The Effect of Soft Background Music, Mozart Music, on the Three Levels of Students’ Engagement: Students and Teachers’ Perceptions of this Effect

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DEDICATION

This study is dedicated to my parents, my sister, my brothers, and my friends who provided me with strength and words of wisdom all through my studying period. I also want to dedicate it to all my family who endowed me with their constant prayers, support, and love.

Most importantly, I dedicate this study to the glory of God who has opened and will continue to open many doors for growth and opportunity throughout my education and professional career.
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The Effect of Soft Background Music, Mozart Music, on the Three Levels of Students’ Engagement: Students and Teachers’ Perceptions of this Effect

Dima Bashir Al Bizri

ABSTRACT

Engagement, in its three levels, cognitive, behavioral, and affective, is vital in the learning process. One strategy that leads to active engagement is soft background music, such as Mozart music. Due to the lack of studies about Mozart music and the three levels of engagement, this study was carried out. The purpose of this study was to investigate the impact of Mozart music on the three levels of student engagement and to elicit students and teachers’ views on the impact of Mozart background music on engagement. To address the research questions, a mixed method approach combining quantitative and qualitative methodologies was used. The ABAB design was used to examine the effect of Mozart music on engagement. The following five instruments were used: SESQ-ENG, TERF-N, semi-structured interviews with the teachers, focus group interviews with the students, and observations. The data were analyzed by calculating the number of students, the frequency of the off-task behaviors, and duration of the on-task behaviors, and examining the students and teachers’ responses. Then, the results were compared, highlighted the common points, and compiled to tackle the research questions. The findings showed that Mozart music motivated students to learn, increased their on-task behaviors, decreased their off-task behaviors, and helped them to concentrate and solve problems, thus leading to higher achievement level. Finally, Mozart music is perceived as a quarto-strategy of engagement that has to do with relaxation, memory, concentration, and mood.

Keywords: Soft background music, Mozart music, cognitive engagement, behavioral engagement, affective engagement.
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Chapter One

Introduction

This study focuses on examining the use of background music such as Mozart’s in the classroom and its perceived effect on student engagement. This chapter presents an overview of the topic as well as the rationale, purpose, and the research questions of the study.

Music

Background music is used in restaurants and malls to increase purchasing intentions and in doctors’ clinics to relax and calm patients from their pain (Hodges & O’Connell, 2005). Music is also used in homes by parents through singing lullabies, moving and swaying with their infants (Trehub, 2002, 2003, 2004). At school, preschool musical activities aid in stimulating students’ thinking and increasing their attention that is essential for school readiness (Flohr, Miller & De Beus, 2000). Burns, Labbé, Williams, and McCall (1999) indicate that not all types of music affect relaxation and physiological arousal, and that the participants who have listened to classical music have shown greater relaxation than those who are exposed to hard rock music. Calm music is defined as classical music without lyrics that is soothing like Mozart music, sonnet K.448 (Burns et al., 1999).

Studies indicate how students improve their performance in learning as well as on memory tests when listening to background music especially Mozart sonnets (Crenc, Wilson, & Prior, 2006; Dunton, 2006). Mozart music has shown its effect on students on the behavioral and learning levels. It is used to aid students to relax, focus their attention, reduce impulsivity, interact well, and communicate better (Crenc et al.,
Brewer (1995b) points out that background music during the learning process affects students’ remembering, motivation and feeling, as well as expression. When music is on, the atmosphere enhances students’ learning through stimulating their feelings. This means that music stimulates their learning and their positive behaviors such as following rules, staying on-task, and communicating better (Brewer, 1995a). Music could produce an increase in students’ engagement that could lead to positive mood and an increase in their motivation to finish their tasks (Hallam, Price, & Katsarou, 2002). In other words, music affects students’ motivation and engagement in learning.

**Student Engagement in Education**

Engagement is important in the learning process and has been the core topic in the education field (Skinner, Furrer, Marchand, & Kindermann, 2008). Umbach and Wawrzynski (2005) have indicated that students may grow undesirable reactions about learning that lead to less participation in class, off-task behaviors, and negative feelings towards the environment if they are not well motivated and engaged in the educational process and consequently to an increase in students’ dropping out of school. Increasing student engagement would give rise to positive feelings towards the environment (Appleton, Christenson, Kim, & Reschly, 2006) and would also result in positive scholastic results (Kern, Bambara, & Fogt 2002; March & Horner, 2002).

Student engagement has three levels, cognitive, behavioral, and emotional or affective engagement. Many studies have used the definition of student engagement based on that of Walker et al. (1990, p. 45):
Academic Engagement (AET) means that the student is appropriately engaged in working on assigned academic material that is geared to her or his ability and skill levels. While academically engaged, the student is (a) attending to the material and the task, (b) making appropriate motor responses (e.g. writing, computing), (c) asking for assistance (where appropriate) in an acceptable manner, and (d) interacting with the teacher or classmates about academic matters or listening to teacher instructions and directions.

However, this definition implies that keeping students on-task decreases their misbehaviors. So, it is used as a classroom management method instead of having the students engaged academically. It also focuses on keeping the students on-task which is related to one level of student engagement, i.e., the behavioral one only. It is preferable that a definition of student engagement should encompass other features of engagement related to the other two levels (Al Hendawi, 2012).

Thus, behavioral engagement has to do with on-task behaviors, active participation, effort, attention and persistence whereas cognitive engagement has to do with the students’ mental effort in performing tasks and students’ evaluation of the value of learning. Emotional engagement has to do with students’ feelings as well as emotional reactions towards the learning task, teachers, peers, and self (Lane & Harris, 2015; Al Hendawi, 2012; Hart, Stewart & Jimerson, 2011).

In this study, I adopt a definition of student engagement that encompasses all three aspects. Regardless of the variances in defining engagement, there are strategies that lead to active engagement during the instructional process. The use of music is only one such strategy (Cheong-Clinch, 2009). Background music has a lifelong effect on behavior and learning; when listening to music, the brain’s functions increase and lead to complex thinking. As a result, reduced impulsivity and hyperactivity are
noticed among students with over-activity (Evans, n.d; Cox & Stephens, 2006; Anderson, 2000; Rickson, 2006). Therefore, as students’ negative behaviors decrease such as being inattentive, being off-task, making noises, and not engaging in class discussions, music may stimulate better engagement and develop student attitudes and capabilities to process and recall information (Carnahan, Rao, & Bailey, 2009).

Purpose and Rationale

Educators are concerned about increasing student engagement due to the interconnection of the three levels of engagement, cognitive, behavioral and emotional engagement. They are also concerned about increasing engagement because research shows its impact on learning and on achievement (Walker, Greene, & Mansell, 2006). Being a teacher in a school, my first concern is to enhance students’ engagement during the learning process in class and improve their achievement. My aim in this research is to elicit students’ and teachers’ perceptions of the impact of Mozart music on the three levels of student engagement, cognitive, behavioral and emotional engagement of Grade 8 students in math sessions. Furthermore, I want to explore whether soft classical background music has an influence on students’ behavioral engagement that would lead to a better emotional as well as cognitive engagement.

Due to the lack of research studies about Mozart music and student engagement, this study will add to knowledge on how the three levels of engagement are affected by background music and whether music can be considered a strategy to enhance engagement.
Research Questions

1. What is the students and teachers’ perceived impact of Mozart music on students’ cognitive, behavioral, and affective engagement of Grade 8 math sessions?

2. How do teachers perceive the effect of Mozart music as a strategy for student engagement on students’ engagement?

3. How do students perceive the effect of Mozart music as a strategy for student engagement on students’ engagement?

<table>
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<th>Purpose</th>
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<td>‘To investigate the impact of Mozart music on the three levels of student engagement, cognitive, behavioral and emotional engagement’</td>
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The document is divided into several chapters. The first chapter explained the main keywords of the study, which are music and student engagement. When defining and elucidating these two keywords, a relationship between them is shown. The rationale, the purpose of this study and the research questions were stated, and relationship

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between the purpose and the research questions was illustrated. The next chapter presents the literature review that is relevant to the topic. Chapter Three presents the methodology that is used in my study. Chapter Four presents the data results of the used instruments, and Chapter Five presents a discussion of the findings. Finally, Chapter Six presents a summary of the study, limitations, and suggestions or further research.
Chapter Two

Literature Review

This research focuses on the perceived impact of Mozart music and its influence on student engagement. In the literature review section, theories of motivation and previous studies are discussed to shed light on the effect of Mozart music on students. The readings provide a conceptual framework that explain how Mozart music affects students, how music and math are connected, and how the three levels of student engagement, cognitive, behavioral and emotional engagement are interrelated.

Theoretical Framework

As student engagement increases, student learning and achievement increase. What affects student engagement is music, especially soft music such as that of Mozart, which is considered as one way that influences students’ motivation, their engagement, and thus their learning and achievement. The core question to be answered is whether Mozart music impacts the three levels of student engagement, cognitive, behavioral and emotional.

The theories of motivation show that competence, interest, perception and control are what make the students motivated (Pintrich, 2003; Ryan & Deci, 2000, Deci & Ryan, 2008; Seifert, 2004). Lazar (2002), Brewer (1995b) and Gardner (1983) point out that music can be used as a mnemonic device to aid students in remembering new information. Studies of Lazar (2002) and Dartt (2009) indicate that music assists in sustaining the attention of the students, which aids in providing a motivational environment for the students. Besides sustaining attention, Crenc et al. (2006) state
that Mozart music is beneficial for students with hyperactivity in decreasing their impulsivity and focusing their attention thus increasing their performance and learning. Dunton’s study (2006) shows that while music is being played, the ability of completing tasks is improved. Evans (n.d.) and Crenc et al. (2006) indicate that a motivating educational atmosphere that is conducive to broader learning is created by music. Therefore, academic achievement is enhanced by soft background music (Hodges & O’Connell, 2005).

**Theories of Motivation**

Motivation has a fundamental part in the success of the learning process. Upon studying closely previous theories of motivation, Ryan and Deci (2000), Seifert (2004), and Pintrich (2003) have similar and consistent features in their conceptual frameworks that are likely to heighten motivation. These features are interest, competence, autonomy, and relatedness (Pintrich, 2003; Ryan & Deci, 2000, Deci & Ryan, 2008; Seifert, 2004). There is a continuous debate about motivation concerning which motivation, internal or external, is impacting the other. In the Self-Determination Theory of Ryan and Deci, the authors explain that intrinsic motivation stays fully internalized, whereas extrinsic motivation can vary from completely internalized to completely external (Ryan & Deci, 2000). They point out that students will be motivated by interesting activities that have uniqueness, challenge, or aesthetic significance. When the three features competence, autonomy, and relatedness are fulfilled with interest, the students will be self-motivated. Moreover, Seifert (2004) suggests that motivation, identification of competence, autonomy, and perceived meaning are essential in his theory. In Seifert’s theory ‘Mastery Pattern’, he describes an effective learning direction as a meaning for intrinsic motivation. The students focus on mastering the goals rather than performing the goals. In addition,
Pintrich (2003) presents guidelines to what make students motivated in five social-cognitive paradigms. The five social-cognitive paradigms that motivate students are competence beliefs, control beliefs, higher levels of interest, stronger perceptions of value, and appropriate goals. Accordingly, these paradigms go along with the previous motivational theories. Then, the three theories focus on competence, interest, perception and control as the basics to motivate students in the classroom which lead to better learning and thus higher achievement.

