

Using Music in the Classroom as a Pedagogical Tool

Including a Teacher Survey in a Selected Public School System

Noah Edwards

Milligan College

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Abstract

This study's purpose was to find and discuss how and why teachers include musical methods in their instruction. A focus was placed on music as a pedagogical tool in two main forms of employment. The first was using music to teach content such as memorization of vocabulary or skills. The second was music being used to affect behavior e.g. classroom management. A survey was sent to a public school system's superintendent's office. The survey was aimed at discovering which teachers were including music as an instructional tool, how they were doing so and their professional opinions on the efficacy of this inclusion. A statistical analysis using independent samples t-tests was conducted to analyze differences between teacher subgroup responses for the following: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects? Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not? Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool? For all three research questions, the null hypotheses were retained.

Keywords: music, pedagogy, cross-curricular instruction, differentiation

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Chapter 1

Introduction

Music has long been a means of communication and a means of carrying down cultural knowledge and meaning (Abril, 2006). It has been shown to improve the precision of detail in relation to autobiographical memories (Belfi, 2018). Music is often used as a means to evoke motivation, calm, inspiration, etc. as evidenced by its uses at sporting events, in film, etc. As such, the possible benefits of using music as a pedagogical tool are intriguing in relation to whether or not they can increase the ease with each student acquires knowledge and skills and if it affects how they conduct themselves in the classroom e.g. their behavior. To better ascertain insight into this use of music, teachers were deemed the most appropriate people in education to question.

Whether teachers use music to help learn content specific skills and knowledge or if they use it to reduce anxiety in a foreign language classroom (Yüce, 2018), teachers who are actually in the practice of using music pedagogically are able to provide this information and provide their confidence about its efficacy. . Moreover, other teachers need to know how their colleagues use music so others in the field may test it in their own classrooms, build or adapt the strategies to their classroom needs and develop their own conclusions. Depending on the group of students and the particular topic, music can be used in a variety of ways pedagogically which is to say that what works with one group may not work in the same way with another (Killian, 2015). This is in direct relation with the ideology of differentiation in which educators use teaching strategies to adapt to a variety of learners in each, individual classroom. As such, a qualitative approach

was taken with some supplemental quantitative measures from a teacher focused survey. This survey was used to ascertain an idea about how teachers use music in their own classrooms and how they rate its efficacy in relation to its various applications. An analysis was also done to make some comparisons among teacher subgroups, defined by what they teach by subject matter, from the data relative to them found in the survey.

Statement of the Problem

In any type of classroom, there must be a variety of strategies to meet the needs of a variety of intellectual types of learners (Kassell, 1998). The use of music as a pedagogical tool addresses the desires for those of a musical inclination as described by Gardner's classification of the nine types of intelligences (Kassell, 1998). How to use music as a pedagogical tool and identifying any of its possible efficacies, however, must be addressed before actually incorporating music into a classroom's curriculum. Moreover, the percentages of teachers who actually use music consistently and who think that it has a positive impact on learning in terms of knowledge and skill acquisition, reduction of learning anxiety and student engagement need to be analyzed to ascertain an idea of how music is being incorporated into everyday learning. Thus, the problem in specificity was how various teachers and teacher subgroups use music and how they think it affects various aspects of learning.

Purpose of the Study

The purpose of this study was to calculate what percent of a certain population of teachers incorporate music, how they incorporate it and how they felt it affected their students' learning. Moreover, a quantitative analysis was done on teachers' responses in relation to a comparison of teacher subgroups defined by their respective disciplines. .

Significance of the Study

In considering the needs of students, researching and discussing multiple types of pedagogical tools such as the incorporation of music into a content-specific curriculum is necessary for the amelioration of differentiation and cross curricular planning.

Limitations

The following limitations were noted:

1. The population was composed of local public schools at the high school and middle school level. Thus, untested generalizations cannot be made about other populations.
2. The population within the schools was limited to language, history, science and math teachers.
3. The data concerned only courses that the teachers instructed during the 2018-2019 school year.

Definitions

1. "Content Specific Teacher" is, in the confines of this study, a teacher whose primary subject matter is one of the following: history, language, mathematics or science.
2. "Musical Intelligence" is, in reference to the terminology of Howard Gardner, the type of learner who succeeds when music is used as a pedagogical tool.
3. "Pedagogical Tool" is, in the confines of this study, the use of music as a means to aide students learn knowledge or as a means to positively influence their behavior in the classroom.

Overview of the Study

There are five chapters contained within this study. The introduction, statement of the problem, purpose of the study, significance of the study, limitations and definitions composes Chapter 1. The literature found relative to the topic is found in Chapter 2. The research questions, methodology and study procedures are found in Chapter 3. The data and findings from the data are in Chapter 4. Discussion of the data findings, implications, study conclusions and ideas for further research is found in Chapter 5.

Chapter 2

Literature Review

Introduction

Music exists across the world in a myriad number of languages and for myriad number of uses. How can teachers implement this far spanning form of expression to help their students' learning? As children, we learn nursery rhymes and musical games to engage us and help learn various basic skills such as counting or the alphabet. Is it possible that teachers can use music as a method to teach more advanced concepts to more advanced students? People often listen to music to get motivated to exercise or to calm down to study. Can teachers use music in a similar fashion to affect behavior in the manner of classroom management? Since music is not dependent on just one culture, can teachers use it to teach culture itself? Is it possible that music can bridge, not just culture, but specific academic disciplines as well?

Music can be used as a tool to help memorization of vocabulary and skills in discipline specific content areas.

Regardless of the subject matter, teachers want students to be able to recall facts, knowledge and skills. As such, tools and methods are always being searched for to improve the student's ability to recall and music is the focus tool here. "Music is strongly intertwined with memories—for example, hearing a song from the past can transport you back in time, triggering the sights, sounds, and feelings of a specific event." (Belfi, 2015). This observation is quite useful for educators. From a young age, students can be taught mathematical skills through the use of music as an educational tool (Geist, 2008). Using music as the methodology students were having fun and learning without even realizing that an organized lesson was

taking place. This organized lesson was based on one of the principles of multiple types of intelligences wherein musical intelligence is one (Kassell, 1998).

Despite the inability to give an example of how to use music in every type of classroom in one short study, educators should consistently be asking themselves how to incorporate music as a way to help student with musical intelligences learn material with more ease. Many teachers across many different subject areas incorporate music based lessons to help students learn material (Killian, 2015). A subject as basic as reading can be supplemented with music instruction (Hansen, 2002). As opposed to simplicity, an advanced lesson on science can be taught using “The Cell Song” wherein students pick up the necessary knowledge by learning a song (Smolinski, 2011).

One subject in particular where there is a plethora of new skills and vocabulary for the student to learn is that of a foreign language. A specialized aspect of this would be pronunciation in the target language which music has been shown to improve as explained, "Particularly for the foreign language teacher who advocates audio-lingual techniques, automaticity of speech is enhanced primarily by inflectional and rhythmic fluency" (Staum, 1985). Furthermore, there is scientific evidence which supports that students who have received formal musical education are able to perform foreign language tasks with more efficacy than those who have not (Milovanov, 2008). With the usefulness of music as a pedagogical tool exemplified in various classrooms, a teacher has only to ask how he or she could implement it to best serve the needs of the students.

Music can be used to introduce and teach culture.

While the memorization of knowledge and skills of learning a foreign language can be aided with music, another aspect to be taken into consideration is that of the culture relative to the target language. Music educators often lead their choruses in discovering multiple cultures through the medium of music (Abril, 2006). Foreign language teachers follow a similar path though they do not always use music as the medium. However, Abril affirms that students can strengthen their understanding of other cultures by learning songs and the musical heritage behind them. That is to say, the cultural history and events which inspired and lead to the creation of the song itself. Moreover, with the idea of stronger, more vivid recollection with the use of music (Belfi, 2015) students are more likely to remember the cultural ideas as opposed to a traditional lecture.

