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Expanding Teacher-Led, Interactive Music-Based Intervention on Preschoolers with ASD

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Citation	Nealer, Jennifer. 2025. Expanding Teacher-Led, Interactive Music-Based Intervention on Preschoolers with ASD. Georgia State University. https://doi.org/10.57709/rbbb-hz48 .
DOI	https://doi.org/10.57709/rbbb-hz48
Download date	2026-04-12 00:06:11
Link to Item	https://hdl.handle.net/20.500.14694/15545

Expanding Teacher-Led, Interactive Music-Based Intervention on Preschoolers with ASD

by

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A Capstone Project Presented to the
FACULTY OF OCCUPATIONAL THERAPY
GEORGIA STATE UNIVERSITY

In Partial Fulfillment of the
Requirements for the Degree
OCCUPATIONAL THERAPY DOCTORATE

May 2025

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Jennifer Nealer

Acknowledgements

I would like to express my sincere gratitude to my faculty mentor, Dr. Yi-An Chen, for her continuous support and invaluable feedback. Her guidance throughout the entire capstone process has been instrumental, and I will always be thankful for her trust, advice, support, and patience from beginning to end.

I would also like to thank the Marcus Jewish Community Center's Sunshine School for being the most incredible site for this project. Nancy Parker, my site mentor, made sure I always felt welcome and supported during my time at the school. I am also deeply grateful to the two volunteer teachers at the Sunshine School for being so open and accepting my research from day one. Everyone at the Sunshine School showed me immense kindness, support, and patience, and I will forever cherish the experience I had there.

I am incredibly thankful for the constant encouragement and love from my family and friends. I could not have made it through my graduate degree without their unwavering support. A special thank you to my parents for always being there for me and helping in countless ways throughout this journey.

I would like to thank God for His guidance in leading me toward this amazing career. His presence gave me strength in difficult moments and helped me overcome every obstacle on the path to completing this degree.

Lastly, I want to express my appreciation to the professors and occupational therapy staff at GSU. Thank you for providing such a supportive and enriching program. With your help, I feel truly prepared to become the best OT I can be and to offer high-quality, evidence-based care to my future patients.

Abstract

Background: Research has identified multiple effective strategies for increasing social engagement and reducing negative behaviors in preschool classrooms, particularly among students diagnosed with autism spectrum disorder (ASD). Among these, music-based interventions have emerged as especially impactful, as many children with ASD respond to music on a deep, personal level. Despite this, many teachers report feeling unprepared or lacking confidence in implementing music-based activities. As a result, they often rely on screen-based tools, such as videos, rather than incorporating more creative, hands-on musical experiences that foster self-expression and meaningful social interaction.

Objective: The purpose of the proposed Capstone project is to create a music-based program that provides training and education for teachers, increasing the use of music-based activities in classrooms. A secondary goal is to assess teacher confidence in integrating music-based activities into preschool classrooms with children with ASD and evaluate the program's effectiveness based on teacher feedback.

ACOTE Areas: This capstone project highlights three relevant ACOTE areas: (a) *Program Development and Evaluation*, (b) *Education*, and (c) *Advocacy*.

Methods: To address the lack of confidence and competence reported by teachers, a Teacher-Centered Music-Based (TCMB) program was developed using Canva. The program outlines evidence-based activities, highlighting their developmental, behavioral, and social engagement benefits. Two preschool teachers from the Marcus Jewish Community Center's Sunshine School volunteered to pilot the program to assess its effectiveness in promoting social participation and behavioral skills in a preschool setting. To evaluate outcomes, both teachers completed a pre-

survey following a training session and a post-survey after implementing the TCMB program. A narrative phenomenological approach was used to explore their experiences and identify emerging themes throughout the process.

Results: The TCMB program consisted of a six-week implementation period, preceded by a one-week training workshop designed to support preschool teachers who felt unprepared or lacked confidence in delivering structured music-based activities. Following the program, both participating teachers reported a greater appreciation for stepping away from screen-based activities in favor of promoting peer interaction and self-expression. They noted that students responded positively to creating and playing instruments, and that musical collaboration transferred to increased engagement in other classroom areas. Additionally, the teachers found the TCMB program's structure easy to integrate into their existing routines and felt it significantly improved their confidence and understanding of the purpose behind music-based activities. Overall, they observed notable improvements in peer interaction, social engagement, and behavioral skills among their students.

Conclusions and Relevance: The TCMB program proved effective in increasing preschool teachers' confidence and competence in implementing music-based activities. For students with ASD, early exposure to such programs can serve as a form of early intervention by supporting the development of essential skills that are often delayed or challenging. Emphasizing early development of social participation, positive peer interactions, and self-regulation lays a strong foundation for future success. Regardless of classroom setting, the TCMB program encourages teachers to move beyond the overuse of screen-based activities and instead adopt creative, hands-on musical experiences that promote interpersonal skill development through engaging and meaningful activities.

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Introduction

The increasing reliance on screen-based instruction in early childhood education has raised concerns, particularly in preschool settings where many educators report lacking the training and confidence to implement interactive, music-based alternatives (Birch & Thompson, 2023). This issue is especially concerning for children with autism spectrum disorder (ASD), a population that often struggles with social engagement (Centers for Disease Control, 2024). Screen-focused learning can limit meaningful peer interaction by diverting attention away from the social environment, further impeding the development of critical social skills.

Although some digital platforms offer movement breaks, these remain screen-centered and fail to promote direct social interaction. As a result, children, especially those with ASD, may remain isolated, missing essential opportunities for interpersonal connections. This highlights the need for interventions that are both developmentally appropriate and socially engaging.

Current strategies often focus on regulation or movement but lack emotional relevance (Peiris et al., 2022; Wood, 2024). In contrast, music-based activities offer a compelling alternative, as many children with ASD show a strong affinity for music, which can foster emotional expression and connection (Applewhite et al., 2022). These interventions have been associated with improvements in attention, social communication, and emotional regulation, particularly when delivered in group or improvisational formats (Jaschke et al., 2024; Ke et al., 2022)

Despite this evidence, many classrooms continue to deliver music activities through screen-based content, diminishing their social benefits. To address this gap, educators need practical, evidence-based resources that support hands-on, interactive implementation.

This capstone project proposes the development of a Teacher-Centered, Music-Based (TCMB) training program designed to educate preschool teachers on the benefits of live, music-based activities for students with ASD. The program includes a one-week training module followed by a six-week implementation period, with pre- and post-surveys to evaluate changes in teacher confidence and student engagement. The TCMB program aims to reduce reliance on screens and empower teachers to deliver socially enriching, emotionally resonant instruction that supports both academic and developmental growth in children with ASD.

Chapter 1: Literature Review

Children with Developmental Disabilities in Preschool

Pre-school is a crucial period for children to develop key life skills, including social, emotional, behavioral, and cognitive skills (Birch & Thompson, 2023; Blasco-Magraner et al., 2021). If a child appears to be developmentally behind, it can lead to an increase in distractibility or frustration within the classroom environment (Blasco-Magraner et al., 2021). For example, many children with intellectual disabilities are capable of completing academic tasks but struggle with following detailed instructions, resulting in frustration and difficulty completing assignments (Jacob et al., 2021). Similarly, it has commonly been reported that children with various forms of emotional and behavioral disorders, such as attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD), have poor performance in concentration, motivation, and overall academic performance (Blasco-Magraner et al., 2021; Kim et al., 2009).

One of the most common diagnoses in preschool classrooms is ASD, with a prevalence of 1 in 46 preschool-aged children (Shaw & Bilder, 2023). According to the Centers for Disease Control (CDC), ASD is described as a developmental disability with communication and social difficulties (Centers for Disease Control, 2024). Within the United States, 1 in 6 children aged 2-8 years are diagnosed with a medical, behavioral, or developmental disorder (Shaw & Bilder, 2023). The estimated prevalence is projected to increase in future years due to earlier identification as more information and education is provided to the general public (Centers for Disease Control, 2024). Recent research has found that symptoms of ASD are typically observed within the first two years of the child's life (National Institute of Mental Health, 2024). With more preschool-aged children getting diagnosed with ASD, it is urgent to implement effective strategies that support their academic and developmental progress.

To enhance productivity and reduce challenging behaviors, research highlights the benefits of activities that break up instructional time, such as movement breaks, which improve focus and behavior in academic settings (Webster et al., 2014). Children with ASD often struggle with peer interactions, exhibiting low participation in group activities, exaggerated or absent responses (e.g., screaming or no reaction), and aggressive behaviors (e.g., biting or scratching) (Centers for Disease Control, 2024). Their inability to engage in social interactions with others, unfortunately, restricts their development in pre-school ages due to the limited social play with peers (Hume et al., 2019). In addition, challenging behaviors usually become more apparent when demands increase, such as when they are requested to follow classroom rules or need to interact with teachers or other classmates (Alrehaili et al., 2023). Therefore, it is crucial for preschool teachers to have access to effective strategies and classroom activities that help children with ASD develop essential skills and encourage participation in social interactions with peers.

Common Strategies and Activities in Preschool Classroom for Children with ASD

There are various strategies and activities that are commonly used to help children with ASD thrive in the preschool classroom. One common approach is incorporating movement breaks into their daily schedule (Peiris et al., 2022). These breaks allow preschoolers to stand and move around, increasing physical activity and breaking up academic instruction to enhance concentration, motivation, and cognition (Peiris et al., 2022). Additionally, teachers may provide access to sensory rooms or designated areas where children with ASD can self-regulate their emotions and behaviors using sensory-stimulating toys (Wood, 2024). Proper sensory stimulation helps children regulate their responses, calm overstimulated bodies, and optimize their learning and participation in the classroom environment (National Council for Special Education, 2021).

Another effective strategy is using social stories which are short narratives with text and/or pictorial cues illustrating appropriate social interactions. Social stories are told by a trusted adult that model expected social behaviors in various situations (Turner, 2021). Social stories help children with ASD, who often experience anxiety during social interactions, navigate unfamiliar situations and understand how to engage appropriately with peers in a relatable and accessible way (Saad, 2016). However, while these common strategies are beneficial, they do not fully support children with ASD in forming emotional connections, developing a sense of identity, or expressing themselves within their academic environment.