**Theories of Music**

Three theories have showed that music helps in learning. Howard Gardner (1983) classifies music as one of the eight intelligences in his theory of Multiple Intelligences. Gardner points out that music has extra cognitive aids besides its effect on stimulating the growth of students’ intelligences. It assists the students in comprehending, sequencing, and improving their memory. Moreover, Brewer (1995b) points out that music is considered essential in students’ learning experiences due to its effect in aiding them to remember and to retrieve information. Since music is structured, information or memories learned with the help of music can be retrieved easily. He writes that music may be used as a memory technique for recalling information. In addition to the above theories, Lazar (2002) has conducted research that backs up the point that music can be used as mnemonic device to aid students in remembering new information. He also states that music helps in sustaining the attention of the students and in delivering a motivational milieu for better learning.
The Effect of Music

Other studies shed light on the importance of using music in children’s life. It is essential for learning, behavior, and development (Crenc et al., 2006; Evans, n.d.; Mattar, n.d.). Music helps the child to perceive space and spatial reasoning (Hetland, 2000b). It is also essential in teaching children to communicate, speak, sing, focus, remember, and release stress (Dolegui, 2013; Crenc et al., 2006; Evans, n.d; Surujlal, 2013). Simply, it is important for the child’s development. Researchers have shown that background music enlarges the periods of concentrated attention during activities. Thus, it improves attention, memory and motivation (Surujlal, 2013; McFerran, 2009). Background music reduces anxiety when the children are over-aroused (Crenc et al., 2006; McFerran, 2009; Surujlal, 2013) as well as reduces impulsive behaviors (Hallam & Price, 1998). Not only listening to music but also listening to background music and playing music via instruments have the same effect. Desrochers, Oshlag, and Kennelly (2014) use the ABAB design to show that background classical music has an effect on lessening disruptive behaviors such as disturbing others and distracting others as well as on growing desirable behaviors such as on-task behaviors, following rules, and engagement. Dieringer and Porretta (2013) also indicate that music decreases off-task behaviors such as wandering, looking away, and disruptive behaviors. Helmes and Wiancko (2006) reveal that there is a reduction of up to 31% on the frequency of out-bursts noise such as shouting and beating of two elderly participants in a teaching hospital in an intervention of listening to baroque music for periods of 30 minutes daily. Thus, music helps in developing students’ attention, memory, and motivation besides decreasing their anxiety and disruptive behaviors and increasing their on-task behaviors.
People’s heart frequency fluctuates from minute to minute. More heart beats per minute make the person more stressed. More than 80 beats per minute and the participants may show signs of cardiovascular diseases which may lead to death (Davidovic, Iric-Cupic, Milanov, Dimitijevic, & Petrovic-Janicijevic, 2013). Vai, Bonnet, Ritter, and Pioger (1988) point out that there is a relation between heart rate (HR) and three respiratory factors, minute ventilation (VE), tidal volume (Vt), and respiratory rate (RR). So, HR, VE, and Vt are altered in a matter of a few heartbeats and oxygen consumption. Music has 60-minute cycles so close to heartbeats. In a recent study by Orman (2011), the heart rate variability (HRV) shows a decrease when the participants listened to music during mental engagement. The heart beats per minute decrease irrespective if the music genre is liked or disliked. However, the HBV can’t be considered as a measure of emotional reacting. In general, soft music is considered a way to increase oxygen consumption, decrease the heartbeats, and decrease the stress.

The Effect of Mozart Music

One kind of background music that has shown great effectiveness is that of Mozart. There is a lot of publicity that focuses on the importance of using Mozart’s music to increase the children’s intelligence and performance. Various studies show that cognitive processing is enhanced upon listening to Mozart sonnets (Jenkins, 2001). However, many studies show that the intelligence in children doesn’t increase if they listen to Mozart’s music (Dartt, 2009; Crenc et al., 2006). As for cognitive tasks, Dartt (2009) reveals that music enhances the development of cognitive thinking as well as the social and emotional development of attention. Dunton (2006) shows that when students listen to music before and during the cognitive task, the ability to complete this task is enhanced. As for behaviors, Crenc et al. (2006) have combined
facts about Mozart music, ADHD behavior and achievement in their study. Mozart background music in classrooms has shown to be effective where it aids in focusing the students’ attention, reducing their arousal, and decreasing their impulsivity which lead to better performance especially in spatiotemporal reasoning. As for motivation, Evans (n.d.) has indicated that music aids students in being more motivated, increases their participation level, and establishes a positive attitude and atmosphere during the activities in the classroom. Crence et al. (2006) have also designated that motivating educational atmosphere that is conducive to broader learning is created by music. McDonald (2013) has indicated that music enhances complex task performance. Hetland (2000a) points out that when instruction is taking place with background music being played, cognitive performance in students appears to be enhanced. As for achievement, Hussain, Thomson, and Schellenberg (2001) have examined the effect of Mozart sonnet, K.448, on 24 college students where they listened to it for 10 minutes daily. The results show that the students considerably perform better on the spatial task than the students who are in the silence condition. So, in other words, Mozart music affects the cognitive, social and emotional development of the students. It also focuses students’ attention, reduces their arousal, and decreases their impulsivity. Moreover, Mozart music creates a positive atmosphere where students’ motivation and participation are increased enhancing their learning and achievement level.

**Music, Math and the Brain**

Math and music are connected with each other due to the use of numbers, ratios, and repeating patterns. A great number of studies on music and math show a positive effect on achievement, yet few studies have found no effect of music on achievement (Hodges & O’Connell, 2005). To avoid math anxiety and low math achievement,
integrating music in math instruction is considered one way to overcome this obstacle (Evans, n.d.; An, Capraro & Tillman, 2013). Melody, scales, rhythm, tuning, and harmony are the things that connect music to math. These musical notions are connected to many mathematical conceptions such as operations, probability, geometry, logarithms, and trigonometry (An et al., 2013). By providing music during the learning process, the brain cells are intensified which leads to an enlargement in the brain’s function. When the structures of the mathematical exercises resemble those in music, students relax, increase their accuracy of tasks and thus can perform better on the mathematical tasks (Greenop & Kan, 2007; Rickson, 2006; Abikoff & Courtney, 1996). In a study by An et al. (2013), a Grade 3 teacher has integrated musical instruments in musical activities during a series of music-mathematics sessions. Significant improvements have been noticed among the third graders after five weeks of the intervention program such as in students’ ability to focus their attention and ability to implement mathematical logic to real world situations (An et al., 2013). Another study by Cox and Stephens (2006) indicates the effect of listening to musical instruments on students’ performance on the Comprehensive Test of Basic Skills for Fifth graders. A group of students has been trained to use musical instruments in music sessions while another group has not. The results have shown that the students who have been trained and listened to musical instruments have scored much better than those who haven’t participated in music on all the areas of the test. So, in other words, the resemblance of mathematical concepts and musical notions connect math and music together. This widens the brain cells and its function which helps in increasing math performance.
Music and Physiological Aspects

Numerous studies show the significance of music as a way for decreasing the physiological aspects in human beings such as heart rate, blood pressure, and heart beats (Tan, Ozdemir, Temiz & Celik, 2015; Vaajoki et al., 2011; Lemmer, 2008; Standley, 1991). There is a close connection between soft classical music and health aspects. Tan et al. (2015) have found that when the experimental group of patients listening to music is compared to the control group, there is a significant reduction in both heart rate and blood pressure of the coronary heart patients as well as a decrease in anxiety, stress, and pain. This indicates that soft classical music can be used as a method of relaxation. Vaajoki et al. (2011) have shown that in abdominal surgery patients, not only blood pressure and heart rate but also respiratory rate has shown significant reduction when they listened to classical music on the day of their operation once compared to the control group who didn’t listen to music. This shows that music has helped in calming down the participants. Standley’s findings (1991) show that music decreases the heart rate when the participants listened to music after dental drill noise in his study in the Center for Music research which shows that music is a calming method. Lemmer (2008) has indicated in his study that Mozart background music has decreased both heart rate and blood pressure and resulted in a minor drop in the cardiac output for rats when they were monitored every 5 minutes for 24 hours under the condition of listening to Mozart music. This also indicates that Mozart music can be used in lowering the heart rate and heartbeats and thus soothing down rats. Another study on prisoners known as Good Vibrations project shows that prisoners have lowered their heart rate and have developed positive changes in their personalities, confidence, communication and coping skills with other prisoners (Henley, Caulfield, Wilson & Wilkinson, 2012). So, soft music decreases blood
pressure, heart rate, and heart beats. Thus, it can be used as a relaxation and soothing means.

**Music and Engagement**

Engagement is essential in the learning process that leads to a higher achievement level in schools (Skinner et al., 2008). In the classroom, engaged students are more likely to learn more and attain higher achievement levels, but disengaged students are more likely to generate negative feelings about learning, have low achievement level, and sometimes drop out of schools (Umbach & Wawrzynski, 2005). However, there are many factors including the students themselves, the teachers, the environment, and the socioeconomic status that shape the student engagement level (Fredricks, Blumenfeld, & Paris, 2004). The three levels of student engagement are interconnected; all three are linked to proper motivation that increases engagement (Fredricks et al., 2004). According to Skinner et al. (2008), students are disengaged due to a lack in their affective engagement which can be defined as the needed interest and motivation for academic achievement. According to Fredricks et al. (2004), students are disengaged due to lack of motivation that allows them to stay on-task and participate in the class. According to Walker, Greene, and Mansell (2006), students need the proper motivation to have them get engaged in the cognitive tasks. Since Mozart music enhances the motivation, the learning, and the achievement level of the students (Crenc et al., 2006; Brewer, 1995a; Hetland, 2000a; Hussain et al., 2001), sonnet K.448 is used.

Some studies discussed the importance of music as a treatment or a relaxation method with students (Dolegui, 2013; Crenc et al., 2006; McFerran, 2009). But, in McBride’s study (2002), some students claim that they are able to learn with
background music, others say that it’s more of a distraction. Many previous studies have focused on how students improve their accuracy in solving math calculation tests when listening to Mozart sonnets while others couldn’t prove this (Greenop & Kan, 2007; Rickson, 2006; Abikoff & Courtney, 1996). Although there are many studies that examine the relation between music and college students work, less studies exist about elementary students.

This study is conducted due to the lack of studies that document the impact of soft background music on the three levels of engagement using an inclusive measurement. Most of the reviewed literature focus on individual engagement aspects but not on the three together. To wrap up, the concepts in this section are summed up in a conceptual framework.
Mozart Background Music

Behavioral Engagement
Cognitive Engagement
Emotional Engagement

Learning and Achievement
Chapter Three

Methodology

This chapter presents the research approach, the sampling method, and the used instruments in this research study. Data analysis and reliability and validity matters are discussed.

Research Design

To be able to address the above research questions, I used a mixed-method approach combining both quantitative and qualitative methodologies. A mixed-method approach is a methodology for conducting research that encompasses gathering, investigating, and assimilating quantitative and qualitative research within a particular study (Fraenkel, Wallen, & Hyun, 2012). The benefit of this research is that both methodologies together deliver a better understanding of the research and its questions. The qualitative methodology is used to examine the effectiveness of using Mozart music as background music in enhancing engagement as perceived by both teachers and students (Cheong-Clinch, 2009). As for the quantitative methodology, it is used to measure the three levels of students’ engagement as perceived by students and teachers (Carnahan, Rao, & Bailey, 2009).

I used different instruments to increase the validity of my findings by cross checking the data from the different sources and highlighting the similarities. So, I used the students’ self-report questionnaire and the teachers’ questionnaire to measure the three levels of engagement quantitatively. I also used qualitative methods such as conducting semi structured interviews with the teachers and focus
group interviews with the students to identify the effectiveness of using Mozart music. In addition to the above, I used observation to record the frequency of the students’ off-task behaviors and the duration of their on-task behaviors.

To study the effect of Mozart background music, the ABAB design was used. The ABAB is a design that a baseline stage (A) is followed by a treatment stage (B) then back to a baseline stage (A) followed by a treatment stage (B). Usually, the ABAB design is used to help the researcher examine whether there is an alteration in the behaviors upon introducing the used treatment, a reversal when the treatment is drawn off, and an improvement when the treatment is presented again (Cohen, Manion, & Morrison, 2011). I chose the ABAB design to help me in making conclusions regarding the effect of Mozart music on the students and examining the degree of control over their behavior by collecting the baseline stage (a session without Mozart background music) and introducing the Mozart background music factor as the treatment stage (a session with Mozart background music). Thus, the first reason to use ABAB method was to monitor the level of engagement of the students during class work with Mozart background music being played and with its absence. The second reason was to evaluate the effectiveness of Mozart music as soft background music on decreasing the undesirable behaviors that were off-task and disruptive behaviors (Desroches, Oshlag, & Kennelly, 2014; Dieringer & Porretta, 2013).
Research Context

This study took place in Grade 8 in an Islamic school in Saida. The students were divided into two sections, one male section and one female section. Eighteen male students and 20 female students from the two sections participated in the study. These two sections were picked because they had the most active and disruptive students among all the sections as recommended by the teachers and the Head of the Department for Cycle III. The age of the participants was 14 to 15 years. Students’ nationalities were Lebanese and Palestinian, and English was considered as their second language.