While Abril focuses more on cultural and history, there is some positive aspects of music to be said in relation to current events and issues in society. By analyzing and learning music which relates to social issues, students are able to connect with the world at large and become aware of cultural ideas (Moore, 2007). This type of critical thinking is so necessary for the growth of the student past their often limited worldview. Moreover, this perpetuates the idea of teaching culture through music but also student engagement since students and youth are often the focus audience of much popular music. This idea of getting a larger perspective of the world through music is explained, "While you may never come to understand that world as your own, by listening, watching, discussing and interacting with it, you will greatly improve your understanding of it. In turn, you and your students will gain a greater understanding of yourselves and your own musical cultures." (Abril, 2006).

Music can be used to reduce student anxiety and improve engagement in a foreign language class.

For any student who has taken a foreign language course, he or she would most likely have had to perform by speaking and conversing in the foreign language. Since it is not the natural, mother tongue of the foreign language learner, there is often much nervousness and anxiety in relation to this task. However, there is research to support the idea that implementing music in the foreign language classroom can reduce anxiety (Dolean, 2016). Besides the reduction of being anxious, the positive side effect of having less anxiety is that students are more engaged. Thus, engagement is what is necessary for making mistakes and learning from them. As such, music is a commendable tool in relation to a foreign language classroom.

Another way to use music to reduce anxiety in the foreign language classroom is to listen to music in the target language before taking the course and also in daily life. The act of taking the time to engage in listening to English speaking music created a difference in the anxiety levels of students who were learning English as a foreign language (Yüce, 2018). The study was not focused on anxiety levels in general though as explained, "Based on the results, it can be concluded that listening to music in the target language before EFL classes can be an effective way for overcoming the problems which stem from foreign language learning anxiety" The overarching idea here between Dolean and Yüce seems to be becoming comfortable with the target language by engaging and listening in the target language — reduction of anxiety of

performing in the target language by becoming accustomed to being around the foreign language.

Music can be used to aide listening comprehension.

Among the many goals of teachers keeping the student's focus is one of the foremost. If the teacher can get the students to focus, the student can listen and hopefully understand and learn. Once more, music is seen to be used as a tool to help the teacher accomplish an educational goal. In using music, the foreign language teacher can garner the attention of the students and with rhythm and musical cadence increase students' understanding of the target language (Arleo, 2000). It is important to note that the repetition of songs is necessary and the author recommends using other pedagogical methodologies in conjunction with the use of music.

In perpetuating the use of music to aide in listening comprehension, another study identified music as being able to help students identify vocabulary and syntax in texts and conversation by just listening and comprehending. This is accomplished in practice by use of songs in the target language in intermediate to advanced foreign language courses at the university level (Tumanov, 2000) "Furthermore, we have argued that this approach can serve to reduce anxiety and increase motivation in students, while at the same time encouraging the use of effective language learning strategies."(Tumanov, 2000).

Music can be used to create cross curricular activities.

In modern education, teachers are expected to meet multiple academic needs of students. As such, cross curricular activities which branch multiple topics and have students make the plausible connections between them have been stressed more than ever in teacher evaluation rubrics. Since foreign language objectives include being able to read, write and discuss in the

interests of the students, music is a strong tool for inter curriculum teaching (Minor, 2014).

Greatly dependent on Theme 1 with many of the same references, the idea of using music to help students learn and bridge ideas between separate disciplines is another use for music pedagogically. This would be especially true for a teacher trying to meet the needs of the musical intelligences in his classroom even if he prefers to focus on other methodologies for helping students memorize material. As an example, songs are used to help students engage, learn and bridge cross curricular activities in a science classroom (Crowther,2013). Instantly, cross curricular engagement has been met, and as such, students are aided by the teacher with a tool that engages, improves detailed recall and reduces anxiety all the while helping to have a more well-rounded view on acquisition of various types of knowledge.

Conclusion

The use of music as a pedagogical tool is dependent on the interest and needs of the teacher in question. Its uses are only limited to the creativity of the teacher in question and his respective students. From being used as an effective tool to teach culture to helping improve classroom atmosphere, music is used in multiple ways in multiple content areas. Though there still needs to be further statistical analysis based on rigorous investigation to make generalized statements across larger populations about the efficacy of music as a teaching tool, the literature has shown promising examples of teachers using effective methods with respect to pedagogical use of music.

Chapter 3

Methodology and Procedures

Following the findings from the review of the literature, research was conducted on how teachers view music as a pedagogical tool. Teachers were surveyed anonymously in a Northeast Tennessee public school system and their responses analyzed to provide some more information on how music is being incorporated in classrooms. This chapter contains five sections: population, sample, data collection instruments, procedure, and research questions.

Population

The research in this study was done in a Northeast Tennessee public school system. The approximate number of students across the county was 5,456; the number of teachers was approximately 403 with approximately 131 teachers in secondary schools.

Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

Sample

The sample size was limited to teachers in secondary schools who taught at least one of the following: history, language, mathematics, or science. Teachers took the survey voluntarily and anonymously. There was a total of 52 teacher respondents.

Data Collection Instruments

The survey that was used to gather data was created uniquely for this research on [surveymonkey.com](https://www.surveymonkey.com).

Procedures

After having confirmed that this research did not require Milligan IRB approval and having requested approval from the county's superintendent office to share the survey with the appropriate teachers, the survey was sent via email and responders accessed the link anonymously.

Research Question and Hypothesis

Research Question #1: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

Research Hypothesis #1: STEM teachers are significantly more likely to report using music in their classrooms than non-STEM teachers.

Null Hypothesis #1: There is no significant difference between STEM and non-STEM teachers reporting using music in their classrooms.

Research Question #2: Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not?

Research Hypothesis #2: Teachers who utilize music report higher levels of student engagement than teacher who do not utilize music.

Null Hypothesis #2: There is no significant difference in teachers, who utilize music and those who do not, reporting higher levels of student engagement.

Research Question #3: Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool.

Research Hypothesis #3: Teachers identify music as being more useful as a teaching tool than in affecting classroom environment.

Null Hypothesis #3: There is no significant difference in how teachers identify music as a teaching tool or as affecting classroom environment.

Chapter 4

Results

Data Analysis

Music can be used as a pedagogical tool in the classroom which needs to be further explored and discussed. The purpose of this study was to analyze how teachers implement music in their classrooms and the effects thereof between the methodology and how they affect various aspects of the students' academic experiences. The study was to collect data through the use of a survey in a public school system in Northeast Tennessee. The survey was distributed via email by the assistant director of schools to secondary schools who taught at least one of the following: history, language, mathematics, or science. Teachers took the survey voluntarily and anonymously. A statistical analysis of responses to answer the research questions was conducted using independent t-Tests. The organization of data and an analysis thereof is found in this chapter.

Collection of Data

Teachers were asked to answer the survey anonymously and willingly. The only limiting factors were that most of the questions were limited to multiple choice and only certain teachers, dependent on their subject matter, were sent the survey. No other personal information was collected from the respondents except those related to the methods used in their profession. Table 1 shows the demographic of the respondents by the subject matter that they teach.

Table 1

Demographic of Teacher Respondents by Subject Matter

Teachers	Frequency	Percent
English	17	32.69
French	1	1.92
History/Social Sciences	9	17.31
Mathematics	19	36.54
Science	13	25.00
Other	10	19.23
<i>Total</i>	<i>52</i>	<i>100.00</i>

Research Questions and Related Hypothesis

Three research questions were posed to better analyze the data in specificity. Each question was accompanied by its relative hypothesis and null hypothesis. The null hypothesis was rejected or accepted based on the .05 level of significance.