Music for Preschool Population

Music-based activities are among the most effective and developmentally appropriate interventions for children with ASD (Applewhite et al., 2022). Incorporating music into the academic curriculum helps regulate emotions and enhance social communication in ways that feel natural and engaging for children (Ke et al., 2022). Music is widely used in schools to provide stimulation, promote social skill development, and support emotional regulation (Blasco-Magraner et al., 2021; Ke et al., 2022). It can help children with ASD focus within the classroom by alleviating anxiety and stress and provide an easy resource for children to share how they are feeling (Stegemann et al., 2019). Additionally, music-based activities foster social interaction, creativity, and build a sense of community within the classroom.

The effectiveness of music-based activities is linked to the way ASD affects brain function. Research suggests that genetic and neurological factors contribute to ASD symptoms (Applewhite et al., 2022). If genetics play a role, these differences may impact the brain's structure and function during development. Research states that children with ASD have a unique attraction to music, allowing them to connect on a personal level and utilize music to help

increase social communication skills (Ke et al., 2022). Engaging in fun and motivating activities, such as music, can stimulate areas of the brain responsible for social, emotional, and cognitive growth, providing crucial support early in a child's academic and social life (Applewhite et al., 2022).

Music-based activities as a whole can be used in a variety of diverse ways, whether individual, meditative, or group-based. When discussing the major impact of social participation, music-based activities can help encourage a form of indirect communication for children with ASD (Applewhite et al., 2022). Group-based musical activities, in particular, have been shown to improve joint attention and eye contact in preschool-aged children (Gulsrud et al., 2007; Williams et al., 2024). In terms of cognitive development, music supports multiple brain functions, enhancing memory, attention, and verbal communication (Applewhite et al., 2022). Furthermore, music-based activities have been proven to decrease anxiety and stress within the busy preschool environment (Blasco-Magraner et al., 2021; Stegemann et al., 2019).

By integrating various forms of music-based activities, educators can provide preschoolers with ASD more opportunities to communicate their needs, develop deeper peer connections, stay on task, and concentrate on less desirable activities. Music-based activities can also facilitate smoother transitions between activities, reinforce lessons, and establish a structured classroom routine. Ultimately, consistently incorporating music-based activities can reduce negative behavior patterns and create a more supportive academic environment for children with ASD and their peers.

Comparing Common Music-Based Activities

Musical activities in preschool typically involve playing instruments, singing, listening, and dancing. Research identifies several common strategies for music-based activities, including improvisational music, group-based music, meditative music, and music and movement (Bieleninik et al., 2017; Blanky-Voronov & Gilboa, 2022; Brightwheel, 2024; Hattaway, 2022). In improvisational music, students choose an instrument and play freely along with a song, while group-based music involves playing instruments or dancing with peers. (Bieleninik et al., 2017; Blanky-Voronov & Gilboa, 2022). Meditative music consists of listening to relaxing melodies while engaging in a challenging task, and music and movement entails following a structured dance routine (Brightwheel, 2024; Hattaway, 2022).

Research shows that all these musical strategies benefit children's development. However, a combination of group-based and improvisational music has demonstrated the most significant impact on communication and emotional regulation in the preschool classroom (Jaschke et al., 2024). Ultimately, all music-based activities share one common goal: to make learning engaging, enjoyable, and motivating for preschool children.

Benefits of Music-Based Activities in the Educational Environment

Music-based activities have been identified in research as being extremely effective and useful within the classroom environment. Research shows they enhance concentration, motivation, and engagement while also improving skills in reading, mathematics, writing, and other academic areas (Blasco-Magraner et al., 2021). For children with ASD, music can help regulate emotions and provide a structured and safe way to explore social interactions (Ke et al., 2022). Compared to other classroom strategies, music-based activities yield better results in social skill development, communication, and behavior management (Ke et al., 2022). For example, among all the common musical activity strategies, singing is particularly effective in

reinforcing learning and encouraging verbal expression with reduced response time (Attar et al., 2022). By integrating music-based activities into the school curriculum, preschoolers can develop essential skills while also gaining an outlet for self-regulation.

Common Concerns of Preschool Teachers

Music-based activities traditionally seen in the preschool environment often involve children being in front of a smart board and moving to a video being played. While it is beneficial that children are still moving around, it limits social interactions since they are more focused on looking at the screen than they are engaging and learning with their peers. By adding in the aspect of social participation, it can help children work on crucial skills with their peers that will encourage an increase in communication, building friendships, and eventually lead to the child being able to appropriately communicate their needs to the trusted teacher or other adults. However, incorporating music-based activities that require social participation without the use of a video or screen involves the need for teacher-led activities. A key barrier to implementing these activities is that many teachers feel unqualified or lack confidence in leading music activities. Some educators believe music should be taught by professionals, leading them to avoid incorporating it into their lessons (Birch & Thompson, 2023). This self-doubt results in incomplete or omitted activities, ultimately limiting students' engagement opportunities.

Research confirms that students achieve better outcomes when music-based activities are led by trained professionals (Su Maw & Haga, 2018). The concept that better outcomes are gained by a more confident professional highlights the need to support and educate teachers on how to effectively implement music-based activities in their classrooms. Providing teachers with proper training and empowering them to incorporate music-based activities that encourage peer interaction can help bridge this gap. By equipping educators with the skills and confidence to use

music in their lessons, preschoolers will gain greater access to engaging and beneficial musical experiences, ultimately improving their communication and social skills.

Purpose of Music-Based Program

This literature review highlights the importance of movement activities in preschool classrooms, particularly for children with ASD. Among the various strategies examined, music-based activities stand out as one of the most effective methods for fostering peer engagement and improving communication skills. However, the main challenge in implementing these activities is the lack of teacher confidence in leading music-based activities without relying on videos. Encouraging teachers to facilitate social participation through music is crucial for supporting children with ASD. A structured music-based program that educates teachers on the benefits of music activities and provides training on how to implement them can help bridge this gap. If teachers are given the tools and knowledge to confidently lead music-based activities, they will be better equipped to support their students in developing essential communication and socialization skills.

The purpose of the proposed Capstone project is to create a music-based program that provides training and education for teachers, increasing the use of music-based activities in classrooms. A secondary goal is to assess teacher confidence in integrating music-based activities into preschool classrooms with children with ASD and evaluate the program's effectiveness based on teacher feedback.

Chapter 2: Needs Assessment

This needs assessment explored the effectiveness of a music-based program for preschool children with ASD. Research indicated that children with ASD are naturally drawn to music and often find it a safe and structured medium for socioeconomical development (Ke et al., 2022). However, previous studies highlight that many teachers feel unprepared or lack confidence in incorporating music-based activities in their classrooms (Birch & Thompson, 2023). To address this gap, this needs assessment involved qualitative data collection through interviews with volunteer teachers, along with classroom observations. The goal was to identify common themes in how music-based activities are currently implemented and assess opportunities for integrating a structured music-based program into the preschool curriculum.

The purpose of this needs assessment was to analyze existing music-based activities utilized within the preschool classroom environment to provide insight into the development of a music-based program.

Process and Methods

Setting and Participants:

This needs assessment was conducted in collaboration with the Marcus Jewish Community Center of Atlanta's (MJCCA) Sunshine School. The selected site mentor at the MJCCA introduced the study to preschool teachers and assisted in recruiting volunteer participants. Two preschool teachers from the MJCCA were recruited, interviewed, and observed in their daily classroom environment.

Study Methods

Two volunteer teachers from the MJCCA were recruited and interviewed either via Webex or in person. The student researcher followed an interview guideline to ask about the music-based activities they used, their opinions and knowledge of the activities, their confidence in incorporating them into the daily curriculum, and general aspects of their classroom environment. Each interview lasted approximately 30 minutes.

A classroom observation was conducted for each teacher to examine the daily preschool schedule and environment. The goal was to understand how music is integrated into the curriculum and determine the most suitable times for incorporating music-based activities within the program. The student researcher who conducted the observation did not have direct contact with the students.

Data Collection

Interviews were recorded through Webex for virtual sessions and via audio recording on the student researcher's phone for in-person sessions. Recordings were transcribed using the Webex script function as well as manually by the student researcher. All recordings and transcripts were downloaded and stored on a password-protected, login-required computer, accessible only to research team members. Identifiable information of the interviewees was not included in the transcriptions, and their names were replaced with Participant#01 and Participant#02. Before the interviews began, participants provided informed consent verbally. They had the opportunity to learn about the study's requirements and ask questions before agreeing to participate. The class observation was not recorded or filmed. The student researcher took notes on classroom activities without documenting any student-related information. All notes were stored on a password-protected, login-required computer, accessible only to research team members.

Ethical Considerations

Participation was voluntary. Teachers received detailed information about the needs assessment's purpose and requirements and had the opportunity to ask questions before providing verbal consent. In-person interviews took place in a private room at the MJCCA. Participants were able to withdraw or skip questions at any time. This needs assessment aimed to benefit teachers and students by evaluating the impact of music-based activities.

Results

Interview: Teacher 1

The first interview was conducted on July 17, 2024. This teacher has a strong background in music, being a self-taught piano instructor for eight years. Passionate about music, she has taken multiple music classes and actively incorporates musical activities into her classroom. She also lets her students experiment with different notes and simple songs by bringing instruments, most commonly the piano, into her classroom.

During the interview, she emphasized her familiarity with music-based activities and her regular use of musical crafts and activities in her preschool classroom. One challenge she highlighted was *“the limited classroom space, which makes it difficult to implement large movement activities.”* Regarding behavior concerns, she noted that undesired behaviors are a minor issue during the school day, particularly at the beginning of the year. However, she incorporates self-regulation strategies to help students manage their emotions and develop coping skills over time. Positive reinforcement, such as behavior charts, is also used to reward students who demonstrate good behavior.