Instrumentation

Self-report questionnaires, teachers’ questionnaires, semi-structured interviews with the teachers, focus group interviews with the students, and observations were used for collecting data to address the research questions of the study.

1. Student Engagement in the Schools Questionnaire-Engagement Composite (SESQ-ENG) is a self-report measurement that gathers information from the student’s perspective related to both the indicators and facilitators of engagement (see Appendix A). It is composed of five factors (Affective Engagement: Liking for Learning; Affective Engagement: Liking for School; Behavioral Engagement: Effort and Persistence; Behavioral Engagement: Extracurricular Activities; and Cognitive Engagement) (Hart et al., 2011). Students rated the items according to a Likert-type scale of 1-5 (e.g., 1 = never, 5 = always). This self-report measurement was found in an article that discussed the three levels of student engagement in school taking into consideration both the students and the teachers’ points of view (Hart et al., 2011). It was a measurement that had to do
with the three levels of engagement but had nothing to do with music. Since the purpose of the study was to investigate the impact of Mozart music on the three levels of students’ cognitive, behavioral and emotional engagement, I chose this instrument because it was the only instrument that I found that tackled the three levels of engagement together and not only one. I decided to use it and add to it the soft background music factor. Upon this, I emailed the authors and secured the permission of Dr. Jimerson to use the instrument in my study. Hart et al. (2011) had ensured reliability for SESQ-ENG, and Cronbach’s coefficient alpha (a) was used (Cronbach & Shavelson, 2004). Results on SESQ-ENG had showed .70 < a < .95 which exhibited good reliability.

Piloting the instrument:

I added items to the questionnaire and piloted it to increase the validity of the instrument, i.e., it measured what it was supposed to measure which was the effect of Mozart background music on students’ engagement (see Appendix A). In the SESQ-ENG, four items were added to the items of the Affective Liking for Learning (I think music makes me learn. When music is on, I get bored quickly. I like learning when there is soft background music. Soft background music makes me fresh.) When piloting it, the last item (Soft background music makes me fresh) wasn’t clear. So, it was changed into (Soft background music keeps me in the mood of learning.) One item was added to the items of the Affective Liking for School (Music motivates me to go to school.) Three items were added to the items of Behavioral Effort and Persistence (When music is on, I work better. When music is on, I stay on-task. I complete my tasks when there is soft music.) Three items were added to the items of Cognitive (When music is on, I learn better. When music is
Therefore, the SESQ-ENG was given to a 14 year-old-boy who had no connection to the study to be piloted. One item only had been changed. Hart et al. (2011) ensured the validity for SESQ-ENG. Moderate significant correlations between the SESQ Affective and Behavioral Engagement composites were evident.

2. **Teacher Engagement Report Form-New (TERF-N)**. The TERF-N is a 10-item, paper-and-pencil chart, where the teacher fills in 10 boxes, one for each item, per student (see Appendix B). Each item is completed using a Likert type scale of 1-5 (e.g., 1 = strongly disagree, 5 = strongly agree). The TERF-N requires approximately 45 minutes to be completed. The questionnaire items address aspects of affective, behavioral, and cognitive engagement. (Hart et al., 2011). This report form was found in an article about the three levels of student engagement in school taking into consideration both the students and the teachers’ points of view (Hart et al., 2011). It supported the results of the self-report measurement completed by the students. But, it was an instrument that had nothing to do with music. As the purpose of the study was to examine the impact of Mozart background music on the three levels of student engagement, and it was the only instrument that I found that tackled the three levels of engagement together, hence I chose it. So, I decided to use this report in my study and add to it the soft background music factor. Upon this, I secured the permission of Dr. Jimerson. Hart et al. (2011) had ensured reliability for TERF-N, and Cronbach’s coefficient alpha (α) was used (Cronbach & Shavelson, 2004). The results on TERF-N had shown good internal consistency (α = .83) between the 10 items that exhibited good reliability.
Piloting the instrument:

I added items to the chart and piloted it to increase the validity of the instrument to measure what it was supposed to measure. As for TERF-N, the items were modified to go along with the study (see Appendix B). In the Affective domain, two items were modified (Seems interested in school when background music is being played. Gets along with peers when background music is being played in the classroom) and one item was added to it (Gets along with teachers when music is being played.) In the Behavioral domain, two items were modified to (Participates in class discussions/activities when background music is being played. Is referred for out-of-class disciplinary procedures when background music is being played) and three items were added to it (Complete their task while listening to background music in the classroom. Produces positive behaviors while listening to background music in the classroom. Produces off-task behaviors while listening to background music in the classroom). In the cognitive domain, three items were modified (Persists on more challenging tasks while listening to background music in the classroom. Demonstrates appropriate effort for task while listening to background music in the classroom. Is self-motivated while listening to background music in the classroom) and one item was added (Tries to solve hard problems while listening to background music in the classroom). After the above alterations, I submitted the TERF-N to a Grade 7 female math teacher to pilot it. I hadn’t received any comment from her.

3. **Focus Group Interview Questions.** The focus group interview questions intended to collect data on the effectiveness of using Mozart music as background music in enhancing engagement from the students’ points of view (see Appendix C). The questions focused on students’ feedback on listening to soft background music.
during the learning process and its effect on them. The questions were derived from the research questions of this study that focused on the impact of Mozart music on affective, behavioral, and cognitive engagement. The advantage of the interview questions with the students is that the interviewer can ask the students to expand with further clarifications on their answers that are important for the study (Fraenkel et al., 2012). To administer the focus group interview questions, the students were selected from the observed ones during the study. So, six female students and six males from Grade 8 were interviewed. They were assigned a meeting time during school time after the study was over. They were seated in a group where all of them could hear the responses to the questions. They could offer additional comments to what they had said based on what they heard from the views and responses of the others. The focus group interview lasted one hour.

Piloting the instrument:

The focus group interview questions were piloted. I requested from the Head of the Department for Cycle III to mix a male and female Grade 7 classes together to do the pilot of the focus group interview questions. I piloted the interview questions with 35 students from Grade 7. The pilot went smoothly and no clarifications were needed.

4. Teachers’ Semi-Structured Interviews. The interview questions intended to collect data on the effectiveness of using Mozart music as background music in enhancing engagement from the teachers’ points of view (see Appendix D). The questions focused on teachers’ feedback on listening to soft music during the learning process and its effect on the students. The questions were derived from the
research questions of this study, which focused on the impact of Mozart music on affective, behavioral, and cognitive engagement. The advantage of the semi-structured interviews with the teachers is that the interviewer can get supplementary interpretations on teachers’ observations that grabbed their attention when administering the study (Fraenkel et al., 2012). After the three week time frame, each teacher of Grade 8 was given a time to be interviewed about the students and the study. The semi-structured interview with both teachers lasted one hour.

Piloting the instrument:

The semi-structured interview questions were piloted on a female Grade 7 Math teacher. I secured the permission of a female Grade 7 Math teacher and asked her to read the instrument thoroughly. Everything was clear and no comments were received from her.

5. Observations. The role that I took in this study was the role of a nonparticipant observer (see Appendix E). I chose the role of a nonparticipant observer where I won’t be interfering in the group that I was observing. The advantage of being a nonparticipant observer was that it helped in focusing the attention of the group on their activities without any interference from the observer (Fraenkel et al., 2012). The purpose of the observation was to monitor any change in students’ class behaviors while soft background music accompanied class work. To focus my observation on some students, I attended two math sessions, prior to the study, and observed all the students to select from them based on their achievement level and their disruptive behaviors. After my initial observation and discussion with the teachers, 12 students were selected to be observed. I observed and noted the
presence or absence of the off-task behaviors for 3 consecutive 1- minute intervals for each student during every math session of the study. The four behaviors that were observed were 1. Disturbs or distracts others such as tapping on the table. 2. Makes inappropriate physical contacts with peers such pinching or shoving. 3. Fidgeting, turning around or moving out of their seats. 4. Talking without permission or with friends. (Kaufman et al., 2014). Furthermore, the duration of the on-task behaviors (solving exercises) and the off-task behaviors (not solving exercises, wandering, looking away, or daydreaming) were timed. The duration of observed on-task behaviors was calculated by subtracting the minutes of off-task behaviors from the minutes observed (Kaufman et al., 2014).

Piloting the observation checklist:

It was piloted on a Grade 7 mixed class with males and females by a female Grade 7 Math teacher. The pilot went smoothly and no clarifications were needed.

**Procedures**

The study was conducted over a period of three weeks four days per week in math sessions. The study was carried out during the last month of the school year. After gaining the approval from the school, the teachers, and the parents, my study was conducted in one male and one female class. The two groups, males and females, had their normal session without soft background music accompanying their class work. On another day, they had their math session with soft background music, i.e., Mozart sonnet K.448 accompanying their class work. The study went on as such, one day without music (baseline stage) and the other session with the presence of Mozart music (treatment stage).
The teachers of the two sections taught the class normally and monitored how the students behaved during the session. To observe the off-task behaviors in every session, I observed the 12 students for 3 consecutive 1-minute intervals each, used a checklist to assure the presence or absence of the behaviors and timed them as well. During the last week, the SESQ-ENG was given to the students to fill out. On the same day, teachers were given the TERF-N to be filled. The results of these two instruments focused on measuring the three levels of engagement. When the study was completed, six female and six male students out of the 12 observed students were selected. The six students who showed the most disruptive behaviors during the study and based on their achievement level were selected to discuss focus group questions. Furthermore, the teachers were given an appointment by me to conduct an interview with them to discuss the effectiveness of Mozart music for affective, behavioral, and cognitive engagement of the students.

**Sampling**

Since the study focused on the impact of Mozart music on the three levels of students’ engagement, a nonrandom sampling method was used. The study was conducted in Grade 8, so my sampling was a convenient and purposive sample. A convenient sample, i.e., any group of students that was conveniently available to be studied, was used in the study since it was the available sample after getting the approved consent from their parents (Fraenkel et al., 2012). A purposive sample included individuals who had particular qualifications of some sort or were considered representative on the basis of previous evidences (Fraenkel et al., 2012). Purposive sampling was used to select students for both observations during the study and focus group interviews. Thus, students were chosen based on the following qualifications: being high, average and low achievers besides showing disruptive
behaviors in the class such as moving out of the seat, disturbing others, talking, or laughing (Kaufman, Larsen, Baroody, Curby, & Arby, 2014). As for the teachers, convenience and purposive sampling was used. It was a convenience sample, i.e., any group of teachers that was conveniently available, because of the available math teachers who taught Grade 8 (Fraenkel et al., 2012). A purposive sample included individuals who had particular qualifications, so teachers were picked to be math teachers having a B.A. in math education with at least 5 years of math teaching experience (Fraenkel et al., 2012). Teachers were a purposive sample due to the essentiality of having experienced teachers since they would be more relaxed with the students, and I would be able to observe them thoroughly during the study (McFerran, 2009). So, the sample was a convenience sample because they were available. It was purposive because the students were selected for the focus group interviews and observation while the teachers were selected for their teaching experience and educational level and could provide me with the needed context for playing background music and collecting data during math sessions.