Results for Research Question 1

Research Question #1: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

In order to answer Research Question #1, an independent samples t-test was conducted to compare the willingness of teachers to implement music in their classrooms between STEM and

non-STEM discipline teachers. There was a slight difference between STEM ($M=.7037$, $S.D. = .4566$) and non-STEM ($M = .68$, $S.D. = .4665$) teachers in their level of willingness to include music into their classrooms ($p=0.8539$). Therefore, the null hypothesis was retained.

Research Hypothesis #1: STEM teachers are significantly more likely to report using music in their classrooms than non-STEM teachers.

Null Hypothesis #1: There is no significant difference between STEM and non-STEM teachers reporting using music in their classrooms.

Results for Research Question 2

Research Question #2: Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not?

In order to answer Research Question #1, an independent samples t-test was conducted to compare reports on student engagement by teachers who use music as teaching tool and those that do not. There was a slight difference between teachers who use music ($M=.7037$, $S.D. = .4566$) and those who do not ($M = .68$, $S.D. = .4665$) in reporting how engaged their students were on an average day ($p=0.6838$). Therefore, the null hypothesis was retained.

Research Hypothesis #2: Teachers who utilize music report higher levels of student engagement than teacher who do not utilize music.

Null Hypothesis #2: There is no significant difference in teachers, who utilize music and those who do not, reporting higher levels of student engagement.

Results for Research Question 3

Research Question #3: Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool?

In order to answer Research Question #1, an independent samples t-test was conducted to compare the teachers reports on their personal, professional views on music's efficacy in the classroom environment versus their views on it as a teaching tool. There was no statistical difference between teacher reports on music's efficacy in positively contributing to the classroom environment (M=.8077, S.D. = .3941) and their reports on its efficacy as a teaching tool (M = .8077, S.D. = .3941) in their personal opinions ($p=1.0$). Therefore, the null hypothesis was retained.

Research Hypothesis #3: Teachers identify music in being more useful as a teaching tool than in affecting classroom environment.

Null Hypothesis #3: There is no significant difference in how teachers identify music as s teaching tool or as affecting classroom environment.

Chapter 5

Findings, Recommendations, and Implications

The purpose of this study was to gather knowledge on how and why teachers include music as a teaching tool in their classroom. A survey asked questions about this very topic to teachers in secondary level schools in a certain county. Teacher responses were analyzed in specificity using independent samples t-tests to answer the research questions. This chapter contains a summary of the findings, conclusion, recommendations and implications from the study.

Summary of the Findings

Research Question #1: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

An independent samples t-test was conducted to compare the willingness of teachers to implement music in their classrooms between STEM and non-STEM discipline teachers. There was a slight difference between STEM ($M=.7037$, $S.D. = .4566$) and non-STEM ($M = .68$, $S.D. = .4665$) teachers in their level of willingness to include music into their classrooms ($p=0.8539$). Therefore, the null hypothesis was retained. The conclusion is that for this population neither STEM nor non-STEM teachers were using music educationally more often than the other.

There was such a variety of disciplines represented in the literature review to dissuade the reader from thinking that only one discipline held the monopoly on incorporating music in their curriculum. It is possible, however, that teachers with a background in music, or who were taught using music, may be more likely to include it in their instruction. Furthermore, teachers who

have studied the works of Howard Gardner may be included musical activities more often than those who are not since Gardner defines Musical Intelligence as a valid type of learner that teachers should accommodate for in their differentiation strategies (Kassell, 1998).

Research Question #2: Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not?

An independent samples t-test was conducted to compare reports on student engagement by teachers who use music as teaching tool and those that do not. There was a slight difference between teachers who use music ($M=.7037$, $S.D. = .4566$) and those who do not ($M = .68$, $S.D. = .4665$) in reporting how engaged their students were on an average day ($p=0.6838$). Therefore, the null hypothesis was retained. This concludes for this study that teachers report very similar opinions about student engagement regardless of whether or not they use music pedagogically.

Due to the bias of self-reporting and the qualitative nature of providing an opinion on student engagement, it could be interpreted that teachers feel that student engagement is often unaffected or hardly affected by the incorporation of music within the limitations of this study. This is not to say that teachers' responses are inaccurate descriptions of their classrooms. It would be perhaps more precise and less biased if a singular classroom study was done on student engagement by an observer comparing days when musical activities are taking place versus when they are not.

Research Question #3: Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool?

An independent samples t-test was conducted to compare the teachers reports on their personal, professional views on music's efficacy in the classroom environment versus their views on it as a teaching tool. There was no statistical difference between teacher reports on music's efficacy in positively contributing to the classroom environment (M=.8077, S.D. = .3941) and their reports on its efficacy as a teaching tool (M = .8077, S.D. = .3941) in their personal opinions ($p=1.0$). Therefore, the null hypothesis was retained. This concludes that teachers who responded identify music's usefulness relatively the same in terms of affecting classroom environment and in terms of as a teaching tool.

It is possible that teachers who utilize music are aware of both aspects of musical application and view them as equally efficacious. It could also be that teachers view these two applications of music in the classroom as so related that they rated them similarly. However, it would be interesting to do a more detailed analysis of a classroom where music is only used to affect classroom environment versus a classroom where music is only used to teach content.

Conclusion

This study sought to gather information and analyze certain specifics of the incorporation of music in the classroom. The survey provides insight into the percentages of teachers who actually incorporate music and if there are trends according to discipline. Since the study was limited to a certain population of teachers, there needs to be further data gathered so as reduce bias. Considering the biases that exist outside of the control of this study which include teachers' responses to how they consider student engagement and other factors, there needs to be certain accommodation when looking at the data. However, the results of this study show that for a

limited population there is no significant difference in STEM teachers using music than non-STEM teachers, that there is no significant difference in teachers, who utilize music and those who do not, reporting higher levels of student engagement, and that there is no significant difference in how teachers identify music as a teaching tool or as affecting classroom environment.

Recommendations

These recommendations are given for this study:

1. Further research needs to be taken in terms of the efficacy and implementation of music as a pedagogical tool.
2. Research should include comparative quantitative and qualitative analysis of student academic performance with and without using music in various settings and with various types of implementations.
3. A larger population needs to be studied so as to reduce bias and gain a larger understanding based on cultural aspects of pedagogy. Furthermore, only teachers who actually implement music pedagogical year should be included in surveys where the questions pertain solely to them.

Implications

1. Teachers should compare and contrast best teaching practices which includes incorporating music in aspects that they deem appropriate for their students.

2. Teachers should not feel compelled to have to implement music into every lesson. However, like any teaching practice that aides multiple types of learners, teachers should be informed about musical teaching strategies that have worked for other teachers and their students.
3. Teachers should not feel limited to just one teaching tool or to just one way of using that tool. Music is as varied as the imagination of the musician; likewise, the teacher's methodologies should be equally creative in addressing the learning needs of his or her students.

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Chapter 1

Introduction

Music has long been a means of communication and a means of carrying down cultural knowledge and meaning (Abril, 2006). It has been shown to improve the precision of detail in relation to autobiographical memories (Belfi, 2018). Music is often used as a means to evoke motivation, calm, inspiration, etc. as evidenced by its uses at sporting events, in film, etc. As such, the possible benefits of using music as a pedagogical tool are intriguing in relation to whether or not they can increase the ease with each student acquires knowledge and skills and if it affects how they conduct themselves in the classroom e.g. their behavior. To better ascertain insight into this use of music, teachers were deemed the most appropriate people in education to question.