When discussing positive classroom outcomes, she stressed the importance of students learning and growing through engagement and hands-on experimentation with their environment. The current music-based activities allow children to explore music using a variety of instruments, both prefabricated and those crafted by the students. In addition to music crafts and dancing, she stated she *“frequently incorporates board and movement-based videos that encourage active participation in the classroom.”*

At the end of the interview, after learning about the newly developed music-based program, she expressed interest in its targeted approach for children with ASD. She stated that she was *“particularly intrigued by strategies that move away from screen use to promote social participation and support children in communicating their needs as challenges arise.”* During the interview, she stated that her main goals are *“to recognize their name, write their name, and work on the necessary academic and social skills needed to be as fully independent as possible within the classroom and within their community.”*

Interview: Teacher 2

The second interview was also conducted on July 17, 2024. This teacher enjoys music but does not have formal training in music theory. She has a personal interest in music and integrates it into her classroom when possible. The teacher highlighted many positive aspects of her classroom structure and organization that support student growth and learning. She stated during the interview, *“with a larger classroom, students have ample space to move, dance, and play.”* She emphasized her strong focus on a play-based model, allowing students to learn and develop through interactions with their environment. By encouraging play-based learning, she believes students gain greater independence as the year progresses.

When discussing undesired behavior, she acknowledged that *“it is a significant concern in the preschool setting, particularly at the beginning of the year.”* She stated, that *“fighting and arguing, especially among preschool boys, are common challenges.”* To address these situations, she implements self-regulation strategies and communicates with parents to discuss incidents and possible underlying causes. Additionally, she *“encourages students involved in conflicts to talk through their issues independently in hopes of reaching a resolution on their own before intervening.”*

Regarding the role of music in the classroom, she explained how it helps facilitate smoother transitions between activities. During the interview, she stated an example, *“playing a clean-up song encourages students to participate in tidying up by making it an enjoyable and engaging experience rather than a chore.”* She also noted that music helps some students come out of their shells and fosters a sense of connection within the classroom in a way that nothing else does. However, a few students prefer to stay on their own rather than participate in group activities. Over time, she observed that these students gradually become more engaged with the group, but until then, she allows them to explore at their own pace.

She concluded the interview by expressing her enthusiasm for music and how she was *“eager to learn more about evidence-based musical activities that can further support her students' development.”* During the interview, she stated that her main goals are *“meeting students at their individual developmental levels, encouraging independence through peer-based learning, and supporting a smooth transition from preschool to more structured academic environments.”*

Observations

During classroom observations, both teachers gave a tour of their classroom environment and explained how music is best incorporated into their routines, as well as where specific time slots could be allocated for activities outlined in the music-based program. Both classrooms had a similar approach to music and emphasized its importance in their overall classroom structure. For example, both teachers noted that music is primarily used to facilitate smooth transitions between activities. Additionally, both teachers observed that when music was used during structured learning time, students seemed to grasp information more easily and quickly. Overall, the classroom observations provided valuable insight into how beneficial and seamlessly music could be integrated into their existing structures. Both teachers expressed excitement about learning more and incorporating evidence-based music activities proven to be effective for preschool-aged children.

Discussion

Findings suggest that a structured music-based program would be highly beneficial for the MJCCA's preschool classrooms. Teachers already recognize the value of music but would benefit from additional strategies that encourage social participation and communication.

The second teacher's emphasis on conflict resolution highlights another key opportunity that music-based activities could be designed to promote communication and self-expression, helping students work through conflicts constructively. Both teachers rely on screen-based musical activities, indicating a need for a program that shifts focus toward hands-on, peer-engaging experiences. By replacing passive screen time with interactive music-based activities, students may experience increased participation, emotional regulation, and reduced behavioral challenges. By implementing the structured music-based program over six weeks, teachers could

observe improvements in student engagement and behavior earlier in the school year, allowing for continued skill-building throughout the academic term.

Conclusion

This needs assessment highlights the importance of integrating structured, interactive music-based activities into preschool classrooms. By addressing teacher concerns, reducing reliance on screen-based activities, and fostering social participation, the proposed program has the potential to enhance communication, emotional regulation, and overall student engagement within the preschool educational environment.

Chapter 3: Theories & Models

SCERTS Model

The social communication, emotional regulation, and transactional support (SCERTS) model (Yu & Zhu, 2018) is a multidisciplinary educational approach designed to enhance emotional regulation and social communication in individuals with ASD. This model emphasizes transactional support to facilitate meaningful learning experiences and improve long-term outcomes (Yu & Zhu, 2018). A key feature of the SCERTS model is its focus on the child's surrounding environment, including family, professionals, community members, and peers, to strengthen multidisciplinary teamwork. Effective communication and collaboration among these individuals ensure that evidence-based activities are applied consistently across different contexts.

Music-based interventions are often integrated within the SCERTS model to maximize benefits for children, particularly in academic settings (Srinivasan & Bhat, 2013). This aligns with the objective of this capstone project, which aims to train teachers to confidently incorporate music-based activities into the classroom curriculum. By doing so, children with ASD can experience a more structured and multidisciplinary approach to learning in preschool.

Theory of Music, Mood, and Movement (MMM)

The theory of music, mood, and movement (MMM) (Murrock & Higgins, 2009) combines principles from physical activity guidelines and music theories to explore the relationship between music, movement, and overall health. This theory proposes that music influences mood and serves as a cue for movement, making physical activity more enjoyable and improving overall well-being. This theory is particularly relevant to this capstone project, as it

suggests that incorporating music into the lives of children with ASD may help reduce negative behaviors. By positively affecting mood, music can foster a more engaging and motivating classroom environment. Additionally, the role of music as a movement cue can promote social involvement, increase motivation, and encourage participation in learning activities.

Social Cognitive Theory of Self-Regulation

The social cognitive theory of self-regulation (Bandura, 2001) emphasizes the importance of self-regulation as a key factor in behavior change. These changes can be broken down into three core categories: self-judgment, self-monitoring, and self-evaluation (Tougas et al., 2015). Mastering all forms of self-regulation is crucial for addressing negative behavior problems and helping children learn how to calm themselves when they become frustrated or angry. In the classroom, each child requires different strategies and tools to understand how to self-regulate during challenging situations. This concept is particularly relevant to this capstone project, as understanding the underlying causes of negative behavior patterns in children with ASD will allow an opportunity to develop a music program that addresses these issues and provides a tool to help regulate children's emotions.

Chapter 4: Methods

Project Design

The purpose of this capstone project is to develop and implement a music-based program specifically designed for preschool teachers working with children with ASD. The TCMB program is tailored for teachers who may lack confidence in incorporating music-based activities or may not fully understand their benefits for preschool-aged children. This study follows a survey and observational research design to assess the effectiveness of the program within the classroom environment.

Participants

The study involves two preschool teachers from the Sunshine School, selected by the site mentor based on their classroom environments and student age groups. The classrooms combined consisted of sixteen students between the ages of 3 and 5. Both teachers voluntarily agreed to participate in the program, providing verbal consent during the training workshop. They also acknowledged their right to withdraw from the study at any time.

Program Development

To develop the TCMB program, the student researcher conducted extensive research on the benefits of music-based activities for children with ASD, drawing from sources such as the CDC, Healthcare Highways, Brightwheel, and Wilson College. This research was categorized into key themes, which formed the basis of Module 1 of the TCMB program. Module 1 educates teachers on the fundamentals of music-based activities, their barriers, benefits, and notable research findings. Modules 2–7 focus on identifying and organizing the most effective music-based activities for the preschool setting. Each module provides detailed summaries, including

materials, time requirements, step-by-step instructions, and the benefits of each activity. Musical craft activities found on various blogs and articles were identified through online searches and adapted to suit preschool skill levels. Activities were structured into 1–2 musical craft projects per week and integrated into an online training platform created using Canva.

Additionally, all modules emphasize peer interaction and decision-making skills. Specific activities were designed to encourage students to choose an instrument they created and play along with their peers. Body movement activities were incorporated to enhance proprioception and active listening skills. Observations of classroom routines helped refine the program to ensure its seamless integration into the existing curriculum.

To support teachers, music-based instructional videos were curated from YouTube and compiled into a Spotify playlist. Teachers were encouraged to use these videos solely for audio purposes to foster student interaction and active listening rather than passive screen time.

Two surveys were included in Modules 1 and 7 to evaluate program effectiveness. These 10–15-minute surveys, created using Qualtrics, contain 8–10 questions assessing teachers' knowledge, comfort level, and experiences with music-based activities.

Program Implementation

The TCMB program, developed using Canva, serves as a training tool for preschool teachers, specifically targeting children with ASD. However, for this study, the program was implemented with two preschool teachers working primarily with neurotypical students. The TCMB program aimed to enhance collaboration, social engagement, and creativity by guiding students through the creation of seven different musical instruments using recycled materials.

Outcome Measures

Teachers completed two brief surveys, each taking approximately 10-15 minutes, to measure changes in their confidence and competency levels while evaluating the program's effectiveness. The pre-survey was administered at the beginning of module 1, after the training workshop, while the post-survey was conducted at the end of module 7. All survey data were collected and stored securely in the Qualtrics database on a password-protected computer. Additionally, classroom observations occurred twice a week or as requested by teachers. These observations ensured proper implementation of activities and provided opportunities for teachers to ask questions. Verbal feedback and key observations were documented and compared with survey responses to maintain consistency and accuracy in the data analysis.

Data Analysis

Following program completion, the student researcher analyzed pre- and post-survey data to assess improvements in teacher confidence and program effectiveness. Common themes and feedback from the two teachers were categorized, with standalone comments examined for additional insights. A narrative phenomenological approach was used to interpret teacher experiences, identifying overarching themes from their feedback. This qualitative method allowed for a deeper understanding of how the TCMB program impacted teacher confidence and classroom engagement.

