
about fake people and gods that (14)
never existed (9) How would they learn?
What did people eat for breakfast? (6)
Was it hard (3) Were kids (8)?
as hungry as we can get,
what did they use to make
up early? (8)

2/9/01

In that two paragraps I don't think it was fare to women (2). They had to work (4). They didn't even get money (5). If they didn't get money they shouldn't have to be slaves (11). Well atleast the men got money for food and for the kids (12). Speaking about boys I don't think it is fare to girls either (12). They had to work so hard (6). I think both boys and girls are pretty valuable (9). Well at least through my eyes (6). Through parents eyes they might think we are even more valuable then I thought (14). No parent wants to watch there son or daughter suffer like that (12). I know they make us work but still they don't make us work that hard (5). The kids might have worked as hard as parents and I don't think that is right (16). They should have been able to pick there own husband at least (12). Another thing. They sent boys to the military training when they were seven (3). That is just sad how many boys die (6). I would want to join the army but not when I was seven (13). If I was in that time I would

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