Whether teachers use music to help learn content specific skills and knowledge or if they use it to reduce anxiety in a foreign language classroom (Yüce, 2018), teachers who are actually in the practice of using music pedagogically are able to provide this information and provide their confidence about its efficacy. . Moreover, other teachers need to know how their colleagues use music so others in the field may test it in their own classrooms, build or adapt the strategies to their classroom needs and develop their own conclusions. Depending on the group of students and the particular topic, music can be used in a variety of ways pedagogically which is to say that what works with one group may not work in the same way with another (Killian, 2015). This is in direct relation with the ideology of differentiation in which educators use teaching strategies to adapt to a variety of learners in each, individual classroom. As such, a qualitative approach

was taken with some supplemental quantitative measures from a teacher focused survey. This survey was used to ascertain an idea about how teachers use music in their own classrooms and how they rate its efficacy in relation to its various applications. An analysis was also done to make some comparisons among teacher subgroups, defined by what they teach by subject matter, from the data relative to them found in the survey.

Statement of the Problem

In any type of classroom, there must be a variety of strategies to meet the needs of a variety of intellectual types of learners (Kassell, 1998). The use of music as a pedagogical tool addresses the desires for those of a musical inclination as described by Gardner's classification of the nine types of intelligences (Kassell, 1998). How to use music as a pedagogical tool and identifying any of its possible efficacies, however, must be addressed before actually incorporating music into a classroom's curriculum. Moreover, the percentages of teachers who actually use music consistently and who think that it has a positive impact on learning in terms of knowledge and skill acquisition, reduction of learning anxiety and student engagement need to be analyzed to ascertain an idea of how music is being incorporated into everyday learning. Thus, the problem in specificity was how various teachers and teacher subgroups use music and how they think it affects various aspects of learning.

Purpose of the Study

The purpose of this study was to calculate what percent of a certain population of teachers incorporate music, how they incorporate it and how they felt it affected their students' learning. Moreover, a quantitative analysis was done on teachers' responses in relation to a comparison of teacher subgroups defined by their respective disciplines. .

Significance of the Study

In considering the needs of students, researching and discussing multiple types of pedagogical tools such as the incorporation of music into a content-specific curriculum is necessary for the amelioration of differentiation and cross curricular planning.

Limitations

The following limitations were noted:

1. The population was composed of local public schools at the high school and middle school level. Thus, untested generalizations cannot be made about other populations.
2. The population within the schools was limited to language, history, science and math teachers.
3. The data concerned only courses that the teachers instructed during the 2018-2019 school year.

Definitions

1. "Content Specific Teacher" is, in the confines of this study, a teacher whose primary subject matter is one of the following: history, language, mathematics or science.
2. "Musical Intelligence" is, in reference to the terminology of Howard Gardner, the type of learner who succeeds when music is used as a pedagogical tool.
3. "Pedagogical Tool" is, in the confines of this study, the use of music as a means to aide students learn knowledge or as a means to positively influence their behavior in the classroom.

Overview of the Study

There are five chapters contained within this study. The introduction, statement of the problem, purpose of the study, significance of the study, limitations and definitions composes Chapter 1. The literature found relative to the topic is found in Chapter 2. The research questions, methodology and study procedures are found in Chapter 3. The data and findings from the data are in Chapter 4. Discussion of the data findings, implications, study conclusions and ideas for further research is found in Chapter 5.

Chapter 2

Literature Review

Introduction

Music exists across the world in a myriad number of languages and for myriad number of uses. How can teachers implement this far spanning form of expression to help their students' learning? As children, we learn nursery rhymes and musical games to engage us and help learn various basic skills such as counting or the alphabet. Is it possible that teachers can use music as a method to teach more advanced concepts to more advanced students? People often listen to music to get motivated to exercise or to calm down to study. Can teachers use music in a similar fashion to affect behavior in the manner of classroom management? Since music is not dependent on just one culture, can teachers use it to teach culture itself? Is it possible that music can bridge, not just culture, but specific academic disciplines as well?

Music can be used as a tool to help memorization of vocabulary and skills in discipline specific content areas.

Regardless of the subject matter, teachers want students to be able to recall facts, knowledge and skills. As such, tools and methods are always being searched for to improve the student's ability to recall and music is the focus tool here. "Music is strongly intertwined with memories—for example, hearing a song from the past can transport you back in time, triggering the sights, sounds, and feelings of a specific event." (Belfi, 2015). This observation is quite useful for educators. From a young age, students can be taught mathematical skills through the use of music as an educational tool (Geist, 2008). Using music as the methodology students were having fun and learning without even realizing that an organized lesson was

taking place. This organized lesson was based on one of the principles of multiple types of intelligences wherein musical intelligence is one (Kassell, 1998).

Despite the inability to give an example of how to use music in every type of classroom in one short study, educators should consistently be asking themselves how to incorporate music as a way to help student with musical intelligences learn material with more ease. Many teachers across many different subject areas incorporate music based lessons to help students learn material (Killian, 2015). A subject as basic as reading can be supplemented with music instruction (Hansen, 2002). As opposed to simplicity, an advanced lesson on science can be taught using “The Cell Song” wherein students pick up the necessary knowledge by learning a song (Smolinski, 2011).

One subject in particular where there is a plethora of new skills and vocabulary for the student to learn is that of a foreign language. A specialized aspect of this would be pronunciation in the target language which music has been shown to improve as explained, "Particularly for the foreign language teacher who advocates audio-lingual techniques, automaticity of speech is enhanced primarily by inflectional and rhythmic fluency" (Staum, 1985). Furthermore, there is scientific evidence which supports that students who have received formal musical education are able to perform foreign language tasks with more efficacy than those who have not (Milovanov, 2008). With the usefulness of music as a pedagogical tool exemplified in various classrooms, a teacher has only to ask how he or she could implement it to best serve the needs of the students.

Music can be used to introduce and teach culture.

While the memorization of knowledge and skills of learning a foreign language can be aided with music, another aspect to be taken into consideration is that of the culture relative to the target language. Music educators often lead their choruses in discovering multiple cultures through the medium of music (Abril, 2006). Foreign language teachers follow a similar path though they do not always use music as the medium. However, Abril affirms that students can strengthen their understanding of other cultures by learning songs and the musical heritage behind them. That is to say, the cultural history and events which inspired and lead to the creation of the song itself. Moreover, with the idea of stronger, more vivid recollection with the use of music (Belfi, 2015) students are more likely to remember the cultural ideas as opposed to a traditional lecture.

While Abril focuses more on cultural and history, there is some positive aspects of music to be said in relation to current events and issues in society. By analyzing and learning music which relates to social issues, students are able to connect with the world at large and become aware of cultural ideas (Moore, 2007). This type of critical thinking is so necessary for the growth of the student past their often limited worldview. Moreover, this perpetuates the idea of teaching culture through music but also student engagement since students and youth are often the focus audience of much popular music. This idea of getting a larger perspective of the world through music is explained, "While you may never come to understand that world as your own, by listening, watching, discussing and interacting with it, you will greatly improve your understanding of it. In turn, you and your students will gain a greater understanding of yourselves and your own musical cultures." (Abril, 2006).

Music can be used to reduce student anxiety and improve engagement in a foreign language class.

For any student who has taken a foreign language course, he or she would most likely have had to perform by speaking and conversing in the foreign language. Since it is not the natural, mother tongue of the foreign language learner, there is often much nervousness and anxiety in relation to this task. However, there is research to support the idea that implementing music in the foreign language classroom can reduce anxiety (Dolean, 2016). Besides the reduction of being anxious, the positive side effect of having less anxiety is that students are more engaged. Thus, engagement is what is necessary for making mistakes and learning from them. As such, music is a commendable tool in relation to a foreign language classroom.