Site Description

The MJCCA is a nonprofit organization serving over 55,000 individuals annually. Established nearly a century ago, the MJCCA partners with approximately 200 local businesses and organizations to provide diverse programs spanning education, fitness, social services, and summer camps (Marcus Jewish Community Center of Atlanta, 2015). The organization's mission

is to foster a vibrant Jewish community through high-quality programs that promote meaningful connections and Jewish values. Its strategic goals include investing in member-centered initiatives, developing core competencies, expanding community engagement, and improving accessibility to the Zaban Campus, where 85% of members identify as Jewish (Marcus Jewish Community Center of Atlanta, 2015). The MJCCA relies on a workforce of 600 volunteers and thousands of employees dedicated to leadership, inclusion, and community engagement. Staff members are expected to embody MJCCA's values of collaboration, respect, and effective communication to serve the community with excellence (Marcus Jewish Community Center of Atlanta, 2015).

The MJCCA operates three preschools inspired by Jewish values and the Reggio Emilia approach to early childhood education (Temple Kol Emeth, 2025). These preschools prioritize creativity, curiosity, and exploration while fostering collaboration between children, families, and educators. The Sunshine School, located in Marietta, GA, served as the implementation site for the TCMB program.

Alignment with MJCCA and Sunshine School Goals

The TCMB training program aligns with the Sunshine School's philosophy and the MJCCA's broader mission by promoting creativity, self-expression, and social engagement. The program encourages students to construct musical instruments from recycled materials, decorate them freely, and collaborate with peers in musical activities. This approach supports autonomy, social interaction, and creative learning while strengthening classroom relationships. By fostering meaningful connections among students, teachers, and families, the TCMB program reinforces the MJCCA's commitment to community engagement. Teachers gain valuable skills to enhance their classroom environments, while students develop social and emotional

competencies through music-based activities. Ultimately, the TCMB program provides an innovative, research-backed approach to early childhood education that benefits both educators and students.

Chapter 5: Results

Participant Characteristics

The participants in this study were two preschool teachers at the MJCCA's Sunshine School, each with multiple years of preschool experience. The TCMB program was implemented in two preschool classrooms at the Sunshine School. One classroom consisted of six children aged 3–4 years, while the other had ten children aged 4–5 years. The children in these classrooms exhibited a range of challenges, including social, emotional, behavioral, and physical difficulties. According to the teachers, these difficulties at times created a learning environment that was difficult to navigate and support developmental growth.

Program Outputs

The program spanned seven weeks, beginning with a one-week training module, broken into subtopics (Figure 1), that focused on information regarding common music-based activities as well as barriers in children with ASD seen in the classroom environment. The training module was then followed by a six-week hands-on implementation period (Figure 2). The TCMB program was delivered through an online platform, Canva, which teachers accessed via a link provided by the student researcher. Teachers dedicated approximately one hour per week for preparation, while the in-class music-based activities lasted between 15 and 30 minutes each day. These times frames were intentionally designed to fit smoothly into existing classroom routines.

Figure 1. Module 1 Subtopics

Module 1 Subtopics:

1. *What is Autism Spectrum Disorder (ASD)?*
 - *Factors/Barriers for Children with ASD*
2. *What is Music-Based Activities?*
3. *What are the benefits of Music-Based Activities within the Pre-K and K educational environment?*
4. *Why is the TCMB necessary?*

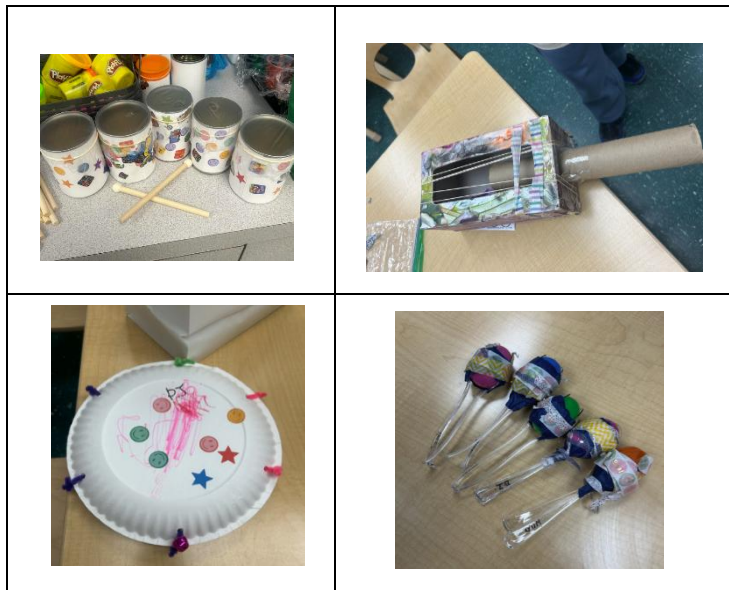
Figure 2. Examples of Weekly Training Program Modules for 6-week TCMB program

<p>Musical Activities: Kazoo and Bottle Top Castanets</p> <p><u>WEEK 2 OVERVIEW:</u></p> <p>Monday: Create Homemade Kazoo Tuesday: Kazoo Musical Activity Wednesday: Create Bottle Top Castanets Thursday: Bottle Top Castanets Musical Activity Friday: Student Choice!</p>	<p>Musical Activity: Tamborine Craft</p> <p><u>WEEK 4 OVERVIEW:</u></p> <p>Monday: Body Movement & Music Activity Tuesday: Tamborine Craft Wednesday: Tamborine Musical Activity Thursday: Student Choice! Friday: Student Choice!</p>
<p>Musical Activity: Rainstick Craft</p> <p><u>WEEK 5 OVERVIEW:</u></p> <p>Monday: Follow the Directions Musical Activity Tuesday: Student Choice! Wednesday: Rainstick Craft + Musical Activity Thursday: Student Choice! Friday: Student Choice!</p>	<p>FREE CHOICE ACTIVITIES</p> <p><small>Have the students collaborate to choose what they want to do to each day of the last week - body movements or musical activities. If they do not know what to decide, then follow the schedule listed below.</small></p> <p>Monday: Follow the Directions Musical Activity Tuesday: Student Choice! Wednesday: Follow the Directions Musical Activity Thursday: Student Choice! Friday: Student Choice!</p> <p><small>USE THIS MODULE AS A QUICK RESOURCE GUIDE FOR ALL MOVEMENT AND MUSIC SONGS</small></p>

For example, on one day, students might create and craft their own musical instruments—such as maracas, guitars, drums, or tambourines (Figure 3)—while on another day, they might

use those instruments during free play, choose from various available instruments, or engage in movement-based activities like dancing or rhythm exercises using their bodies and listening skills. Regardless of the specific activity, the classroom teacher independently initiated and implemented the music session after preparing through the TCMB program.

Figure 3. Music-Based Activity Craft Examples



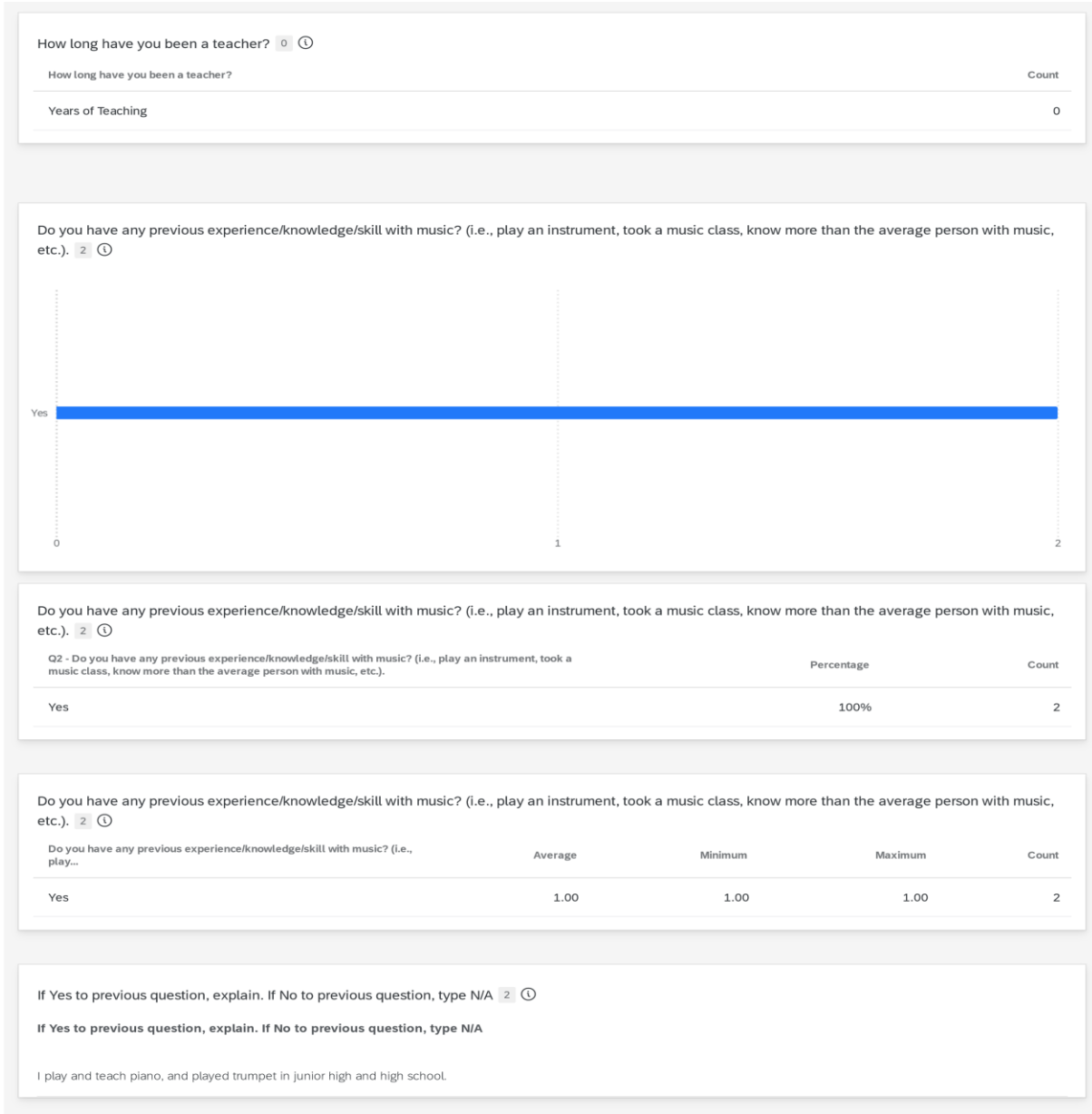
The student researcher conducted classroom observations twice a week, on Mondays and Fridays, to document the implementation process and gather notes on student engagement and teacher facilitation. This specific population was chosen with the intention of demonstrating the program’s adaptability and potential for seamless integration into any preschool classroom, regardless of student behavior or classroom dynamics.