**Reliability and Validity of the instruments**

Hart et al. (2011) had ensured reliability for both instruments SESQ-ENG and TERF-N. To identify the reliability of both, Cronbach’s coefficient alpha (a) was used (Cronbach & Shavelson, 2004). The reliability would be high whenever coefficient alpha (a) was closer to the detected scores. So, single coefficient examination was tracked for each domain of the SESQ-ENG and TERF-N. Results on SESQ-ENG had shown $.70 < a < .95$, and the results on TERF-N had shown good internal consistency ($\alpha = .83$) between the 10 items. Therefore, both instruments SESQ-ENG and TERF-N exhibited good reliability. In addition to the above, the focus group interview questions and the teachers’ semi-structured interview
questions had been piloted with the 14-year-old boy and the Grade 7 female math teacher for clarity and relevance.

Hart et al. (2011) had ensured the validity for both instruments SESQ-ENG and TERF-N. Moderate, significant correlations between the SESQ Affective and Behavioral Engagement composites and the overall TERF-N scores were evident. These correlations implied a relationship between how teachers and students viewed engagement.

As for the focus group interview questions and the teachers’ semi-structured interview questions (see Appendix C & D), they were derived from the research questions and the SESQ-ENG and TERF-N (Fraenkel et al., 2012; Hart et al., 2011) (see Appendix A & B). The observation checklist was based on previous research (Desroches et al., 2014; Dieringer & Porretta, 2013) (see Appendix E). Thus, they were valid based on the content-related evidence of validity. So, all the measures were valid and reliable and could be used in the study.

The following table also shows how items from the various instruments are related to the main research questions and to each other, which increases the validity or credibility of my instruments (see Appendix F).
Table 1: Validity and Reliability Table (a)

<table>
<thead>
<tr>
<th>Instrument 1 SESQ-ENG</th>
<th>Instrument 2 TERF-N</th>
<th>Instrument 3 Students’ Focus Group Questions</th>
<th>Instrument 4 Teachers’ Interviews</th>
<th>Instrument 5 Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive:</strong></td>
<td></td>
<td>C. 1. How do you think soft background music helps you complete your school work/ assignments? Why?</td>
<td>C. 1. How did you view students’ ability to perceive math concepts when Mozart background music is being played?</td>
<td>1. Disturbs or distracts others such as tapping on the table.</td>
</tr>
<tr>
<td><strong>Behavioral Effort &amp; Persistence:</strong></td>
<td>Behavioral:</td>
<td>Affective: 3. What does soft background music make you feel?</td>
<td>Affective: 3. How do you think Mozart background music affected students’ learning?</td>
<td>3. Fidgeting, turning around or moving out of their seats</td>
</tr>
<tr>
<td>When music is on, I stay on-task.</td>
<td>Participates in class discussions/activities when background music is being played.</td>
<td></td>
<td></td>
<td>4. Talking without permission or with friends.</td>
</tr>
<tr>
<td><strong>Affective (Liking for Learning):</strong></td>
<td>Affective:</td>
<td>1. How do you think soft background music helps you complete your school work/ assignments? Why?</td>
<td>Affective: 3. How do you think Mozart background music affected students’ learning?</td>
<td></td>
</tr>
</tbody>
</table>
Ethical Consideration

Ethical issues are very important in the research studies. Consent, privacy and confidentiality, and risks as related to benefits are three main features to be taken into account when dealing with the stakeholders (Robson, 2000). In order to carry out the ethical issues, the following procedures were followed. First, I sat for an exam to receive the Human Subject Protection training certificate. Then, I submitted all the applications to the Institutional Review Board (IRB) at LAU which were secured. After that, I met and gave the principal of the school a written formal request stating the purpose of the project. After an explanation of what the project was about, the principal granted me the approval and permission to start my study. Primarily, parents of all the students in Grade 8 received a consent form to approve and sign. The approved and signed consents from the parents were collected to ensure the voluntary participation of the students during the study. Then, teachers were chosen based on two things, taught subject (Math) and years of experience (at least 5 years of experience). They were also asked for their approvals to ensure their voluntary participation in the study. After the approvals, the sample was ready and the three-week time study began.

Data Analysis

All the questionnaire data were analyzed by calculating the number of students and responses. The results of the focus group interviews with the students and the interviews with the teachers helped in identifying if Mozart music had an effect on affective, behavioral, and cognitive engagement.

The items found in SESQ-ENG, addressed the three levels of student engagement as the students reported during the experiment. The cognitive domain focused on
whether the students were engaged in thinking or not. The behavioral domain focused on whether they were participating and being involved in the learning process as staying on-task or not. The affective domain focused on whether they liked being in school and studying and how they reacted with their peers (Hart et al., 2011). The data were converted into bar graphs. The teachers rated the three domains of each of the 12 students from their observations during the experiment using the TERF-N. The teachers took around 35 minutes to finish rating the TERF-N. The data from the TERF-N was converted into bar graphs. Then the results from both instruments, SESQ-ENG and TERF-N, were compared with each other.

The questions in the students’ focus group and teachers’ interviews tackled how Mozart music impacted the students’ engagement from both students’ points of view and the teachers’ observations. The focus group interview lasted one hour, and teachers’ interviews lasted one hour. During the interviews, the answers were recorded using a telephone and then were transcribed. It took me around 12 hours of transcription. I read the research questions and read the interview answers page by page and found the answers for each research question. Then I highlighted the answers and summarized them.

As for the observations, the students were observed using the ABAB method where the first day was considered the baseline for all the students where background music was not being played followed by a session where Mozart background music, K.448, was being played. Twelve students were selected to be observed based on their achievement level and their inappropriate behaviors. Each student was observed for 3 consecutive 1- minute intervals during each math session. The students were monitored for their four inappropriate behaviors, and I checked the frequency of the behaviors using the observation checklist (see Appendix E). The off-task behaviors
(not solving exercises, wandering, looking away, or daydreaming) were timed, and the duration of the on-task behaviors (solving exercises) was calculated by subtracting the minutes of off-task behaviors from the minutes observed (Kaufman et al., 2014). The procedure was repeated for four days in three consecutive weeks under the same conditions. Before each session, whether music was to be played or not, the teachers reminded the students of the classroom rules. At the end of the study, each student had data on the frequency of the inappropriate behaviors and the duration of the on-task behaviors. It took me 6 hours to convert all the data into charts. The frequency of the inappropriate behaviors of each student during the sessions without music was compared to the frequency of the inappropriate behaviors during the sessions with music. I highlighted the difference in the frequencies to examine if Mozart music helped in decreasing the inappropriate disruptive behaviors and calming them down or not. Then, the duration of the on-task behaviors during the sessions without music was compared to the duration of the on-task behaviors during the sessions with music. I also highlighted the highest and the lowest durations during both sessions with and without music to examine if Mozart music helped in increasing the on-task behaviors or not. The results were compared with each other.

The results from all the instruments were compared. I highlighted the common points of all the results that address the research questions. Then, I compiled them to tackle the research questions. However, the results couldn’t be generalized to other grades in other private schools since it was a study of perception. In studies of perception, contexts varied and the sample was small and non-random, i.e., not a representative sample.
Chapter Four

Data Results

This chapter presents the results of the data analyses related to the research questions. The data results were organized by each research questions under which relevant data from the five instruments were stated: the self-report questionnaire, teachers’ questionnaire, semi-structured interviews with the teachers, student focus groups interviews, and observations of students’ behaviors.

The first research question was: “What is the students and teachers’ perceived impact of Mozart music on students’ cognitive, behavioral, and affective engagement of Grade 8 math sessions?” Results showed the degree of the levels of engagement, affective, behavioral, and cognitive, as well as the change that this extra factor of Mozart background music brought to this engagement.

I. Student Engagement in the Schools Questionnaire-Engagement Composite (SESQ-ENG)

Affective Engagement

In the affective engagement factor (liking for learning), there were four of nine items that were related to the soft music condition. Only 10 males out of 18 and 9 females out of 20 think that music made them learn while 8 males and 9 females thought that music sometimes made them learn. However, almost all the students (17 males and 19 females) said that music helped them not get bored quickly while learning. Seventeen males versus 14 females liked learning when there was
soft background music like that of Mozart. These two items revealed a good indication how music affected learning. As for the last item, 13 males and 15 females indicated that the soft background music kept them in the mood of learning. Thus, more than half of the students (males or females) considered listening to soft music especially Mozart’s as conducive for learning.

Graph 5: SESQ-ENG Affective Engagement (Liking for Learning), males

Graph 6: SESQ-ENG Affective Engagement (Liking for Learning), females
Behavioral Engagement

In the behavior engagement factor (Effort and Persistence), there were three out of ten items that were related to the soft background music condition. More than half of the students believed that they could work better when music was on (14 males and 13 females). The same number of males and females (15 from each) showed that they stayed on-task when music was being played which indicated the effect of music on their effort and persistence while working. Fifteen males and 16 females were able to complete their tasks when the soft music was being played. The numbers showed that soft background music and that of Mozart’s specifically affected the behavioral engagement of the students. It also affected their effort and persistence in working, staying on-task and completing their tasks while learning (see Appendix G1 & G2).

Cognitive Engagement

Out of eleven items, three were related to the soft background music condition. The graphs (see Appendix G3 & G4) showed that both males and females showed similar levels of cognitive engagement in learning. When it came to music, 15 males versus 11 females could learn better with music. Twelve students from both genders could recall information faster when music was being played. Eleven males versus 9 females could memorize quickly when music was being played. This indicated that males rather than females preferred using music to enhance their cognitive engagement in class (see Appendix G3 & G4).
II. Teacher Engagement Report Form-New (TERF-N).

Affective Engagement

Out of the four items about affective engagement, three were related to the soft background music condition. Eighteen males and 16 females seemed to be interested in school when background music was being played. Sixteen males and 20 females got along with peers when background music was being played in the classroom. The last item was about getting along with teachers when music was being played. All the 18 males got along with their teacher; however, 12 females got along with their teacher and 8 females showed neutral connection with their teacher when music was on. This gave us an idea that the males and females were interested in school and got along well with peers and teachers when music was being played.

![Graph 5: TERF-N Affective Engagement, males](image-url)
Behavioral Engagement

There were seven items about behavioral engagement, five of which were related to the soft background music condition. In general, students showed disruptive and off-task behaviors, but while listening to music, males and females showed a decrease in these behaviors. Sixteen males and females participated in class discussions and activities when background music was being played. Two out of 18 males were referred for out-of-class disciplinary procedure when background music was being played. Six females out of 20 made some disturbances in class but were not referred for out-of-class disciplinary procedure when background music was being played. Eighteen males and 16 females tried to complete their task while listening to background music in the classroom. Sixteen males showed positive behaviors while listening to background music in the classroom whereas two males did not. As for females, 18 out of 20 showed
positive behaviors while two females neither behaved positively nor negatively while listening to background music in the classroom. Two males out of 18 showed off-task behaviors while listening to background music in the classroom, and 14 males didn’t show off-task behaviors in the classroom at all. Two females out of 20 showed such neutral reaction while 18 females didn’t show off-task behaviors in the classroom at all. Briefly, when background music was being played, most of the males and females had reacted positively by participating in activities, completing tasks, and behaving positively as indicated in the graphs. Moreover, out-of-class disciplinary procedures and off-task behaviors were low in number (see Appendix H1 & H2). This might indicate that soft background music affected the behavioral engagement of the students in the classroom positively.

**Cognitive Engagement**

All four items of cognitive engagement were related to the soft background music condition. Sixteen out of 18 males and 16 out of 20 females persisted on more challenging tasks while listening to background music in the classroom. Fourteen males and 18 females demonstrated great effort for task while listening to background music in the classroom. When the teachers asked the students if they were motivated while listening to background music in the classroom, sixteen males had revealed that they were while just 10 females responded positively. Even though 16 males and females tried to solve hard problems while listening to background music in the classroom, only two females didn’t try to solve the hard problems. When it came to cognitive engagement, soft background music in the classroom had positively affected the males more than the females. It gave them a push to persist on challenging tasks, do an appropriate effort, solve
hard problems and be self-motivated (see Appendix H3 & H4). The soft background music positively affected the males and females’ cognitive engagement.