Another way to use music to reduce anxiety in the foreign language classroom is to listen to music in the target language before taking the course and also in daily life. The act of taking the time to engage in listening to English speaking music created a difference in the anxiety levels of students who were learning English as a foreign language (Yüce, 2018). The study was not focused on anxiety levels in general though as explained, "Based on the results, it can be concluded that listening to music in the target language before EFL classes can be an effective way for overcoming the problems which stem from foreign language learning anxiety" The overarching idea here between Dolean and Yüce seems to be becoming comfortable with the target language by engaging and listening in the target language — reduction of anxiety of

performing in the target language by becoming accustomed to being around the foreign language.

Music can be used to aide listening comprehension.

Among the many goals of teachers keeping the student's focus is one of the foremost. If the teacher can get the students to focus, the student can listen and hopefully understand and learn. Once more, music is seen to be used as a tool to help the teacher accomplish an educational goal. In using music, the foreign language teacher can garner the attention of the students and with rhythm and musical cadence increase students' understanding of the target language (Arleo, 2000). It is important to note that the repetition of songs is necessary and the author recommends using other pedagogical methodologies in conjunction with the use of music.

In perpetuating the use of music to aide in listening comprehension, another study identified music as being able to help students identify vocabulary and syntax in texts and conversation by just listening and comprehending. This is accomplished in practice by use of songs in the target language in intermediate to advanced foreign language courses at the university level (Tumanov, 2000) "Furthermore, we have argued that this approach can serve to reduce anxiety and increase motivation in students, while at the same time encouraging the use of effective language learning strategies."(Tumanov, 2000).

Music can be used to create cross curricular activities.

In modern education, teachers are expected to meet multiple academic needs of students. As such, cross curricular activities which branch multiple topics and have students make the plausible connections between them have been stressed more than ever in teacher evaluation rubrics. Since foreign language objectives include being able to read, write and discuss in the

interests of the students, music is a strong tool for inter curriculum teaching (Minor, 2014).

Greatly dependent on Theme 1 with many of the same references, the idea of using music to help students learn and bridge ideas between separate disciplines is another use for music pedagogically. This would be especially true for a teacher trying to meet the needs of the musical intelligences in his classroom even if he prefers to focus on other methodologies for helping students memorize material. As an example, songs are used to help students engage, learn and bridge cross curricular activities in a science classroom (Crowther,2013). Instantly, cross curricular engagement has been met, and as such, students are aided by the teacher with a tool that engages, improves detailed recall and reduces anxiety all the while helping to have a more well-rounded view on acquisition of various types of knowledge.

Conclusion

The use of music as a pedagogical tool is dependent on the interest and needs of the teacher in question. Its uses are only limited to the creativity of the teacher in question and his respective students. From being used as an effective tool to teach culture to helping improve classroom atmosphere, music is used in multiple ways in multiple content areas. Though there still needs to be further statistical analysis based on rigorous investigation to make generalized statements across larger populations about the efficacy of music as a teaching tool, the literature has shown promising examples of teachers using effective methods with respect to pedagogical use of music.

Chapter 3

Methodology and Procedures

Following the findings from the review of the literature, research was conducted on how teachers view music as a pedagogical tool. Teachers were surveyed anonymously in a Northeast Tennessee public school system and their responses analyzed to provide some more information on how music is being incorporated in classrooms. This chapter contains five sections: population, sample, data collection instruments, procedure, and research questions.

Population

The research in this study was done in a Northeast Tennessee public school system. The approximate number of students across the county was 5,456; the number of teachers was approximately 403 with approximately 131 teachers in secondary schools.

Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

Sample

The sample size was limited to teachers in secondary schools who taught at least one of the following: history, language, mathematics, or science. Teachers took the survey voluntarily and anonymously. There was a total of 52 teacher respondents.

Data Collection Instruments

The survey that was used to gather data was created uniquely for this research on [surveymonkey.com](https://www.surveymonkey.com).

Procedures

After having confirmed that this research did not require Milligan IRB approval and having requested approval from the county's superintendent office to share the survey with the appropriate teachers, the survey was sent via email and responders accessed the link anonymously.

Research Question and Hypothesis

Research Question #1: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

Research Hypothesis #1: STEM teachers are significantly more likely to report using music in their classrooms than non-STEM teachers.

Null Hypothesis #1: There is no significant difference between STEM and non-STEM teachers reporting using music in their classrooms.

Research Question #2: Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not?

Research Hypothesis #2: Teachers who utilize music report higher levels of student engagement than teacher who do not utilize music.

Null Hypothesis #2: There is no significant difference in teachers, who utilize music and those who do not, reporting higher levels of student engagement.

Research Question #3: Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool.

Research Hypothesis #3: Teachers identify music as being more useful as a teaching tool than in affecting classroom environment.

Null Hypothesis #3: There is no significant difference in how teachers identify music as a teaching tool or as affecting classroom environment.

Chapter 4

Results

Data Analysis

Music can be used as a pedagogical tool in the classroom which needs to be further explored and discussed. The purpose of this study was to analyze how teachers implement music in their classrooms and the effects thereof between the methodology and how they affect various aspects of the students' academic experiences. The study was to collect data through the use of a survey in a public school system in Northeast Tennessee. The survey was distributed via email by the assistant director of schools to secondary schools who taught at least one of the following: history, language, mathematics, or science. Teachers took the survey voluntarily and anonymously. A statistical analysis of responses to answer the research questions was conducted using independent t-Tests. The organization of data and an analysis thereof is found in this chapter.

Collection of Data

Teachers were asked to answer the survey anonymously and willingly. The only limiting factors were that most of the questions were limited to multiple choice and only certain teachers, dependent on their subject matter, were sent the survey. No other personal information was collected from the respondents except those related to the methods used in their profession. Table 1 shows the demographic of the respondents by the subject matter that they teach.

Table 1

Demographic of Teacher Respondents by Subject Matter

Teachers	Frequency	Percent
English	17	32.69
French	1	1.92
History/Social Sciences	9	17.31
Mathematics	19	36.54
Science	13	25.00
Other	10	19.23
<i>Total</i>	<i>52</i>	<i>100.00</i>

Research Questions and Related Hypothesis

Three research questions were posed to better analyze the data in specificity. Each question was accompanied by its relative hypothesis and null hypothesis. The null hypothesis was rejected or accepted based on the .05 level of significance.

Results for Research Question 1

Research Question #1: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

In order to answer Research Question #1, an independent samples t-test was conducted to compare the willingness of teachers to implement music in their classrooms between STEM and

non-STEM discipline teachers. There was a slight difference between STEM ($M=.7037$, $S.D. = .4566$) and non-STEM ($M = .68$, $S.D. = .4665$) teachers in their level of willingness to include music into their classrooms ($p=0.8539$). Therefore, the null hypothesis was retained.

Research Hypothesis #1: STEM teachers are significantly more likely to report using music in their classrooms than non-STEM teachers.

Null Hypothesis #1: There is no significant difference between STEM and non-STEM teachers reporting using music in their classrooms.

Results for Research Question 2

Research Question #2: Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not?

In order to answer Research Question #1, an independent samples t-test was conducted to compare reports on student engagement by teachers who use music as teaching tool and those that do not. There was a slight difference between teachers who use music ($M=.7037$, $S.D. = .4566$) and those who do not ($M = .68$, $S.D. = .4665$) in reporting how engaged their students were on an average day ($p=0.6838$). Therefore, the null hypothesis was retained.

Research Hypothesis #2: Teachers who utilize music report higher levels of student engagement than teacher who do not utilize music.