Program Evaluation

A pre- and post-test survey (Figures 4 & 5) was used to assess the effectiveness of the TCMB program. The survey questions evaluated the teachers’ perceived competence and

confidence in using music-based strategies, particularly in relation to their students, as well as students diagnosed with ASD.

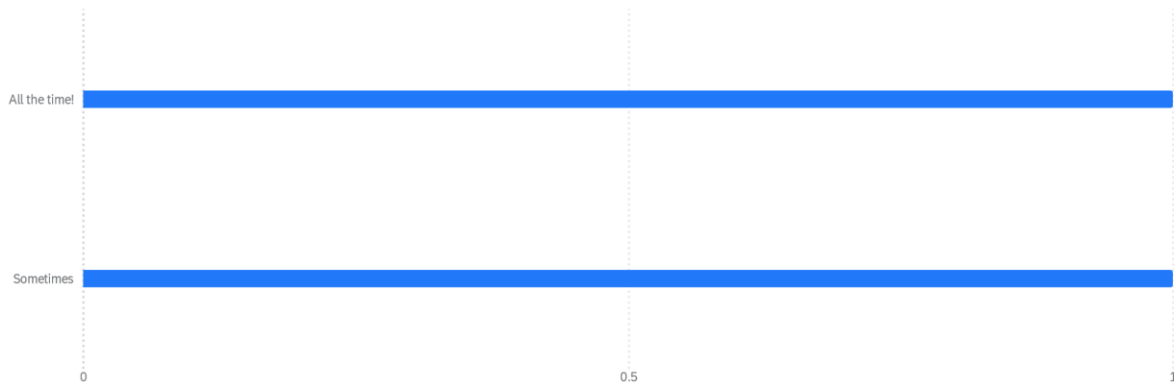
Figure 4. Pre-Survey Responses.



If Yes to previous question, explain. If No to previous question, type N/A

Years ago played basic piano

How often do you use music within your classroom? 2 ⓘ



How often do you use music within your classroom? 2 ⓘ

Q4 - How often do you use music within your classroom?	Percentage	Count
All the time!	50%	1
Sometimes	50%	1

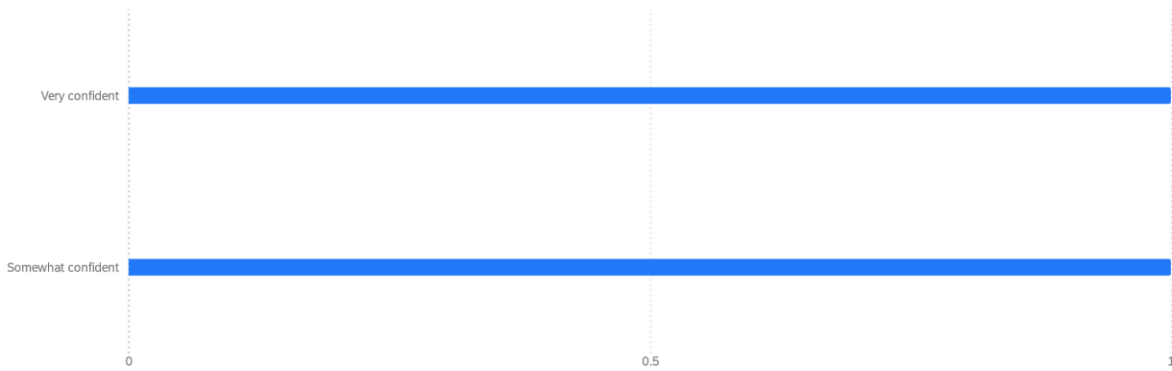
How often do you use music within your classroom? 2 ⓘ

How often do you use music within your classroom?	Average	Minimum	Maximum	Count
All the time!	1.00	1.00	1.00	1
Sometimes	2.00	2.00	2.00	1

How do you mostly incorporate music into your classroom? 2 ⓘ

How do you mostly incorporate music into your classroom?

How confident do you feel in incorporating music into your classroom curriculum? 2 ⓘ



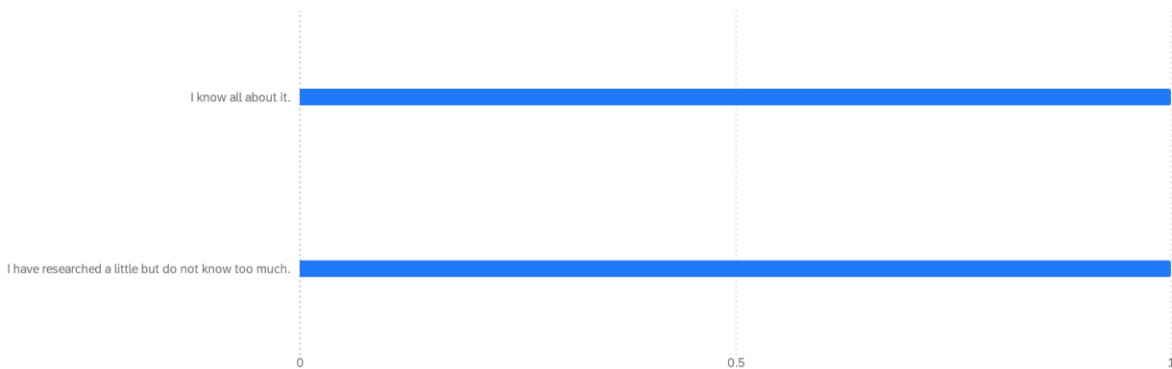
How confident do you feel in incorporating music into your classroom curriculum? 2 ⓘ

Q6 - How confident do you feel in incorporating music into your classroom curriculum?	Percentage	Count
Very confident	50%	1
Somewhat confident	50%	1

How confident do you feel in incorporating music into your classroom curriculum? 2 ⓘ

How confident do you feel in incorporating music into your classroom curric...	Average	Minimum	Maximum	Count
Very confident	1.00	1.00	1.00	1
Somewhat confident	2.00	2.00	2.00	1

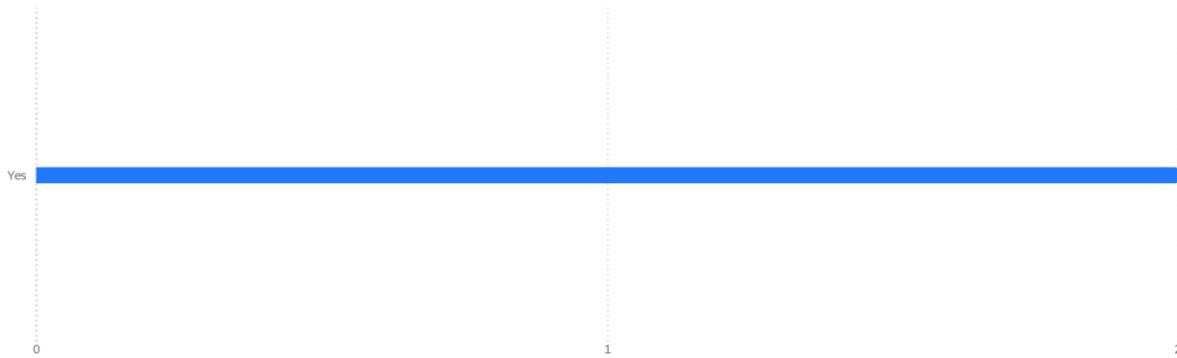
How knowledgeable are you on the impact that music-based activities can have on preschool aged-children with ASD? 2 ⓘ



How knowledgeable are you on the impact that music-based activities can have on preschool aged-children with ASD? 2 ①

How knowledgeable are you on the impact that music-based activities can hav...	Average	Minimum	Maximum	Count
I know all about it.	1.00	1.00	1.00	1
I have researched a little but do not know too much.	2.00	2.00	2.00	1

Do you believe that music-based activities can help the children in your classroom thrive? 2 ①



Do you believe that music-based activities can help the children in your classroom thrive? 2 ①

Q8 - Do you believe that music-based activities can help the children in your classroom thrive?	Percentage	Count
Yes	100%	2

Do you believe that music-based activities can help the children in your classroom thrive? 2 ①

Do you believe that music-based activities can help the children in your cl...	Average	Minimum	Maximum	Count
Yes	1.00	1.00	1.00	2

Summarize how you think music-based activities can impact the preschool/kindergarten academic environment. 2 ①

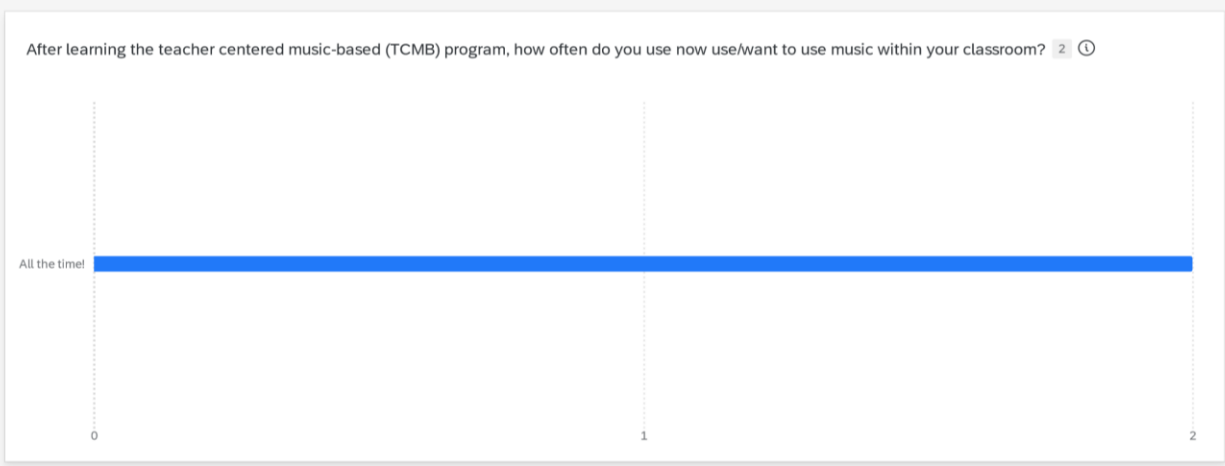
Summarize how you think music-based activities can impact the preschool/kin...