III. Focus Group Interview Questions

The second research question was: “How do students perceive the effect of Mozart music as a strategy for student engagement on students’ engagement? The focus group interview questions provided students’ feedback on using soft background music and its effect on them during the learning process. So, six female and six male students divided as high, average, and low achievers from Grade 8 were interviewed.

Upon answering this question, it was noticed that there was a difference between the female and the male answers. The males were more into having Mozart music while solving problems during the math sessions at school and at home since it encouraged them, helped them to learn, and assisted them in concentrating. While some of the females revealed that Mozart music was beneficial to them, others declared that Mozart music had no effect on them but rather it had made them feel sleepy.

High Achievers

Both male and female high achievers agreed on the effect of Mozart music. Both had noticed the difference in the sessions when Mozart music was being played and when it was not, such as music helped the class to get quieter and more relaxed, helped them in focusing, concentrating, understanding the concepts quickly, learning the material better, participating with the teacher, and recalling the information at home. Both also pointed out that the music helped them in
solving hard problems, staying on-task for longer times, working better, and decreasing the times of daydreaming or mind wandering. The male high achievers drew attention to the importance of Mozart music in relaxation, keeping frustration and sadness away from them, staying in the mood of learning, never getting bored, concentrating on the activity they were doing and thus earning higher marks. One male was using the same sonnet K.448 at home while studying as another was using different sonnets of Mozart while doing his homework. However, one female said sometimes this Mozart sonnet had made her feel sleepy during the session.

**Average Achievers**

The average achievers had similar points of view as the high achievers. Both males and females revealed the importance of Mozart music in forgetting everything that had nothing to do with the learning process, paying attention, concentrating, participating more, and focusing on learning. They said that the math session passed quickly when music was being played. The average achievers were encouraged by the male high achievers to use it at home while solving problems. They had noticed that Mozart music helped them in staying on-task, decreasing the off-task periods, completing their work quickly, and trying their best to solve hard problems. One male average achiever said:” I had made a research about all the sonnets of Mozart, and I listened to these sonnets while doing my homework at home. I was very excited to use Mozart music since it encouraged me to concentrate and finish my work.” Those average achievers declared that they liked learning when music was being played. It helped keeping them in the mood of learning, getting quieter than before, solving hard problems, getting engaged in activities, and enjoying learning.
Low Achievers

There was a discrepancy between the male and female low achievers’ results. The male low achievers affirmed that Mozart music had helped the class to be quieter than usual thus having no disturbance from their classmates which helped them to focus on what they were doing, think better, understand the material better, and participate in the activities. They had noticed that in class they were trying their best to solve hard problems and answering them correctly while at home where Mozart music was not being played, they were trying their best but always solving them incorrectly. The male low achievers declared that this soft music encouraged them to solve problems, never get bored, feel relaxed, concentrate more on learning, and enjoy learning. Before the research was administered, they wished that math sessions would end quickly. But, when Mozart music was being played during math sessions, they got excited and enthusiastic to attend them. They also wanted to use this music in other sessions. Simply, Mozart music had made them get into the mood of learning, enjoy their time, and thus like math sessions.

On the other hand, the female low achievers believed that Mozart music had no effect on them. As for understanding the material better, this hadn’t changed them. There were concepts that they had grabbed and other concepts they hadn’t. One female said:” It had neither disturbed me nor made me learn better.” One declared that she didn’t like music, so she didn’t prefer to use music while doing her school work. The other stated that she always listened to music while studying, so this music had made no change on doing her school work. But, there was one thing that Mozart music had affected them which was staying on-task. This had helped them finish their work quickly. Although they said that Mozart
had no effect on them, they stated that it hadn’t made them feel bored in the math sessions. They felt relaxed and enthusiastic to go to math sessions where music was being played. It had kept them in the mood of learning.

Moreover, both males and females had expressed their wishes of applying this research in the middle of the school year and not towards the end of the school year where they were not concentrating anymore like before. One male average achiever asked: “Why hadn’t you come before during the school year?” A female high achiever said: “I wish you had used music during the school year and not at the end of it. I thought Mozart music would have benefited us if it was used during the school year.” They also had expressed a wish for using Mozart music in sessions with other subjects next year. A male low achiever said: “Could you tell the school to let us use Mozart music in the math sessions next year and in other subjects, too.” A female average achiever commented:” I would like to use Mozart in other subjects next year like in Physics, Chemistry, Biology, and English but definitely not with memorization subjects like History.”

To wrap up, Mozart music was a strategy that made them relax, focus, concentrate, and pay attention to what was being given in the session. This affected students’ behaviors where they became quieter than before, stayed on-task for longer periods, tried their best to solve problems, and completed their work quickly. It also affected their mood and thus they enjoyed learning. It also helped them recall the information quickly; both high and average achievers had commented that music helped them remember newly learned information. In this way, students’ achievement could be enhanced. Students positively perceived the use of Mozart music as a strategy of student engagement. Therefore, Mozart music seemed to be an effective strategy for improving students’ engagement.
IV. Teachers’ Semi-Structured Interviews.

The last research question was: “How do teachers perceive the effect of Mozart music as a strategy for student engagement on students’ engagement?

The questions of the semi-structured interview focused on teachers’ feedback on using soft background music and its effect on the students during the learning process. Two teachers, a male and a female one, were interviewed.

Cognitive Engagement

The male and the female teacher responded differently when it came to students’ cognitive engagement. The male teacher indicated that the students became more helpful and collaborative with each other when music was being played in the session. They had developed collective spirit and became able to control their behaviors, pay attention, concentrate more, and finish their class work quickly. They were able to stay on-task for longer periods of time and solve more problems than before. However, the female teacher said that completing the class work depended on the ability of each student. Some got enthusiastic to focus and complete their work since they had the ability to focus on both music and learning the material at the same time while there were female students who couldn’t focus on both music and learning. So, either they have focused on music or on learning.

As for perceiving math concepts, the two teachers had different points of view. The male teacher pointed out that Mozart music hadn’t affected the students’ ability to perceive math concepts better than without music, “Soft background music helped the students to concentrate and pay attention but perceive math concept faster that was not noticed in my class.” However, the female teacher
pointed out that Mozart music had affected the students’ ability to perceive the geometrical math concepts rather than algebraic concepts. In geometry sessions, the females perceived the math concepts faster and participated with the teacher because every geometrical problem had a new idea. So, the students increased their concentration on figuring out what was new. But in algebra sessions, there was a lot of repetition which made them feel sleepy especially that the sessions were at the end of the school day.

Both teachers had the same point of view about students’ improvement. The female teacher commented: “Upon correcting the quizzes, many females got higher marks.” Some students got higher marks than before while others had shown stability in their level. Both pointed out that if Mozart music had been used for a longer period of time and not towards the end of the school year, it would have shown better results on the achievement level. It needed at least a semester to notice difference in the grades.

**Behavioral Engagement**

Both teachers noticed an increase in students’ concentration, participation and periods of the on-task activities. The male teacher noted that the students’ disturbing behaviors had decreased a lot when the session had soft background music. They became quieter which helped them in focusing, concentrating, solving problems, and participating with the teacher. He commented: “To my astonishment, I noticed how the students calmed down when the session had background music. They also concentrated and participated more than usual.” The female teacher also noticed that students were calmer during math sessions. But, she was quite aware that students’ participation differed in geometry sessions than algebra ones. In geometry sessions, the participation increased
since they found that every exercise was a new challenge for them to find out the
new ideas. So, Mozart music helped them in concentrating on the new ideas in
the exercises, staying on-task for longer periods, and participating with the
teacher.

**Affective Engagement**

Both teachers also noticed the enthusiasm of the students when they knew that
the session had music. Both stated that Mozart music had kept the students in the
mood of learning and had made them get engaged in the activities. The male
teacher had commented that there had been an improvement in students’
participation and engagement in the activities, which they got excited and looked
forward to study math when music was being played in the session. He noticed
that there was an increase in the students’ enthusiasm during the activities. They
had this feeling of challenge during the session, which made them get encouraged
and enthusiastic. The female teacher said: “The females had to concentrate on the
material when music was being played. So, it became a challenge for them to
focus on what they were doing, i.e., understanding the material or solving
exercises. Although few had felt sleepy, others got the energy to focus and stay in
the mood of learning.” She added that during sessions, which had new ideas, the
students got excited.

Upon asking both teachers if they liked to use Mozart music as a strategy for
student engagement in other grades, both teachers chose Grade 9, which they
taught,” The students suffer from stress and pressure due to the presence of the
official exams. So, Mozart music would be a helpful strategy to use with the 9th
graders to decrease the stress and pressure they would feel all year long.” Thus,
Mozart could be used to enhance relaxation, make the students concentrate, work
hard, stay in the mood of learning in order to learn better and thus increase their achievement.

To wrap up, both teachers revealed that Mozart music had helped the students a lot during the last three weeks of the school year where students’ concentration was very low. They noticed that the three levels of student engagement had increased during this critical period of time. Mozart music showed its effectiveness in helping the students to become quieter and encouraged them to stay on-task. So, it was a strategy that helped the students to relax, focus, and concentrate. Not only the students but also the teachers enjoyed the sessions with music and preferred to use Mozart music in other sections, too. Therefore, from teachers’ point of view, Mozart music seemed to be an effective strategy for improving students’ engagement.

V. Observations

The observation supported all the above instruments and provided data to address the three research questions. It was used to monitor any change in students’ class behaviors while soft background music accompanied class work. It was also used to record the frequency of the off-task behaviors and the duration of the on-task behaviors. Each math session lasted for 45 minutes. Each of the twelve students was observed for 3 consecutive 1-minute intervals during each math session. So, the observation lasted for 36 minutes each session. The duration of the observed on-task behaviors was calculated by subtracting the minutes of off-task behaviors from the minutes observed (Kaufman et al., 2014). After the observation period had finished, out of the twelve observed students, only six female and six male students were chosen for the focus group interview based on their inappropriate disruptive behaviors during the study and their
achievement level. So, they were divided as two high, average, and low achievers from each class.

**Observed Behaviors**

As results from SESQ-ENG, TERF-N, students’ focus group interview, and teachers’ semi-structured interviews showed that when music was being played during the math session, the class became quieter and a decrease in students’ inappropriate behaviors was noticed. The observation technique supported this result by counting the frequency of the inappropriate observed behaviors when each student was observed for 3 consecutive 1-minute intervals during every math sessions.

**High Achievers**

In the sessions where music was not being played, the disruptive behaviors of the male high achievers were frequently high. However, during the sessions where music was being played, a great decline in these behaviors was noticed. For example, in session 9 where music was not being played, male 2 talked three times, turned around and moved from his seat two times, and distracted or disturbed others one time. On the following day, session 10 where music was being played, male 2 didn’t do any of these behaviors; instead he was concentrating, working on his class work, and participating with the teacher all the session. Another example was male 4 who talked three times and turned around twice in session 3 where music was not being played yet talked only once in session 4, where music was being played (see Appendix I).

The same thing was noticed for the female high achievers. During the sessions where music was not being played, the disruptive behaviors of the female high
achievers were commonly high. However, during the sessions where music was being played, a decline in the students’ behaviors as well as absence to some behaviors was observed. For instance, female 2 in session 1 where music was not being played talked twice while in session 3 where music was being played, she worked quietly, concentrated and participated with the teacher. Another example was female 3 who talked with her friends and turned around during the first three sessions without music and showed a total absence for these behaviors during the first three sessions with music (see Appendix J).

### Observed Behaviors Chart

**Graph 2: Female 2 Disruptive Behaviors**

Average Achievers

As for the male average achievers, the disruptive behaviors had declined. For example, male 3 in session 3 where music was not being played talked and turned around twice while in session 4 where music was being played, he talked only once during the session. Another example was male 5 who was an active student. In session 5 where music was not being played, he talked three times, disturbed his friends by making noise with his chair twice, made inappropriate physical contact with his peer (slapping his peer’s neck) twice, and moved out of his seat.
these behaviors had declined the following session when music was being played to a point where he turned around and talked with his friend only once (see Appendix I).