Null Hypothesis #2: There is no significant difference in teachers, who utilize music and those who do not, reporting higher levels of student engagement.

Results for Research Question 3

Research Question #3: Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool?

In order to answer Research Question #1, an independent samples t-test was conducted to compare the teachers reports on their personal, professional views on music's efficacy in the classroom environment versus their views on it as a teaching tool. There was no statistical difference between teacher reports on music's efficacy in positively contributing to the classroom environment (M=.8077, S.D. = .3941) and their reports on its efficacy as a teaching tool (M = .8077, S.D. = .3941) in their personal opinions ($p=1.0$). Therefore, the null hypothesis was retained.

Research Hypothesis #3: Teachers identify music in being more useful as a teaching tool than in affecting classroom environment.

Null Hypothesis #3: There is no significant difference in how teachers identify music as s teaching tool or as affecting classroom environment.

Chapter 5

Findings, Recommendations, and Implications

The purpose of this study was to gather knowledge on how and why teachers include music as a teaching tool in their classroom. A survey asked questions about this very topic to teachers in secondary level schools in a certain county. Teacher responses were analyzed in specificity using independent samples t-tests to answer the research questions. This chapter contains a summary of the findings, conclusion, recommendations and implications from the study.

Summary of the Findings

Research Question #1: Are teachers in STEM subjects significantly more or less likely to report implementing music in their classrooms than teachers in non-STEM subjects?

An independent samples t-test was conducted to compare the willingness of teachers to implement music in their classrooms between STEM and non-STEM discipline teachers. There was a slight difference between STEM ($M=.7037$, $S.D. = .4566$) and non-STEM ($M = .68$, $S.D. = .4665$) teachers in their level of willingness to include music into their classrooms ($p=0.8539$). Therefore, the null hypothesis was retained. The conclusion is that for this population neither STEM nor non-STEM teachers were using music educationally more often than the other.

There was such a variety of disciplines represented in the literature review to dissuade the reader from thinking that only one discipline held the monopoly on incorporating music in their curriculum. It is possible, however, that teachers with a background in music, or who were taught using music, may be more likely to include it in their instruction. Furthermore, teachers who

have studied the works of Howard Gardner may be included musical activities more often than those who are not since Gardner defines Musical Intelligence as a valid type of learner that teachers should accommodate for in their differentiation strategies (Kassell, 1998).

Research Question #2: Do teachers that utilize music as a teaching tool report higher levels of student engagement than teachers that do not?

An independent samples t-test was conducted to compare reports on student engagement by teachers who use music as teaching tool and those that do not. There was a slight difference between teachers who use music ($M=.7037$, $S.D. = .4566$) and those who do not ($M = .68$, $S.D. = .4665$) in reporting how engaged their students were on an average day ($p=0.6838$). Therefore, the null hypothesis was retained. This concludes for this study that teachers report very similar opinions about student engagement regardless of whether or not they use music pedagogically.

Due to the bias of self-reporting and the qualitative nature of providing an opinion on student engagement, it could be interpreted that teachers feel that student engagement is often unaffected or hardly affected by the incorporation of music within the limitations of this study. This is not to say that teachers' responses are inaccurate descriptions of their classrooms. It would be perhaps more precise and less biased if a singular classroom study was done on student engagement by an observer comparing days when musical activities are taking place versus when they are not.

Research Question #3: Do teachers identify music as being more useful in affecting classroom environment or as a teaching tool?

An independent samples t-test was conducted to compare the teachers reports on their personal, professional views on music's efficacy in the classroom environment versus their views on it as a teaching tool. There was no statistical difference between teacher reports on music's efficacy in positively contributing to the classroom environment (M=.8077, S.D. = .3941) and their reports on its efficacy as a teaching tool (M = .8077, S.D. = .3941) in their personal opinions ($p=1.0$). Therefore, the null hypothesis was retained. This concludes that teachers who responded identify music's usefulness relatively the same in terms of affecting classroom environment and in terms of as a teaching tool.

It is possible that teachers who utilize music are aware of both aspects of musical application and view them as equally efficacious. It could also be that teachers view these two applications of music in the classroom as so related that they rated them similarly. However, it would be interesting to do a more detailed analysis of a classroom where music is only used to affect classroom environment versus a classroom where music is only used to teach content.

Conclusion

This study sought to gather information and analyze certain specifics of the incorporation of music in the classroom. The survey provides insight into the percentages of teachers who actually incorporate music and if there are trends according to discipline. Since the study was limited to a certain population of teachers, there needs to be further data gathered so as reduce bias. Considering the biases that exist outside of the control of this study which include teachers' responses to how they consider student engagement and other factors, there needs to be certain accommodation when looking at the data. However, the results of this study show that for a

limited population there is no significant difference in STEM teachers using music than non-STEM teachers, that there is no significant difference in teachers, who utilize music and those who do not, reporting higher levels of student engagement, and that there is no significant difference in how teachers identify music as a teaching tool or as affecting classroom environment.

Recommendations

These recommendations are given for this study:

1. Further research needs to be taken in terms of the efficacy and implementation of music as a pedagogical tool.
2. Research should include comparative quantitative and qualitative analysis of student academic performance with and without using music in various settings and with various types of implementations.
3. A larger population needs to be studied so as to reduce bias and gain a larger understanding based on cultural aspects of pedagogy. Furthermore, only teachers who actually implement music pedagogical year should be included in surveys where the questions pertain solely to them.

Implications

1. Teachers should compare and contrast best teaching practices which includes incorporating music in aspects that they deem appropriate for their students.

2. Teachers should not feel compelled to have to implement music into every lesson. However, like any teaching practice that aides multiple types of learners, teachers should be informed about musical teaching strategies that have worked for other teachers and their students.
3. Teachers should not feel limited to just one teaching tool or to just one way of using that tool. Music is as varied as the imagination of the musician; likewise, the teacher's methodologies should be equally creative in addressing the learning needs of his or her students.

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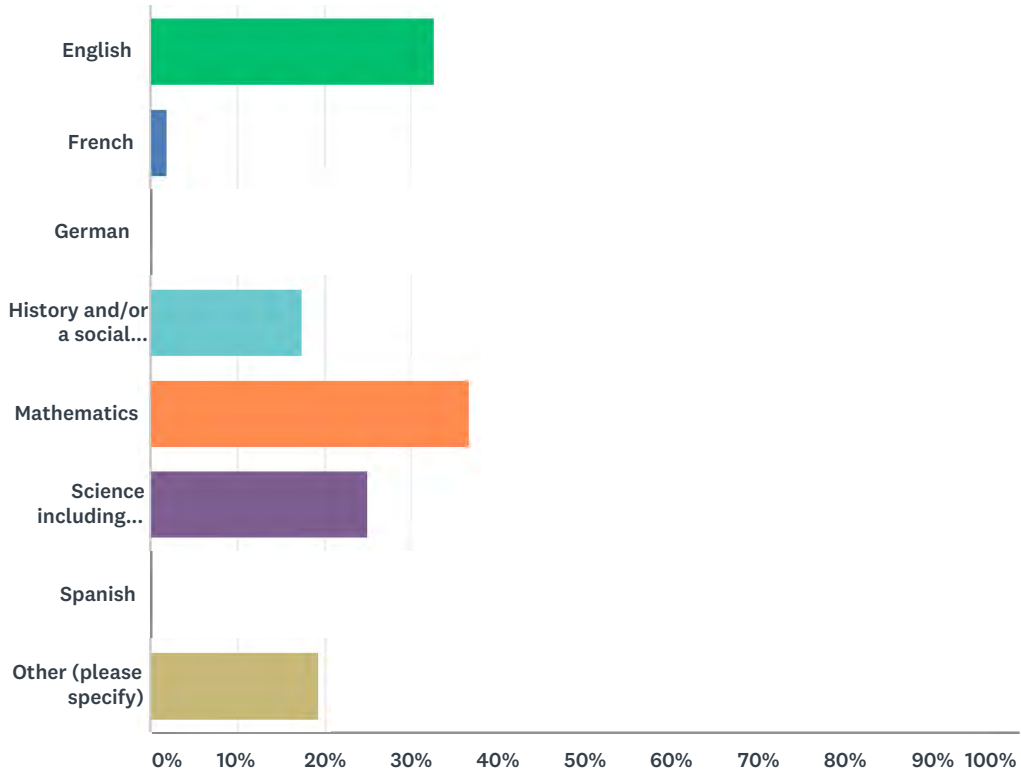
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Listening Habits and Foreign Language Classroom Anxiety. International Journal of
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Q1 What subject(s) do you teach?