Many children respond to music and the movements it provides. I have made up songs about how to hold a scissors and cut, and how to spell their names. I use music in all areas and often hear the children singing songs they recently heard.

It's creative, stirs the imagination, can be soothing, can be used as a connection to a specific theme we are working on

Figure 5. Post-Survey Responses.

Responses: 2



After learning the teacher centered music-based (TCMB) program, how often do you use now use/want to use music within your classroom? 2 ⓘ

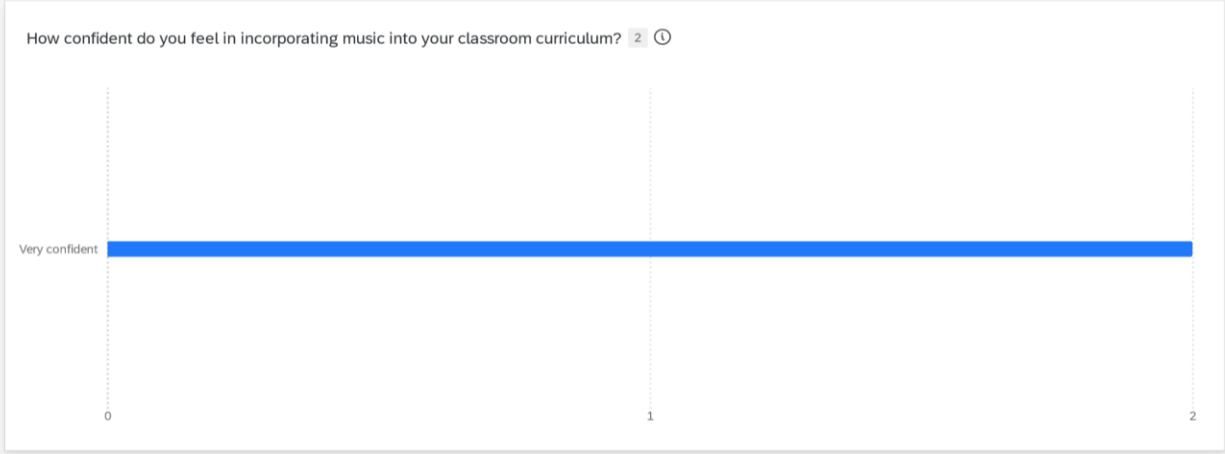
Q1 - After learning the teacher centered music-based (TCMB) program, how often do you use now use/want to use music within your classroom?

	Percentage	Count
All the time!	100%	2

After learning the teacher centered music-based (TCMB) program, how often do you use now use/want to use music within your classroom? 2 ⓘ

After learning the teacher centered music-based (TCMB) program, how often d...

	Average	Minimum	Maximum	Count
All the time!	1.00	1.00	1.00	2



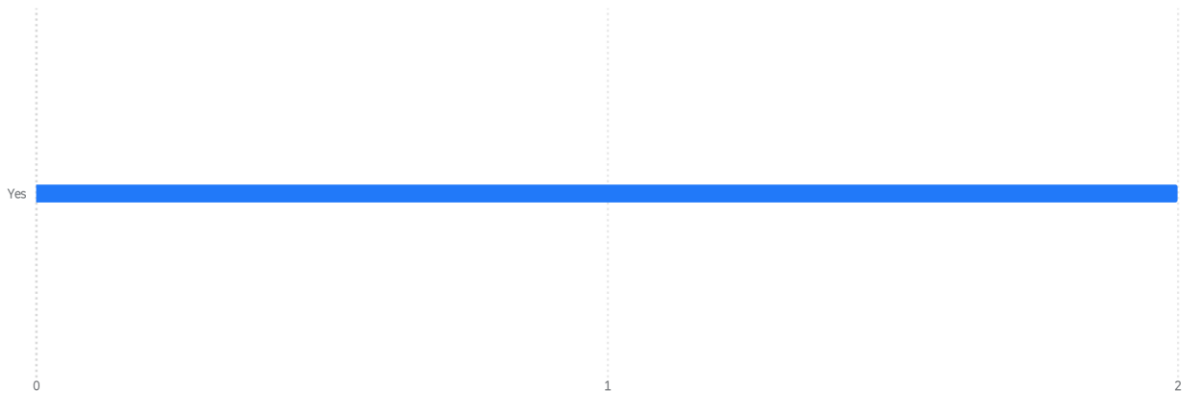
How confident do you feel in incorporating music into your classroom curriculum? 2 ⓘ

Q2 - How confident do you feel in incorporating music into your classroom curriculum?	Percentage	Count
Very confident	100%	2

How confident do you feel in incorporating music into your classroom curriculum? 2 ⓘ

How confident do you feel in incorporating music into your classroom curric...	Average	Minimum	Maximum	Count
Very confident	1.00	1.00	1.00	2

Do you believe that music-based intervention can help the children in your classroom thrive? 2 ⓘ



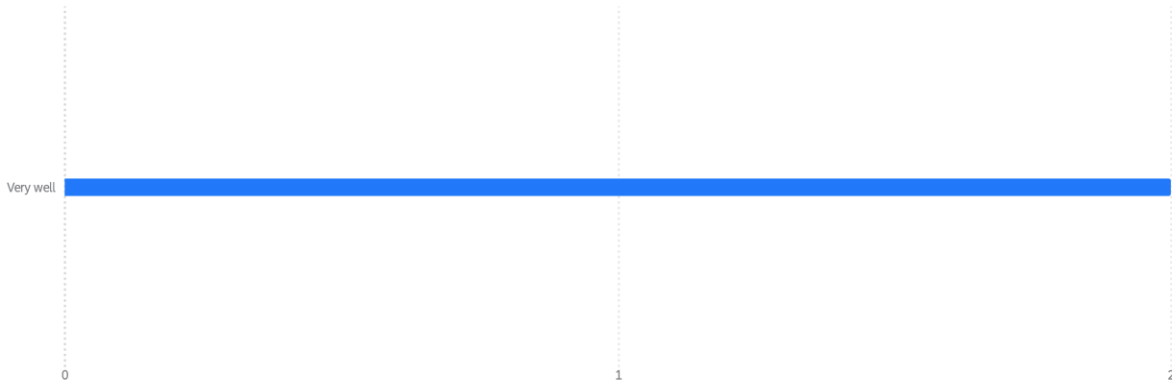
Do you believe that music-based intervention can help the children in your classroom thrive? 2 ⓘ

Q3 - Do you believe that music-based intervention can help the children in your classroom thrive?	Percentage	Count
Yes	100%	2

Do you believe that music-based intervention can help the children in your classroom thrive? 2 ⓘ

Do you believe that music-based intervention can help the children in your...	Average	Minimum	Maximum	Count
Yes	1.00	1.00	1.00	2

How well do you understand the impact music-based intervention can have on preschool aged-children with ASD? 2 ①



How well do you understand the impact music-based intervention can have on preschool aged-children with ASD? 2 ①

Q4 - How well do you understand the impact music-based intervention can have on preschool aged-children with ASD?	Percentage	Count
Very well	100%	2

How well do you understand the impact music-based intervention can have on preschool aged-children with ASD? 2 ①

How well do you understand the impact music-based intervention can have on...	Average	Minimum	Maximum	Count
Very well	1.00	1.00	1.00	2

Summarize 2 key take-aways from this training session? 2 ①

Summarize 2 key take-aways from this training session?

The children enjoyed making these instruments and seeing how well they worked when complete! It made the group more cohesive when playing together

The class really enjoyed making all the instruments and using them during our brain breaks. Music and movement make the children more engaged and involved.

Summarize (1-2 key details) about what you now know involving the impact of music-based interventions? 2 ①

Summarize (1-2 key details) about what you now know involving the impact of...

It can be soothing & calming . It gives some children more confidence to experiment with sounds

Music is one of the best tools to use for teaching. It keeps the class engaged and involved in so many ways. It's a great way to teach concepts and incorporate teachable moments. Plus it can be adapted to meet anyone's needs.

Is there anything not mentioned in the training session that you would like to know?

Is there anything not mentioned in the training session that you would like...

no

Is there anything else overall that you would like to comment on/add/share involving the next 6 weeks?

Is there anything else overall that you would like to comment on/add/share...

We had a very pleasant time with Ms. Jennifer. She was very well prepared and very supportive

Thank you for all your hard work and dedication to make this program. The children looked forward to their time with you and making the instruments.

In the pre-survey, teacher one expressed a strong interest in music and reported being familiar with music-based activities. In contrast, teacher two indicated that she had some knowledge of music-based activities but did not feel confident enough to implement them independently. However, after completing the TCMB program, teacher two stated in the post-survey that she now feels confident incorporating music-based activities into her classroom routine. On the final day of the program, she shared that she *“absolutely loved learning new ways to incorporate music into her classroom without showing videos constantly.”* Teacher one echoed a similar sentiment, noting that, *“kids get so into it when it is their own creation that it makes it just so much more meaningful to them.”* She further explained that making their own instruments, *“really helps them develop these important educational and life skills more easily and in a fun way.”* Overall, both teachers demonstrated increased competence and expressed greater confidence in using music-based activities independently, without relying on videos or screen time.