The disruptive behaviors of the female average achievers had declined in the sessions where music was being played. For instance, in session 7 where music was not being played, female 5 talked three times, turned around twice, and disturbed her friends by tapping with her pen on the table twice. While the following session where music was being played, she talked only once with her friend as the other behaviors disappeared and participated in the class. Another example was female 6 who talked with her friend three times, turned around once and disturbed her friends by tapping with the ruler on the table once in session 7 where music was not being played. Then the following session where music was being played, she only talked once while the other behaviors disappeared, and an increase in her concentration and participation was noticed (see Appendix J).
For the male low achievers, the disruptive behaviors had declined. For example, in session 5 where music was not being played, male 1 turned around and swung on the chair three times, talked with his friends twice, and disturbed his friends once by making noises by moving the table. In session 6 where music was being played, male 1 swung and talked with his friend one time while he didn’t disturb his friends since he focused on his class work and participated with the teacher. Another example was male 6 who moved a lot in the class. In session 9 where music was not being played, male 6 was very active where he moved out of his seat, swung and turned around and talked with his friends three times. He also disturbed his friends by making noise by moving his table besides making inappropriate physical contact with his peer where he put water in the back of his friend sitting in front of him. But, in the following session where music was being played, all the disturbing behaviors, the distractions, and the inappropriate behaviors disappeared and his talking declined (see Appendix I).

As for the female low achievers, it was clear that the disruptive behaviors had declined in the sessions where music was being played. For example, in session 9 where music was not being played, female 1 talked with her friends three times, moved out of her seat without permission twice, and distracted her friends by mocking one of her friends in a loud voice once. Yet, in the following session where music was being played, she turned around and talked with her friend once while no distraction was done. Another example was female 4 who talked a lot. In session 7 where music was not being played, female 4 talked with her friend three times, disturbed her friends by tapping on the table with pen twice, and moved out of her seat once. However, in the following session where music was being played, she only talked once with her friends without making any
disturbance or moving out with permission. The observation of the behaviors of the students had shown a decline of the students’ inappropriate behaviors supported by the other instruments, too (see Appendix J).

**Duration of the On-Task/ Off-Task Behaviors**

As results from SESQ-ENG, TERF-N, students’ focus group interview, and teachers’ semi-structured interviews showed that Mozart music encouraged the students to stay on-task and solve problems, the class observation technique supported this result, too. It was supported by calculating the duration of the on-task and the off-task behaviors of the students.

**Males**

The duration of the on-task behaviors of the males differed from one student to another based on their achievement level and on their movement. The duration of the on-task behaviors for high achievers ranged between 2.5 to 3 minutes per the session where music was being played while it ranged between 1 to 2 minutes per the session where music was not being played. For example, the highest duration during a session where music was being played for male 2 was 3 minutes while the highest during a session where music was not being played was 2 minutes.
Male 4 was another example where his highest duration during a session where music was being played was 2.5 minutes while his highest during a session where music was not being played was 2 minutes (see Appendix K). This indicated that Mozart music enhanced the on-task behaviors for high achievers.

Moreover, the duration of the on-task behaviors for average achievers ranged between 1.5 to 2.5 minutes per the session where music was being played while it ranged between 0.5 to 2 minutes per the session where music was not being played. For instance, the highest duration during a session where music was being played for male 3 was 2.5 minutes while the highest during a session where music was not being played was 2 minutes. Male 5 was another example where his highest on-task duration during a session where music was being played was 2.5 minutes while his highest during a session where music was not being played was 1 minute (see Appendix K). This showed that Mozart music enhanced the on-task behaviors for average achievers.

Furthermore, the duration of the on-task behaviors for low achievers ranged between 2 to 2.5 minutes per the session where music was being played while it ranged between 0 to 1.5 minutes per the session where music was not being
played. For instance, the highest duration during a session where music was being played for male 1 was 2.5 minutes while the highest during a session where music was not being played was 1.5 minutes. Male 6 was another example where his highest on-task duration during a session where music was being played was 2.5 minutes while his highest during a session where music was not being played was 1.5 minutes (see Appendix K). This showed that Mozart music enhanced the on-task behaviors for low achievers, too.

Females

As for the females, the duration of their on-task behaviors differed from one student to another based on their achievement level and on their movement. The duration of the on-task behaviors for high achievers ranged between 2.5 to 3 minutes per session where music was being played while it ranged between 1.5 to 2.5 minutes per session where music was not being played. For example, the highest duration during a session where music was being played for female 2 was 3 minutes while the highest during a session where music was not being played was 2.5 minutes. Female 3 was another example where her highest on-task duration during a session where music was being played was 3 minutes while her highest during a session where music was not being played was 2 minutes (see Appendix L). This indicated that Mozart music enhanced the on-task behaviors for female high achievers.

In addition, the duration of the on-task behaviors for female average achievers ranged between 2 to 2.5 minutes per the session where music was being played while it ranged between 1.5 to 2 minutes per the session where music was not being played. For example, the highest duration during a session where music was being played for female 5 was 2.5 minutes while the highest during a session
where music was not being played was 2 minutes. Female 6 was another example where her highest on-task duration during a session where music was being played was 2.5 minutes while her highest during a session where music was not being played was 2 minutes (see Appendix L). This indicated that Mozart music boosted the on-task behaviors for female average achievers.

Furthermore, the duration of the on-task behaviors for low achievers ranged between 2 to 2.5 minutes per the session where music was being played while it ranged between 1 to 1.5 minutes per the session where music was not being played. For example, the highest duration during a session where music was being played for female 1 was 2.5 minutes while the highest during a session where music was not being played was 1.5 minutes. Female 4 was another example where her highest on-task duration during a session where music was being played was 2.5 minutes while her highest during a session where music was not being played was 2 minutes (see Appendix L). This indicated that Mozart music enhanced the on-task behaviors for low achievers, too.

[Graph 1: Female 1 On-Task Behaviors]

In conclusion, based on the results of the observation and the results of the other instruments, Mozart music seemed to increase the duration of the on-task
behaviors for high, average, and low male and female achievers. Students’ relaxation increased their concentration, which in return enhanced their on-task behaviors and thus helped them learn better. But, what was clear was that the Mozart music increased the duration of the on-task behaviors and decreased the duration of off-task behaviors for the male students more than the females. So, the effect of Mozart music was larger on males than on females in terms of increasing the on-task behaviors and decreasing the off-task behaviors.

**Findings of the research**

Mozart music, as soft background music, was considered an effective strategy for developing the affective, behavioral, and cognitive levels of student engagement. On the affective level, Mozart music encouraged and motivated the students to attend the math sessions. It also helped them get into the mood of learning and enjoy their time. However, males were more affected than the females on the affective level. On the behavioral level, males and females had been affected positively by Mozart music as evident in an increase in their class work, on-task behaviors, completion of their work, and participation in class. It also played an important role in decreasing the inappropriate disruptive behaviors and the off-task behaviors while increasing the duration of the on-task behaviors. It was noted that this soft background music affected the males more than the females in terms of decreasing the inappropriate behaviors and increasing the duration of the on-task behaviors. As for the cognitive engagement, Mozart music had enhanced the males’ engagement more than the females’ engagement. All the males were challenged by the music to concentrate and solve hard problems where the females’ concentration to solve hard problem was based on the potentials of each female. All the males got into the mood of learning, stayed
on-task and enjoyed their math sessions; some of the females had done the same. The students along with the teachers perceived Mozart music as a background music strategy for relaxation that helped the students become quieter. This increased the students’ concentration, the duration of staying on-task, as well as their ability to solve more problems and to complete their work. It was also a strategy to increase the students’ participation and their mood to work and learn. Mozart music helped the students enjoy their learning time and increased their achievement level. Finally, it could be used as a technique to help in recalling new information, although this was useful for males more than females.
Chapter Five

Discussion

This chapter discusses the results of the data in relation to the reviewed literature to interpret the significance of the findings. The results of this research focused on students and teachers’ perceptions about the impact of Mozart background music on the three levels of student engagement, cognitive, behavioral and emotional engagement of Grade 8 students in math sessions.

Affective Engagement

On the affective level of engagement, results showed the enthusiasm and motivation of all the students to attend the math sessions while Mozart background music was playing. Surujlal (2013) had shown in his research that background music enlarged the periods of concentrated attention during activities thus improving attention and motivation. Since the structure of Mozart music resembled the structures of many mathematical concepts, the students’ brain function increased which raised the students’ interest (An et al., 2013, Greenop & Kan, 2007; Rickson, 2006). Pintrich’s theory of motivation (2003) showed that higher levels of interest made the students motivated. The results showed that during the sessions where Mozart background music was being played, students had a sense of challenge while solving exercises. Ryan and Deci (2000) also pointed out that students were motivated by interesting activities that had uniqueness or challenge. So, Mozart music raised students’ interests and feeling of challenge.
In addition, results indicated that Mozart music helped the students to concentrate, get into the mood of learning and enjoy their time. This was supported by Lazar’s theory of music (2002) which indicated that music helped in sustaining the attention of the students and in delivering a motivational milieu for better learning. Evans (n.d.) had also designated that music created a positive attitude and atmosphere during the activities in the classroom that aided students to be more motivated.

**Behavioral Engagement**

On the behavioral level of engagement, results showed that Mozart music positively affected the students’ behavioral engagement. One of its effects was increasing the students’ class work and on-task behavior, which was supported by the research of Crenc et al. (2006). The study of Crenc et al. (2006) showed that Mozart music was beneficial for students with hyperactivity in decreasing their impulsivity and focusing their attention thus increasing their performance and learning. This effect was supported by another research finding that soft background music decreased disruptive behaviors such as disturbing others and enhanced desirable behaviors such as on-task behaviors, following rules, and engagement (Desrochers et al., 2014).

Another effect of Mozart music on the students’ behavioral engagement was the ability to complete their work. This result was supported by Dunton’s research (2006), which showed that the ability of the students to complete their tasks was improved when background music was played. An additional effect of Mozart music was the increase in students’ participation in class. Evans (n.d.) had indicated that music assisted students in being more motivated thus increasing
their participation level. Desrochers et al. (2014) also found that soft background music enhanced students’ participation during the activities.

Another effect of Mozart music on students’ behavioral engagement was the decline of the inappropriate behaviors and off-task behaviors. This was in line with Desrochers et al.’s research (2014) that showed the effect of background music on lessening disruptive behaviors such as disturbing and distracting others as well as by the research of Hallam and Price (1998) which indicated that background music reduced anxiety and impulsive behaviors. Crenc et al. (2006) specifically pointed out that Mozart music was useful for students with hyperactivity in decreasing their impulsivity.

In addition to the above, Dieringer and Porretta (2013) had specified in their study that music decreased off-task behaviors such as wandering, looking away, and disruptive behaviors. As there was a decrease in the disruptive behaviors and the off-task behaviors, the on-task behaviors and their duration increased. Surujlal (2013) supported this result in his study when he mentioned that background music extended the periods of concentrated attention during activities. It was also supported in a study related to Kaufman et al. (2014) who pointed out gender differences. The duration of the on-task behaviors had increased for the males more than the females due to the higher decrease in the males’ disruptive behaviors.
Cognitive Engagement

On the cognitive level of engagement, results showed that Mozart music had affected the cognitive engagement of the males more than the females. All the males were motivated, encouraged, and challenged to persist and stay on-task to complete their work; however, some of the females had shown the same result. It was based on the individual effort of the female to concentrate, persist, and stay on-task to complete her work. There were many explanations for such result. Some of the females had complained of feeling sleepy because the music was soft and all the math sessions for the females were towards the end of the day when they were tired, sleepy, hungry, and out of energy. Some had felt that Mozart music was more as a distraction to them because they couldn’t concentrate on their learning when music was being played. This was supported by many previous studies like McBride’s (2002) where some students claimed that they were able to learn with background music while others said that it was more of a distraction. Many prior studies had focused on how students improved their accuracy in solving math calculation tests while listening to Mozart sonnets whereas others couldn’t prove this (Greenop & Kan, 2007; Rickson, 2006; Abikoff & Courtney, 1996).