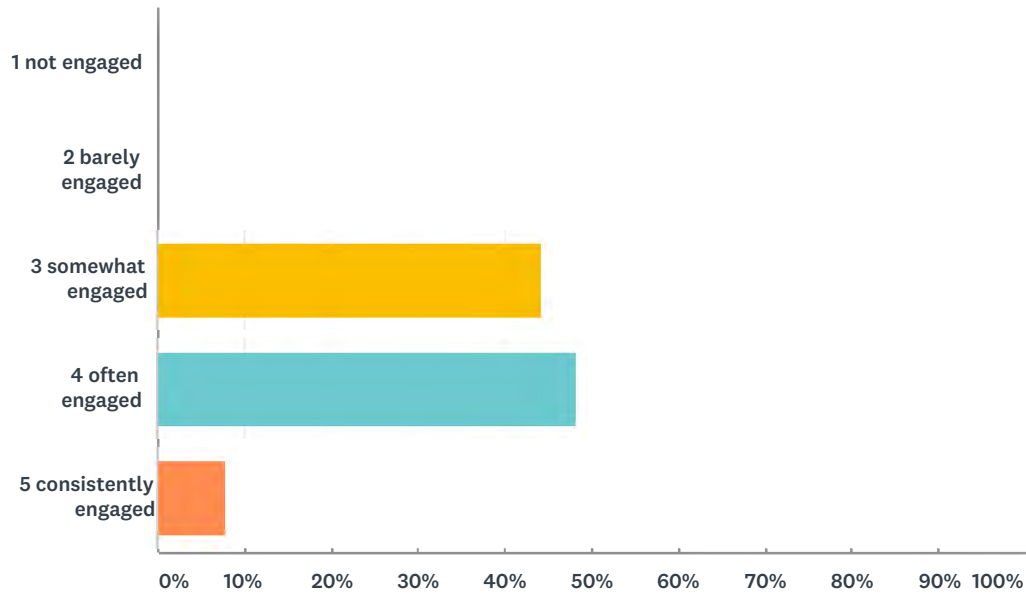
Answered: 52 Skipped: 0



ANSWER CHOICES	RESPONSES	
English	32.69%	17
French	1.92%	1
German	0.00%	0
History and/or a social science	17.31%	9
Mathematics	36.54%	19
Science including biology, chemistry, etc.	25.00%	13
Spanish	0.00%	0
Other (please specify)	19.23%	10
Total Respondents: 52		

Q2 If you were to consider all of your classes as a whole on an average day, where would you rate student engagement, which would include being on task, asking questions, being motivated to learn, etc. ?

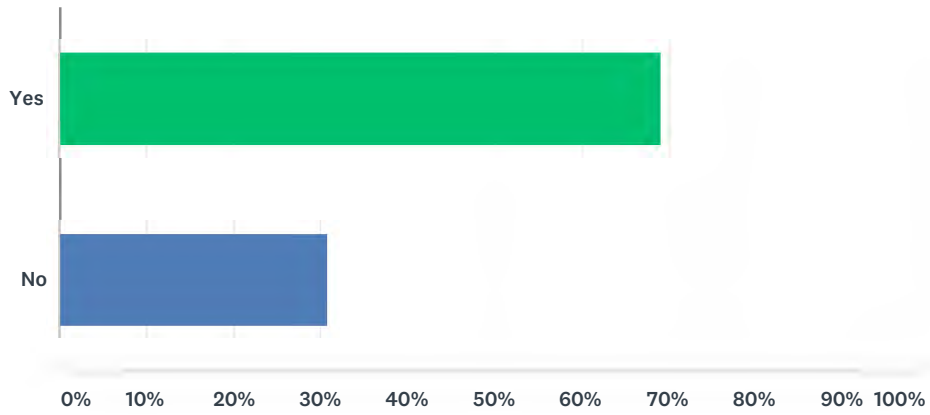
Answered: 52 Skipped: 0



ANSWER CHOICES	RESPONSES	
1 not engaged	0.00%	0
2 barely engaged	0.00%	0
3 somewhat engaged	44.23%	23
4 often engaged	48.08%	25
5 consistently engaged	7.69%	4
TOTAL		52

Q3 Do you ever utilize music as a teaching tool in your classroom?

Answered: 52 Skipped: 0



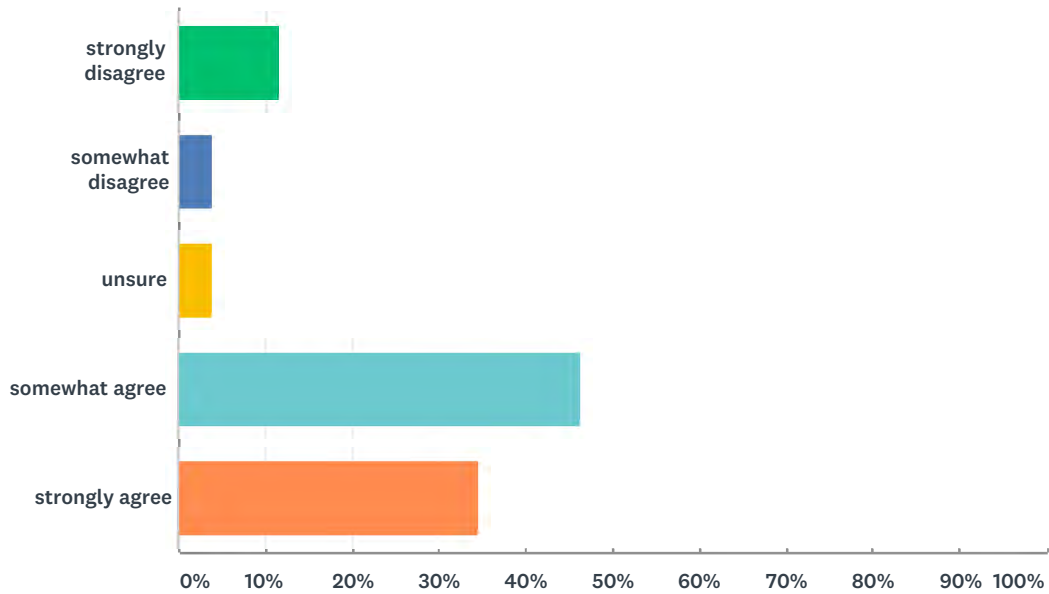
ANSWER CHOICES	RESPONSES	
Yes	69.23%	36
No	30.77%	16
TOTAL		52

Q4 If you answered yes to the previous question, please explain how you utilize music as a teaching tool.

Answered: 41 Skipped: 11

Q5 How would you agree that musical activities or just listening to music can be a way of reducing student anxiety about learning or performing in the classroom?