Outcome Measures

Through a combination of classroom observations, teacher reports, and survey responses, an overall improvement in social engagement among students was observed. Teacher two noted in the post-survey that the TCMB program “*made the group more cohesive when playing together.*” This observation was supported by the student researcher, who initially noted instances of students fighting over craft supplies and showing little interest in their projects. By the end of the program, however, students were observed sharing materials, laughing, and engaging in collaborative play with their instruments.

In addition to these observations, teacher one remarked in the post-survey that the program “*made the children more engaged and involved*” during class time. These qualitative reports and behavioral observations suggest that the TCMB program contributed to increased social participation, improved peer interactions, and a reduction in negative behavior patterns over the course of the program.

Chapter 6: Discussion

Contextualization

This study specifically examined the effects of a teacher-led, music-based intervention on preschool students, with particular attention to its potential benefits for children with ASD. Several findings from this study align with existing literature. For instance, both participating classrooms, along with the majority of previously cited studies, emphasized concerns regarding excessive screen time and the importance of providing screen-free brain breaks. Furthermore, this study reinforces prior research demonstrating the positive impact of music-based interventions on behavior and the development of peer interactions, particularly within preschool settings. These outcomes further support earlier findings suggesting that music can enhance communication and social participation skills during a critical period of social development. Although no formally diagnosed students with ASD participated in the study, the observed increases in social participation and positive peer engagement provide compelling implications. Given existing research indicating that children with ASD often form strong personal connections with music, it is likely that similar activities could yield comparable, if not greater, benefits for this population.

A notable discrepancy between prior research and the findings of this study is the perception of teacher competence in facilitating music-based activities without the use of video or other screen-related content. In earlier studies, teachers frequently reported a lack of confidence in leading such activities independently, often relying on videos during brain breaks due to the convenience and the absence of alternative strategies. However, in the current study, participants who had previously expressed uncertainty or limited their break activities to simple crafts reported a significant increase in both confidence and competence following their

involvement in the TCMB program. These findings suggest that when educators are provided with clear, practical instructions and adaptable approaches, they are more likely to implement non-screen-based activities effectively, resulting in improvements in student behavior and social communication within the classroom.

New Insights

The findings from this study contribute to emerging perspectives on reducing reliance on screen-based activities in early childhood classrooms. They highlight the potential of incorporating group games, crafts, and other socially engaging, teacher-led activities—whether music-based or not—as effective alternatives for brain breaks. The improvements observed in communication, social participation, and behavioral outcomes associated with reduced screen time suggest that such approaches may be valuable for broader classroom implementation. These results may encourage educators to reconsider the frequent use of screen time during the school day and explore more interactive, developmentally supportive methods. In the long term, prompting teachers to engage students through creative, non-digital strategies may not only enhance immediate classroom dynamics but also help foster essential social and learning skills that extend beyond the classroom and into students’ future experiences.

Additional findings from this study support educators who may perceive themselves as lacking confidence or competence to facilitate meaningful, screen-free activities. Participation in the TCMB program appears to provide these teachers with a greater sense of security and self-assurance in promoting peer interaction through engaging and developmentally appropriate practices. Moving away from screen-based methods, and instead incorporating activities such as instrument-making, collaborative crafts, or teacher-led instructional songs and movement, has been shown to support preschoolers’ social development. These types of activities not only foster

positive peer interactions within the classroom but also help cultivate interpersonal and communication skills that can extend beyond the school environment.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the small sample size, which was limited to two teachers and classrooms with an average of eight students, restricts the generalizability of the results. Second, both participating teachers had previously incorporated music in some capacity within their classroom routines. Notably, one teacher had already expressed an understanding of the value of music-based activities and was actively seeking to reduce screen time, which may have influenced the outcomes. A third limitation is the absence of students with a formal diagnosis of ASD. Although several students displayed early signs of ASD, none had received a confirmed medical diagnosis, which limits the specificity of the study's findings to the ASD population.

Despite these limitations, the study also presents notable strengths. First, the results successfully addressed all proposed research aims. Additionally, the surveys employed multiple methods to support both content and face validity of the TCMB program, suggesting its potential for broader application among preschool educators. This program may be particularly useful for teachers seeking practical strategies to reduce screen time in the classroom. Finally, the study contributes to the growing body of evidence supporting the use of music-based, teacher-led interventions to foster positive peer interactions and enhance developmental outcomes in preschool-aged children.

Clinical Relevance

Overall, this capstone project demonstrates significant benefits for preschool teachers and the structure of their classrooms. The TCMB program offers a six-week sequence of music-based activities designed to help educators recognize the developmental importance of reducing screen time. By providing an established, easy-to-implement framework, the program encourages teachers to step outside their comfort zones and experiment with creative, engaging alternatives to screen use. These activities not only increase opportunities for peer interaction but also help teachers feel more confident in their ability to support student development through play-based, music-centered learning.

The program's impact extends beyond the teachers themselves, indirectly benefiting students by fostering a more interactive and developmentally stimulating classroom environment. As teachers integrate these activities into their established routines, they empower students to build essential academic, social, and personal skills that support growth both inside and outside the classroom and into later stages of life. Encouraging peer interaction and creativity in place of passive screen engagement promotes more meaningful learning experiences and contributes to long-term developmental success.

Furthermore, the TCMB program has potential utility beyond the general education setting. Pediatric occupational therapy clinicians, particularly those working in school environments, may find this program valuable for fostering early social communication and interaction skills in children with ASD. Given the emphasis on early childhood and the strong connection many children with ASD have with music, implementing music-based activities at the preschool level can provide a foundational platform for further therapeutic and educational progress. Overall, the TCMB program offers a promising, evidence-informed approach for

supporting both educators and clinicians in enhancing early childhood development through music-based activities.

Based on feedback from participating teacher volunteers, the TCMB program was regarded as both useful and beneficial as a daily guide for implementation within the preschool classroom. A promising direction for future development of the program would be to expand its duration beyond the initial six-week framework to encompass an entire academic semester. Aligning the program with the academic calendar and developmental milestones would offer teachers a comprehensive, structured resource for implementing screen-free brain breaks consistently throughout the semester. This extended period could provide greater opportunities to observe long-term benefits of music-based activities and give educators sufficient time to develop their own creative, engaging brain break activities beyond the scope of the original program.

In addition, future research should address one of the key limitations of this study: the absence of students with a confirmed diagnosis of ASD. Implementing the TCMB program in a specialized preschool setting that serves children with ASD would allow for a more targeted evaluation of the program's effectiveness for this population. Such research would contribute to a deeper understanding of the potential impact of music-based activities on communication, social participation, and behavior among children with ASD. Expanding the participant base in this way would enhance the external validity of the TCMB program and strengthen the evidence supporting its application across diverse early childhood educational settings.

Chapter 7: Implications

While the overall impacts of the TCMB program have been demonstrated in previous sections, its potential benefits for the target population, children with ASD, have yet to be formally evaluated. However, given the positive outcomes in increased social participation among neurotypical preschool students, along with multiple studies indicating that children with ASD often connect with music on a personal level, it is reasonable to suggest that the TCMB program holds significant potential for positively impacting this population.

Additionally, as previously noted, both teachers who participated in the TCMB program reported that it was easy to navigate and incorporate into their already well-established and busy routines. The program requires only one hour per week for preparation and 15–30 minutes of classroom time, which was found to be manageable and not overly burdensome. This ease of implementation increases the likelihood that teachers will choose the TCMB program over passive alternatives, such as playing videos. Introducing interactive, screen-free activities as early as preschool may lead to longer-lasting positive effects on behavior and social engagement.

The primary goal of occupational therapists is to support individuals in thriving within their meaningful daily activities, or "occupations." For students, these occupations typically include learning and playing. In the case of students with ASD, challenges often arise in engaging in peer interactions, communicating effectively, and participating appropriately in social situations. Considering these difficulties, along with the previously discussed strong personal connection many children with ASD have with music, early exposure to programs such as the TCMB program may facilitate the development of essential social and communication skills. This early intervention has the potential to reduce negative behavioral patterns and improve social participation outcomes often associated with delays in these areas.

Chapter 8: Sustainability Plan

Following the completion of the study, the TCMB training program will be fully transferred to the MJCCA's Sunshine School for continued use and to support the training of any additional teachers interested in incorporating music-based activities. The TCMB program is intentionally designed to be simple and flexible, allowing teachers to integrate it into their daily routines without the need for extensive instructions or formal training. As demonstrated by the study results, the program is user-friendly and teachers reported that they were able to implement the music-based activities easily and effectively. Notably, by Week 5 of the capstone experience, it became clear that no additional workshop was necessary for teachers to understand how to use the program appropriately within their classrooms.

To support continued implementation, the student researcher will supply recycled materials needed for the TCMB activities to an additional one to two classrooms. This will allow the MJCCA time to begin collecting their own supply of the easily obtainable materials should they wish to continue offering the program. In addition, the student researcher will provide a supplemental resource sheet with alternative craft ideas, enabling teachers who participated in the program to maintain the same classroom structure beyond the initial six-week period. This resource ensures that students can continue benefiting from the established routine, particularly given the observed improvements in behavior and peer interactions as a result of the program.

To further support sustainability, the student researcher's email will be listed on the TCMB program website, allowing any participant to reach out with questions. The student researcher will remain available via email during the first school semester to assist with any inquiries from MJCCA staff. Additionally, the student researcher will check in once per semester via email to assess the program's progress and address any updates or concerns. These check-ins

will continue until the program is fully integrated, and the school is independent and confidently implementing the TCMB program across its classrooms.

Chapter 9: Conclusion

This capstone project explores the development and implementation of a music-based program designed to support preschool educators, particularly those who may feel unprepared or lack confidence in facilitating screen-free activities during educational breaks. The TCMB program offers a structured six-week curriculum aimed at enhancing classroom engagement by promoting creativity, reducing reliance on screen time, and supporting the development of foundational skills in children with ASD. The program encourages teachers to adopt innovative, play-based strategies that foster meaningful learning experiences. Feedback from participating educators highlights notable improvements in student behavior, social participation, and peer interactions. The TCMB program has also been recognized as an effective tool for fostering creative expression, offering children opportunities to engage in meaningful and enjoyable activities that support both emotional and cognitive development. Preliminary findings suggest that future research should focus on evaluating the program's effectiveness in classrooms composed exclusively of students with ASD. Early implementation of music-based activities may facilitate the development of essential communication and social skills, which are critical as academic and social demands increase over time.