Despite this gender discrepancy, findings indicate that students’ concentration had been enhanced upon hearing the soft background music. This increase in concentration had affected their on-task behaviors, completion of work, as well as learning and achievement. This was supported by various studies which indicated that background music assisted in improving attention (Surujlal, 2013; McFerran, 2009) and sustaining the attention of the students (Dartt, 2009; Lazar, 2002). To be more specific, this result was in line with the results of Crenc et al.
(2006) as well as Hodges and O’Connell (2005) who had shown in their studies that Mozart background music focused the students’ attention, decreased their impulsivity, and increased their achievement.

**Mozart as a quarto-strategy of engagement**

Findings showed that both students and teachers perceived Mozart music as a quarto-strategy that enhanced students’ engagement. Playing Mozart music as background music was considered as a relaxation strategy, a memory technique, a concentration technique, and a mood regulator technique. Mozart music was shown to be a method of relaxation or an accelerator in calming down the students that helped in reducing their stress. This was supported by a recent study of Tan et al. (2015) who found that music reduced the heart rate and the blood pressure of the coronary heart patients. In this way, music decreased anxiety, stress, and pain. Another study by Lemmer (2008) correlated with the results of my study where he revealed that Mozart music could be used to lower the heart rate and heart beats of rats and thus soothe them down. In addition, Mozart music was shown to be a memory technique to enhance recalling information for males more than females. This result was supported by many studies that indicated music as a mnemonic device to aid students in remembering new information (Surujlal, 2013; Lazar, 2002; Gardner, 1983) and in retrieving information (Brewer, 1995a). Moreover, Mozart music was shown to be a concentration technique that helped students in focusing attention. It was supported by many studies such as that of Crenc et al. (2006) who had stated that Mozart music was beneficial for focusing students’ attention, improving their attention (Surujlal, 2013), and sustaining it (Dartt, 2009; Lazar, 2002). This increased the students’ duration of staying on-task as well as their ability to solve more problems and to
complete their work (Dunton, 2006). Finally, Mozart music was shown to be a mood regulator technique that helped students in increasing their mood to work and learn thus encouraging them to enjoy learning. This result correlated with that of Evans’s study (n.d.) that revealed that music created a positive attitude and atmosphere during the activities, which enhanced students’ participation in the classroom. When students became interested in the activities they were doing, they were more self-motivated which lead them to enjoy learning, get better learning and thus attain higher achievement (Pintrich, 2003; Ryan & Deci, 2000, Deci & Ryan, 2008). Hence, Mozart music was considered as a quarto-strategy that enhance students’ engagement.

To sum up, soft classical background music in class, specifically Mozart music had an influence on the three levels of students’ engagement. On the affective level, Mozart music motivated students and gave them enthusiasm to learn math. On the behavioral level, Mozart music was useful in increasing students’ class work, on-task behaviors, completion of their work, enrichment of their participation in class as well as in decreasing the inappropriate behaviors and the off-task behaviors of the students. On the cognitive level, Mozart music enhanced students’ concentration, motivated, encouraged, and challenged them to persist and stay on-task to complete their work. Finally, Mozart music was perceived as a relaxation strategy, a memory technique, a concentration technique, and a mood regulator technique. These results added to previous research about music and student engagement in the educational field. This study was regarded as a guide for teachers which could help them in enhancing students’ engagement. It was also considered to be an easy strategy and a beneficial way to implement in the class with the students.
Chapter Six

Conclusion

This chapter presents a conclusion of the study, the limitations that were distinguished in the study, and some suggestions for further research.

Conclusion

The research questions of this study tackled the effect of Mozart background music on the three levels of students’ engagement. After the students of Grade 8 listened to Mozart background music in math sessions for a period of 3 weeks for 4 days per week, the results showed that it was an efficient strategy for enhancing the affective, behavioral, and cognitive levels of student engagement. It encouraged and motivated students to learn. It also increased students’ participation and on-task behaviors and decreased the inappropriate disruptive and off-task behaviors. In addition, Mozart background music challenged the students to solve hard problems. As for the students and teachers’ perceptions, Mozart music was perceived as a quarto-strategy where it could be used as a relaxation strategy, a memory technique, a concentration technique, and a mood regulator technique in the class. Thus, Mozart music had a positive effect on all the levels of engagement.
Limitations

There were several limitations in this research study that should be noted. One of the major limitations of this research study was implementing it during the last month of the school year. This was not the suitable period of time to implement it because the students were already out of energy and bored with school to an extent that they started to refuse writing on their copybooks or even correcting their homework. Another limitation was conducting the study for three weeks. To have more accurate results, especially related to cognitive and emotional engagement as well as achievement, the study should be implemented for at least a whole semester. One more limitation was related to the sampling. The sampling was limited to a definite age group, grade level and geographical area coverage. It was limited to engaging two teachers only. It was also limited to having separated gender classes. A final limitation to take into consideration was the sample size which may be low, 18 males and 20 females.

Suggestions for further research

In the present study, the soft background music that was used was that of Mozart. But, this type of music was not familiar to the sample used in the study. So, one avenue for potential future research lies in implementing the research study using a more common genre of Lebanese soft classical music that is familiar to our students. In this way, students may consider it a great help and results may differ. A final suggestion is to implement the research study in a mixed class where it has males and females. In this way, the results of the study regarding the three levels of engagement especially on the behavioral and emotional level may be different.
References


Evans, K. E. (n.d.) How does integrating music and movement in a kindergarten classroom affect student achievement in math. Retrieved from [http://gothenburg.k12.ne.us/StaffInfoPg/Papers/J_Evans.pdf](http://gothenburg.k12.ne.us/StaffInfoPg/Papers/J_Evans.pdf)


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Appendices
Appendix A

Instrument 1: Student Engagement in the Schools Questionnaire-Engagement Composite (SESEQ-ENG) is a self-report measurement that obtains information from the student’s perspective related to both the indicators and facilitators of engagement. It is composed of five factors (Affective Engagement: Liking for Learning; Affective Engagement: Liking for School; Behavioral Engagement: Effort and Persistence; Behavioral Engagement: Extracurricular Activities; and Cognitive Engagement). Students respond according to a Likert-type scale of 1-5 (e.g., 1 = never, 5 = always) (Hart, Stewart & Jimerson, 2011)

Factor Loadings for the SESEQ-ENG Items

1 Affective Liking for Learning:
I am very interested in learning.
I think what we are learning in school is interesting. (a3) .85 .74
I like what I am learning in school. (a5) .79 .70
I enjoy learning new things in class. (a7) .52 .61
I think learning is boring. (a9R)*** .39

2 Affective Liking for School:
I like my school. (a11) .92 .79
I am proud to be at this school. (a13) .87 .78
Most mornings, I look forward to going to school. (a15) .34 .36
I am happy to be at this school. (a17) .77 .77
I try hard to do well in school. (a2) .45 .50
In class, I work as hard as I can. (a4) .45 .53

3 Behavior Effort & Persist.:
When I’m in class, I participate in class activities. (a6) .32 .40
I pay attention in class. (a8) .63 .55
When I’m in class, I just act like I’m working. (a10R) .66 .45
In school, I do just enough to get by. (a12R) .62 .41
When I’m in class, my mind wanders. (a14R) .42 .19
If I have trouble understanding a problem, I go over it again until I understand it. (a16) .50 .36
When I run into a difficult homework problem, I keep working at it until I think I’ve solved it. (a18) .52 .52
4 Behavior Extracurricular:

I am an active participant of school activities such as sport day and school picnic. (a20) .72 .59
I volunteer to help with school activities such as sport day and parent day. (a22) .82 .71
I take an active role in extracurricular activities in my school. (a24) .59 .59
When I study, I try to understand the material better by relating it to things I already know. (b1) .59 .47
When I study, I figure out how the information might be useful in the real world. (b2) .58 .38
When learning new information, I try to put the ideas in my own words. (b3) .62 .52
When I study, I try to connect what I am learning with my own experiences. (b4) .76 .57

5 Cognitive:

I make up my own examples to help me understand the important concepts I learn from school. (b5) .62 .51
When learning things for school, I try to see how they fit together with other things I already know. (b6) .70 .53
When learning things for school, I often try to associate them with what I learnt in other classes about the same or similar things. (b7)
I try to see the similarities and differences between things I am learning for school and things I know already. (b8)
I try to understand how the things I learn in school fit together with each other. (b9) .73 .62
I try to match what I already know with things I am trying to learn for school. (b10) .81 .67
I try to think through topics and decide what I’m supposed to learn from them, rather than studying topics by just reading them over. (b11)
When studying, I try to combine different pieces of information from course material in new ways. (b12) .70 .65

*Note.* ***Items that cross-loaded. Both items loaded on Factors 1 & 3. Values***

*(SESQ-ENG Modified to this study)*

**Factor Loadings for the SESQ-ENG Items**

1 **Affective Liking for Learning:**

I am very interested in learning.
I think what we are learning in school is interesting. (a3) .85 .74
I like what I am learning in school. (a5) .79 .70
I enjoy learning new things in class. (a7) .52 .61
I think learning is boring. (a9R)*** .39

*I think music makes me learn.*

When music is on, I get bored quickly.
I like learning when there is soft background music.
Soft background music keeps me in the mood of learning.

2 Affective Liking for School:

I like my school. (a11) .92 .79
I am proud to be at this school. (a13) .87 .78
Most mornings, I look forward to going to school. (a15) .34 .36
I am happy to be at this school. (a17) .77 .77
I try hard to do well in school. (a2) .45 .50
In class, I work as hard as I can. (a4) .45 .53

Music motivates me to go to school.

3 Behavior Effort & Persist.:

When I’m in class, I participate in class activities. (a6) .32 .40
I pay attention in class. (a8) .63 .55
When I’m in class, I just act like I’m working. (a10R) .66 .45
In school, I do just enough to get by. (a12R) .62 .41
When I’m in class, my mind wanders. (a14R) .42 .19
If I have trouble understanding a problem, I go over it again until I understand it. (a16) .50 .36
When I run into a difficult homework problem, I keep working at it until I think I’ve solved it. (a18) .52 .52

When music is on, I work better.
When music is on, I stay on-task.
I complete my tasks when there is soft music.