Answered: 52 Skipped: 0

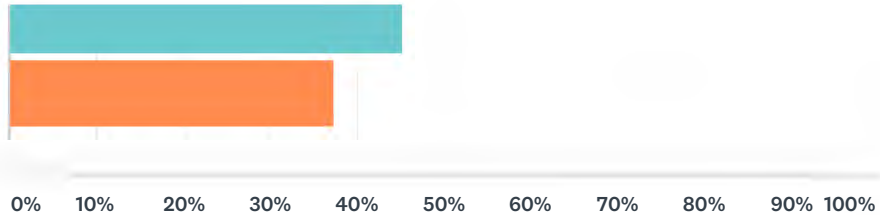


ANSWER CHOICES	RESPONSES	
strongly disagree	11.54%	6
somewhat disagree	3.85%	2
unsure	3.85%	2
somewhat agree	46.15%	24
strongly agree	34.62%	18
TOTAL		52

Q6 For each row, mark how you feel about music being used as an effective teaching tool for the following activities.

Answered: 52 Skipped: 0



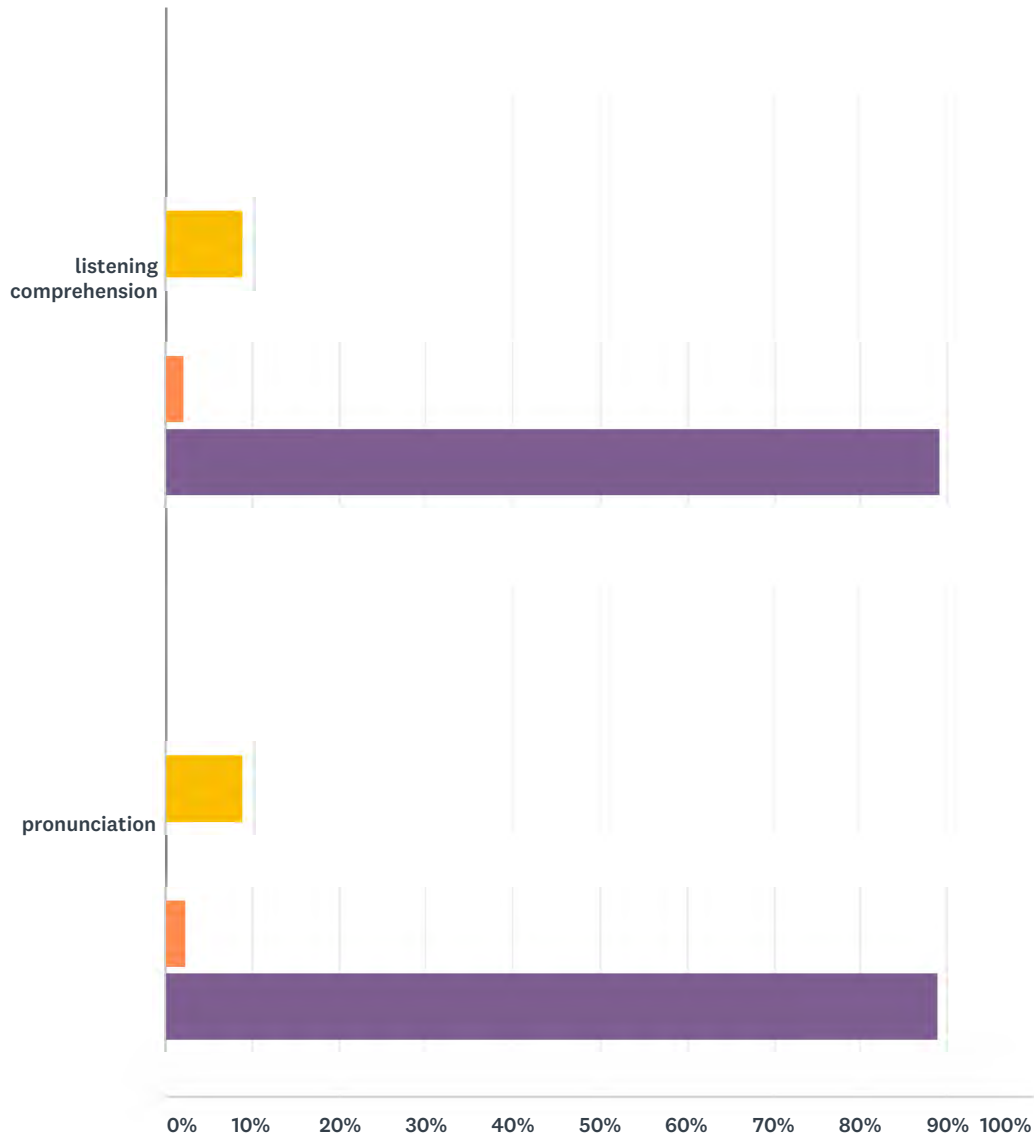


■ strongly disagree
 ■ somewhat disagree
 ■ unsure
 ■ somewhat agree
■ strongly agree

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	UNSURE	SOMEWHAT AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
to memorize vocabulary	3.85% 2	0.00% 0	13.46% 7	42.31% 22	40.38% 21	52	4.15
to learn skills	5.77% 3	1.92% 1	15.38% 8	46.15% 24	30.77% 16	52	3.94
to learn about culture	3.85% 2	3.85% 2	0.00% 0	42.31% 22	50.00% 26	52	4.31
to incorporate cross curricular knowledge/skills	3.92% 2	1.96% 1	11.76% 6	45.10% 23	37.25% 19	51	4.10

Q7 If you are a foreign language teacher, how would you agree that teaching students with music improves the following aspects of foreign language acquisition?

Answered: 46 Skipped: 6

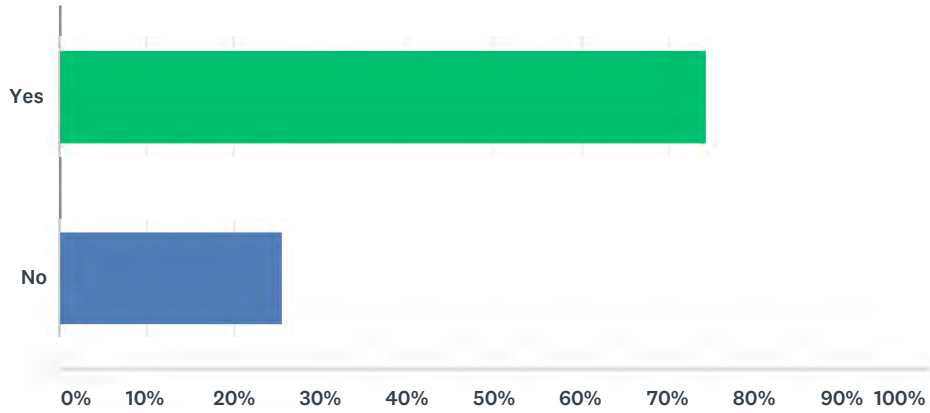


■ strongly disagree
 ■ somewhat disagree
 ■ unsure
 ■ somewhat agree
■ strongly agree
 ■ N/A

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	UNSURE	SOMEWHAT AGREE	STRONGLY AGREE	N/A	TOTAL	WEIGHTED AVERAGE
listening comprehension	0.00% 0	0.00% 0	8.70% 4	0.00% 0	2.17% 1	89.13% 41	46	3.40
pronunciation	0.00% 0	0.00% 0	8.89% 4	0.00% 0	2.22% 1	88.89% 40	45	3.40

Q8 Whether you currently use music in your classroom or not, would you be interested in learning more about how to incorporate music into your curriculum?

Answered: 51 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	74.51%	38
No	25.49%	13
TOTAL		51