In conclusion, the TCMB program demonstrates significant potential for integration into early childhood education settings. By offering an engaging, screen-free alternative that supports both educator confidence and student development, the program contributes to a more inclusive, interactive, and developmentally appropriate learning environment for preschool children.

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Appendix 1: Learning Objectives

Long-Term Goals (LTGs)	Short-Term Goals (STGs)	Actions	Expected Outcomes	Timeline
<p>(What you hope to learn or complete in order to achieve your Capstone Project)</p> <p style="text-align: center;">*Include at least 3 LTGs</p>	<p>(Short-term steps to help you reach your long-term goals)</p> <p style="text-align: center;">*Include 2-3 STGs per LTG</p>	<p>(What you do to achieve each short-term goal)</p> <p style="text-align: center;">*Include at least 1 action per STG</p>	<p>(What you expect to learn or achieve after completing the action)</p> <p style="text-align: center;">*Include at least 1 outcome per action</p>	<p>(When you expect to achieve the outcome?)</p> <p style="text-align: center;">*Include at least 1 timeline per outcome</p>
<p>1. Utilize information gathered from previous interviews to understand the common "in-class" activities that special education teachers do to improve behavior performance in ASD and to identify the "issues" or weaknesses of the existing activities.</p>	<p>1A. Utilize information from previous interviews regarding the two teachers' methods for negative behaviors and increasing social engagement for children with ASD.</p> <p>1B. Gather information on each activity including at least 5 strengths and weaknesses.</p> <p>1C. Summarize activities effectiveness to start developing</p>	<p>1A. Identify the top 5 behavior management and social engagement methods based on previous interviews.</p> <p>1B. Read through identified articles for information and research any missing gaps if needed.</p> <p>1C. Develop a summary chart of each activity's strength, weaknesses,</p>	<p>1A. Learn about what is currently happening within the classroom for behavior management and social engagement.</p> <p>1B. Create a list of each activity that has been stated as effective for easy reference.</p> <p>1C. Share and discuss summaries with site mentor to see if program activities</p>	<p>1A. Due on week 1.</p> <p>1B. Due on week 1.</p> <p>1C. Due on week 1.</p>

	recommendations for the new music-based program.	duration, and outcomes.	would be effective and beneficial for desired outcomes.	
<p>2. Create an evidence-based practice music-based program addressing the weaknesses of the current activities that can be implemented into preschool classroom.</p>	<p>2A. Identify specific perspectives that can address behavior and social concerns based on different resources, including literature and experts in this area.</p> <p>2B. Decide the specific instruments or music that can be used to efficiently deliver the music-based program to students.</p>	<p>2A. Use the previously created summary chart from current teachers' meetings to best narrow down and choose duration, activities, and expected outcomes for program creation.</p> <p>2B. Discuss with site mentor and teachers on possible music/musical instruments that could be beneficial within the specific students like/dislikes within the preschool.</p>	<p>2A. Learn and create a music-based program to educate teachers to help aid in positive behavior and social outcomes.</p> <p>2B. Develop a written summary on how the music program would positively impact teachers' confidence and help with behavior and social concerns within the preschool environment.</p>	<p>2A. Due end of week 4.</p> <p>2B. Due end of week 4</p>
<p>3. Create a training program for teachers to implement the developed music-based program in class.</p>	<p>3A. Develop an educational session for teachers and train them on how to best implement the music-based program.</p> <p>3B. Develop easy-to-follow online modules that teachers can take to fully deepen their knowledge and can reference at any</p>	<p>3A. Host 1-2 training session(s) at the beginning of the on-site research time to make sure all teachers are trained and to answer questions.</p> <p>3B. Be available/in attendance during</p>	<p>3A. Provide an opportunity to fully train teachers on the program, answer any questions, and help them gain confidence in implementing the program.</p> <p>3B. Be there for the teachers each week</p>	<p>3A. Due on week 7.</p> <p>3B. Due on week 7.</p>

	time when implementing the program.	time teacher is implementing program to make sure it is correct, appropriate, and to answer questions the teacher may have in real time.	and answer questions to increase and provide opportunity for full confidence for implementation.	
4. Examine the effectiveness of the music-based program with pre- and-post tests.	<p>4A. Develop a pre- and post-survey for teachers to do in order to identify gaps in education and confidence.</p> <p>4B. Follow up teacher interviews and re-ask them the related questions on what they do now to manage behavior concerns and increase social engagement for preschool students, particularly with ASD.</p>	<p>4A. Identify at least 3 potential areas/concerns that preschool teachers may have in regard to their confidence level to successfully execute the music-based program and track how those change after program implementation.</p> <p>4B. Revisit the previous summary chart from goal 1 and write comments on what has changed and why according to teacher's perspective and experiences.</p>	<p>4A. Develop an 8-10-question pre-survey in order to determine where a gap of confidence lies in the execution of music-based activities within the preschool environment and a 10-question post-survey in order to track how much has improved.</p> <p>4B. Track teachers' confidence to fully implement the program on their own and see how behavior management and social engagement strategies have changed/improved.</p>	<p>4A. Pre-survey due beginning of week 7. Post-survey due end of week 11.</p> <p>4B. Due end of 11 weeks.</p>

Appendix 3: Summary Pages

Background

Preschool is a critical period for the development of essential life skills, including social, emotional, behavioral, and cognitive competencies (Birch & Thompson, 2023; Blasco-Magraner et al., 2021). Research estimates that approximately 9–15% of preschool-aged children exhibit disruptive behavior problems, which can hinder academic progress and limit opportunities for social engagement (Charach et al., 2017). Incorporating music into the classroom has been shown to enhance concentration, motivation, socialization, and academic performance, particularly for children diagnosed with ASD, who often demonstrate a unique affinity for music (Blasco-Magraner et al., 2021; Ke et al., 2022). Despite its benefits, there remains a lack of accessible, curriculum-based music programs designed to support positive behavior in preschool settings. This gap often leads educators to rely on short video-based movement breaks, which are more readily available but less effective in promoting meaningful engagement. Additionally, many teachers report feeling unprepared or lacking the confidence to implement music-based activities, further contributing to the overuse of passive screen time (Birch & Thompson, 2023). The frequent use of such videos not only reduces opportunities for active engagement and creative expression but also limits the potential for smoother transitions between structured learning and breaks through intentional, developmentally appropriate musical activities.

Purpose

The purpose of the proposed Capstone project is to create a music-based program that provides training and education for teachers, increasing the use of music-based activities in classrooms. A secondary goal is to assess teacher confidence in integrating music-based activities into

preschool classrooms with children with ASD and evaluate the program's effectiveness based on teacher feedback.

Specific Aims

To achieve the goal of this project, four specific aims are proposed:

- 1) Understand the common classroom activities that special education teachers do to improve behavior performance in autism spectrum disorder (ASD) and to identify the weaknesses of the existing activities.**

Data gathered from previous interviews with identified preschool teachers will be analyzed to gain insight into the existing classroom structures and routines. This analysis will inform the development of the TCMB program by identifying effective practices that can be integrated into the intervention, as well as areas that may require modification to ensure the program aligns with the specific needs and dynamics of each classroom.

- 2) Create an evidence-based practice, teacher-centered, music-based (TCMB) program addressing the weaknesses of the current activities that can be implemented into preschool ASD classroom.**

A six-week program will be developed to incorporate evidence-based, music-centered activities that align with the existing preschool classroom structure and curriculum. The program will be organized around weekly instrument themes that correspond with the thematic units used by the MJCCA. Each week will include one to two music-related craft activities and three to four musical and movement-based activities. These activities will range from 15 to 30 minutes in duration, depending on the specific demands and objectives of each session. The complexity of the activities will gradually increase each week to match the anticipated progression of students'

skills and engagement. The student researcher will observe the classroom two out of five days each week, or on additional days as requested by the teacher, to provide support in organizing and facilitating the activities.

3) Create a workshop for teachers to implement the developed music-based program in class.

During the fifth week of the program, a training workshop will be conducted to evaluate the usability, clarity, and time efficiency of the training modules. The student researcher will guide participating teachers through the first module, highlighting the developmental benefits of music for preschool-aged children and explaining the rationale for focusing on ASD within the scope of the project. Additionally, an overview of the TCMB program and its associated activities will be provided. The workshop is expected to last between 30 minutes to one hour, depending on the number and depth of questions posed by the teachers regarding the program and training materials.

4) Examine the effectiveness of the music-based program with pre-and-post surveys.

A pre-survey will be administered at the beginning of the fifth week to assess teachers' initial levels of confidence and competence in implementing music-based activities prior to the start of the TCMB program. Following the completion of the program, a post-survey will be distributed to evaluate changes in these areas, as well as to gather feedback on overall program satisfaction, perceived usefulness, and whether the program enhanced teachers' creativity and organizational skills on a weekly basis. Each survey will consist of 8 to 10 questions and is estimated to take approximately 10-15 minutes to complete.

Outputs and Outcomes

The successful completion of this capstone project will result in a fully evidence-based program that integrates music-based activities into preschool classrooms to support the unique developmental needs of children with ASD. In addition to directly benefiting students, the project aims to enhance teachers' knowledge, confidence, and competence in implementing meaningful musical interventions. A key goal of the TCMB program is to move beyond traditional screen-based musical activities, such as five-minute movement videos, by offering more engaging, interactive alternatives. Reducing reliance on screens is expected to increase opportunities for peer interaction, which may, in turn, promote more effective communication and reduce disruptive behavior in the classroom.

This project will be developed and implemented at the MJCCA preschool, where the created training modules will be transferred to staff for continued use. These resources will also be available for other preschool educators interested in incorporating music-based activities into their classrooms. Following the project's completion, the student researcher will maintain ongoing collaboration with MJCCA, checking in once per semester to support the continued success and sustainability of the TCMB program and its associated teacher training.