4 Behavior Extracurricular:

I am an active participant of school activities such as sport day and school picnic. (a20) .72 .59
I volunteer to help with school activities such as sport day and parent day. (a22) .82 .71
I take an active role in extracurricular activities in my school. (a24) .59 .59
When I study, I try to understand the material better by relating it to things I already know. (b1) .59 .47
When I study, I figure out how the information might be useful in the real world. (b2) .58 .38
When learning new information, I try to put the ideas in my own words. (b3) .62 .52
When I study, I try to connect what I am learning with my own experiences. (b4) .76 .57

5 Cognitive:

I make up my own examples to help me understand the important concepts I learn from school. (b5) .62 .51
When learning things for school, I try to see how they fit together with other things I
already know. (b6) .70 .53
When learning things for school, I often try to associate them with what I learnt in other classes about the same or similar things. (b7)
I try to see the similarities and differences between things I am learning for school and things I know already. (b8)
I try to understand how the things I learn in school fit together with each other. (b9) .73 .62
I try to match what I already know with things I am trying to learn for school. (b10) .81 .67
I try to think through topics and decide what I’m supposed to learn from them, rather than studying topics by just reading them over. (b11)
When studying, I try to combine different pieces of information from course material in new ways. (b12) .70 .65

*When music is on, I learn better.*
*When music is on, I can recall information faster.*
*When music is on, I can memorize quickly.*
Appendix B

Instrument 2: Teacher Engagement Report Form (TERF-N). The TERF-N is a 10-item, paper-and-pencil chart, where the teacher fills in 10 boxes, one for each item, per student. Each item is completed using a Likert type scale of 1-5 (e.g., 1 = strongly disagree, 5 = strongly agree). The TERF-N requires approximately 45 minutes to complete for 30 students. The questionnaire items address aspects of affective, behavioral, and cognitive engagement. (Hart, Stewart & Jimerson, 2011)

Factor Loadings for the TERF-N Items

<table>
<thead>
<tr>
<th>ITEM &amp; HYPOTHESIZED DOMAIN</th>
<th>FACTOR LOADINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AFFECTIVE</strong></td>
<td></td>
</tr>
<tr>
<td>Seems interested in school</td>
<td>.89 .92</td>
</tr>
<tr>
<td>Gets along with peers</td>
<td>.56 .51</td>
</tr>
<tr>
<td>Seems to care about grades</td>
<td>.94 .90</td>
</tr>
<tr>
<td><strong>BEHAVIORAL</strong></td>
<td></td>
</tr>
<tr>
<td>Has good attendance</td>
<td>.50 .97</td>
</tr>
<tr>
<td>Participates in class discussions/activities</td>
<td>.74 .70</td>
</tr>
<tr>
<td>Is referred for out-of-class disciplinary procedures</td>
<td>-.29 .54</td>
</tr>
<tr>
<td>Is respectful to staff</td>
<td>.60 .62</td>
</tr>
<tr>
<td><strong>COGNITIVE</strong></td>
<td></td>
</tr>
<tr>
<td>Persists on more challenging tasks</td>
<td>.23 .87</td>
</tr>
<tr>
<td>Demonstrates appropriate effort for task</td>
<td>.91 .89</td>
</tr>
<tr>
<td>Is self-motivated</td>
<td>.92 .91</td>
</tr>
</tbody>
</table>

Note. The average communality for the TERF-N = .60

*(TERF-N Modified to this study)*

Factor Loadings for the TERF-N Items

<table>
<thead>
<tr>
<th>ITEM &amp; HYPOTHESIZED DOMAIN</th>
<th>FACTOR LOADINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AFFECTIVE</strong></td>
<td></td>
</tr>
<tr>
<td>Seems interested in school when background music is being played</td>
<td>.87</td>
</tr>
<tr>
<td>Gets along with peers when background music is being played in the classroom</td>
<td>.91</td>
</tr>
<tr>
<td>Seems to care about grades</td>
<td></td>
</tr>
<tr>
<td><strong>BEHAVIORAL</strong></td>
<td></td>
</tr>
<tr>
<td>Has good attendance</td>
<td>.50 .97</td>
</tr>
</tbody>
</table>
Participates in class discussions/activities when background music is being played.
Is referred for out-of-class disciplinary procedures when background music is being played.
Is respectful to staff.
Is responsible to staff.
Complete their task while listening to background music in the classroom.
Produces positive behaviors while listening to background music in the classroom.
Produces off-task behaviors while listening to background music in the classroom.

**COGNITIVE**
Persists on more challenging tasks while listening to background music in the classroom.
Demonstrates appropriate effort for task while listening to background music in the classroom.
Is self-motivated while listening to background music in the classroom.
Tries to solve hard problems while listening to background music in the classroom.
Appendix C

**Instrument 3: Focus Group Questions.** These questions intend to know the effectiveness of using Mozart music as background music in enhancing engagement from students’ points of view.

**The Focus Group Questions:**

1. How do you think soft background music helps you complete your school work/assignments? Why?
2. What do you think about having soft background music while you do your school work? Explain.
3. What does soft background music make you feel?
Appendix D

Instrument 4: Teachers’ Interviews. These questions intend to know the effectiveness of using Mozart music as background music in enhancing engagement from teachers’ points of view.

Teachers’ questions after the experiment:

1. How do you think Mozart background music encouraged the students to learn?
2. How do you think Mozart background music affects the students’ class work?
3. How did you find students’ participation in the math sessions with Mozart music as background music?
4. How did you view students’ ability to perceive math concepts when Mozart background music is being played?
5. How did you find the students’ achievement when Mozart background music is played?
6. Would you like to use Mozart background music in other grades? If yes, which ones? If no, why?
### Appendix E

**Observation Checklist**

<table>
<thead>
<tr>
<th>Students</th>
<th>Observed Behaviors</th>
<th>Length of Off-task behaviors</th>
<th>Length of On-task behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disturbs or distracts others such as tapping on the table</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Makes inappropriate physical contacts with peers such as pinching or shoving</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fidgeting, turning around or moving out of their seats</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Talking without permission or with friends</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Student 1
- Student 2
- Student 3
- Student 4
Appendix F

Table 2: Validity and Reliability Table (b)

| Purpose: To investigate the impact of Mozart music on the three levels of student engagement, cognitive, behavioral and emotional engagement |
| Research Question: What is the students and teachers’ perceived impact of Mozart music on students’ cognitive, behavioral, and affective engagement of Grade 8 math sessions? |

<table>
<thead>
<tr>
<th>Instrument 1 SESQ-ENG</th>
<th>Instrument 2 TERF-N</th>
<th>Instrument 3 Students’ Focus Group Questions</th>
<th>Instrument 4 Teachers’ Interviews</th>
<th>Instrument 5 Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive: When music is on, I learn better.</td>
<td>Cognitive: Persists on more challenging tasks when background music is being played in the classroom.</td>
<td>Cognitive: 1. How do you think soft background music helps you complete your school work/assignments? Why?</td>
<td>Cognitive: 11. How did you view students’ ability to perceive math concepts when Mozart background music is being played?</td>
<td>1. Disturbs or distracts others such as tapping on the table.</td>
</tr>
<tr>
<td>Behavioral Effort &amp; Persistence: When music is on, I stay on-task.</td>
<td>Behavioral: Participates in class discussions/activities when background music is being played.</td>
<td>Behavioral: 2. What do you think about having soft background music while you do your schoolwork? Explain.</td>
<td>Behavioral: 2. How did you find students’ participation in the math sessions with Mozart music as background music?</td>
<td>2. Makes inappropriate physical contacts with peers such as pinching or shoving.</td>
</tr>
<tr>
<td>Affective (Liking for Learning): I like learning when there is soft background music.</td>
<td>Affective: Gets along with peers when background music is being played in the classroom.</td>
<td>Affective: 3. What does soft background music make you feel?</td>
<td>Affective: 3. How do you think Mozart background music affected students’ learning?</td>
<td>3. Fidgeting, turning around or moving out of their seats</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4. Talking without permission or with friends.</td>
</tr>
</tbody>
</table>
**Purpose:** To elicit students and teachers’ views on the effect of Mozart background music on students’ engagement

**Research Questions:**
- How do teachers perceive the effect of Mozart music as a strategy for student engagement on students’ engagement?
- How do students perceive the effect of Mozart music as a strategy for student engagement on students’ engagement?

<table>
<thead>
<tr>
<th>Instrument 1</th>
<th>Instrument 2</th>
<th>Instrument 3</th>
<th>Instrument 4</th>
<th>Instrument 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SESQ-ENG</td>
<td>TERF-N</td>
<td>Students’ Focus Group Questions</td>
<td>Teachers’ Interviews</td>
<td>Observation</td>
</tr>
</tbody>
</table>

**Cognitive:**
- When music is on, I can recall information faster.
- Demonstrates appropriate effort for task when music is used in the classroom.
- 1. How do you think soft background music helps you complete your school work/assignments? Why?
- 1. How did you find students’ achievement when Mozart background music is being played?

**Behavioral:**
- Produces positive behaviors while listening to background music in the classroom.
- Produces off-task behaviors while listening to background music in the classroom.
- 2. What do you think about having soft background music while you do your schoolwork? Explain.
- 2. How do you think Mozart background music encouraged the students to learn?

**Affective:**
- Gets along with teachers when music is being played.
- 3. What does soft background music make you feel?
- 3. Would you like to use Mozart background music in other grades? If yes, which ones? If no, why?

**Cognitive:**
- Disturbs or distracts others such as tapping on the table.
- Makes inappropriate physical contacts with peers such as pinching or shoving.
- Fidgeting, turning around or moving out of their seats.
- Talking without permission or with friends.
Appendix G

The graphs represent the results of the SESQ-ENG for males and females.

Graph 1: SESQ-ENG Behavioral Engagement (Effort and Persistence), males

Graph 2: SESQ-ENG Behavioral Engagement (Effort and Persistence), females
When music is on, I learn better
When music is on, I can recall information faster
When music is on, I can memorize quickly

Factor Items:
- Never
- Rarely
- Sometimes
- Often
- Always

Graph 3: SESQ-ENG Cognitive Engagement, males

Graph 4: SESQ-ENG Cognitive Engagement, females
Appendix H

These graphs represent the results of the TERF-N for both male and female teachers.

Graph 1: TERF-N Behavioral Engagement, males

Graph 2: TERF-N Behavioral Engagement, females
Persists on more challenging tasks while listening to background music in the class

Demonstrates appropriate effort for task when background music is being played in the classroom

Is self-motivated while listening to background music in the class

Tries to solve hard problems while listening to background music in the class

Cognitive (males)

Graph 3: TERF-N Cognitive Engagement, males

Cognitive (females)

Graph 4: TERF-N Cognitive Engagement, females
Appendix I

The following graphs represent the frequency of the disruptive behaviors of the males during the study.

Graph 1: Male 1 Disruptive Behaviors

Graph 2: Male 2 Disruptive Behaviors
**Observed Behaviors Chart**

**(male 3)**

- disturbs or distracts others
- makes inappropriate physical contacts with peers
- fidgeting, turning around or moving out of their seats
- talking without permission or with friends

**Graph 3: Male 3 Disruptive Behaviors**

**Observed Behaviors Chart**

**(male 4)**

- disturbs or distracts others
- makes inappropriate physical contacts with peers
- fidgeting, turning around or moving out of their seats
- talking without permission or with friends

**Graph 4: Male 4 Disruptive Behaviors**
Graph 6: Male 6 Disruptive Behaviors

Observed Behaviors Chart (male 6)

- Blue line: disturbs or distracts others
- Orange line: makes inappropriate physical contacts with peers
- Grey line: fidgeting, turning around or moving out of their seats
- Yellow line: talking without permission or with friends

Frequency of behaviors against days.
Appendix J

The following graphs represent the frequency of the disruptive behaviors of the females during the study.

Graph 1: Female 1 Disruptive Behaviors

Graph 3: Female 3 Disruptive Behaviors
Graph 4: Female 4 Disruptive Behaviors

Graph 5: Female 5 Disruptive Behaviors
Graph 6: Female 6 Disruptive Behaviors

Observed Behaviors Chart (female 6)

- Disturbs or distracts others
- Makes inappropriate physical contacts with peers
- Fidgeting, turning around or moving out of their seats
- Talking without permission or with friends
Appendix K

The following graphs represent the duration of the on-task behaviors for the males during the study.

**Graph 1: Male 1 On-Task Behaviors**

**Graph 3: Male 3 On-Task Behaviors**
Graph 4: Male 4 On-Task Behaviors

Graph 5: Male 5 On-Task Behaviors
Graph 6: Male 6 On-Task Behaviors
Appendix L

The following graphs represent the duration of the on-task behaviors for the females during the study.

Graph 2: Female 2 On-Task Behaviors

Graph 3: Female 3 On-Task Behaviors
Graph 4: Female 4 On-Task Behaviors

Graph 5: Female 5 On-Task Behaviors
Duration of On-Task Behaviors (female 6)

Graph 6: Female 6 On-Task Behaviors
Appendix M

THIRD PARTY COPYRIGHT MATERIALS APPROVAL FORM

DEAR

I am a research student in the Department of Education at The Lebanese American University. I am seeking permission to use the following material in my thesis entitled "The Effect of Soft Background Music, Mozart Music, on the Three Levels of Students' Engagement: Students and Teachers' Perceptions of this Effect" for the purposes of examination and subsequent deposit in the LAU publicly available digital repository of LAU.

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If you wish to discuss the matter further, please contact me at (dima.alibni2@lau.edu.lb) or telephone (03/ 243782). Thank you for considering this request.

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Dima Al Bazi

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