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Article

The Influence of Music-Based Activities on Socio-Cognitive Development in Preschool Children

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Abstract:
The influence of music-based activities on socio-cognitive development in preschool children is a topic of growing interest and significance in the field of early childhood education. This study explored the impact of music-based activities on learners' social and cognitive skills within early childhood education settings, and investigated early childhood educators' confidence in integrating these activities into their teaching. A sample of 32 educators, each with varying ages, highest educational attainments, and years of teaching experience, was selected. Utilizing a descriptive-correlational design, the study found that the teachers held a very high perception of the influence of music-based activities on learners' social and cognitive skills. Further, the teachers exhibited a high level of confidence in their ability to incorporate these activities into their pedagogy, and they recognized the effectiveness of these activities in promoting learners' socio-cognitive development. Importantly, significant positive correlations were identified between the impacts of music-based activities on both sociocognitive skills and the educators' confidence in integrating these activities. These findings emphasized the value of music-based activities in enhancing learners' socio-cognitive development and highlight the essential role of teacher confidence in effectively implementing these activities. Based on these results, the study recommends the development and implementation of a comprehensive action plan designed to enhance educators' competence in integrating music-based activities and maximizing their benefits. Future research is encouraged to further investigate the specific elements of music-based activities that most effectively enhance learners' skills and how best to implement these in early childhood educational settings.

Keywords: Music-Based Activities, Socio-cognitive Development, Preschool Children

Introduction

It is becoming increasingly common knowledge that incorporating musically-based activities into early childhood education plays a significant role. Agres et al. (2021) emphasized that the influence of music-based activities on socio-cognitive development

holds significant importance due to its profound impact on their overall growth and well-being. Empirical findings of Rickson (2021) suggested that Music provides a powerful medium for fostering social skills, as children engage in cooperative experiences, taking turns, and collaborating with others. Additionally, music stimulates cognitive development by enhancing memory, attention, and pattern recognition, while also promoting problem-solving, critical thinking, and creativity (Zhao, Narikbayeva & Wu, 2021).

Moreover, music-based activities play a crucial role in language and communication development, improving phonological awareness, vocabulary acquisition, and language comprehension (Wu, 2022). According to Martin et al. (2021) music aids in emotional and self-regulation skills, allowing children to explore and express their emotions, develop resilience, and manage stress. Recent findings of Crooke et al. (2023) noted that music-based activities promote cultural and diversity awareness, fostering an appreciation for different cultures and encouraging inclusivity.

Recognizing the importance of music in socio-cognitive development optimize learning opportunities and support the holistic development of children. For instance, engaging in musical training, such as learning to play an instrument or participating in a school choir, has been associated with improved cognitive skills, including enhanced spatial-temporal reasoning, mathematical abilities, and language development (Holmes, 2021), Music-based activities have also been found to enhance memory, attention, and concentration, thereby positively impacting students' academic performance (Arrington, 2023), Music-based activities provide a platform for students to engage in collaborative and group experiences, fostering social interactions, empathy, and cooperation (O'Rourke et al., 2021), engaging in music-based activities has been found to increase positive emotions, enhance self-expression, and provide a sense of belonging and identity for students, promoting their psychological well-being (Nijs & Nicolaou, 2021) and exposure to diverse musical traditions and genres helps students develop respect, empathy, and a broader perspective on different cultures (Mellizo, 2019).

Despite the growing number of studies, there is a noticeable absence of empirical evidence about the impact of music-based activities on the socio-cognitive growth of preschool children within the context of Singapore's early childhood education system. This demonstrates how urgently it is necessary to conduct an in-depth examination of how preschool teachers in Singapore evaluate the effects of music-based activities on children's sociocognitive development and the factors that drive the efficacy of such activities. Finding out the specific cultural implications and needs of children in Singapore regarding activities based on music would lead to a more in-depth understanding of early childhood education strategies that can be implemented in a range of contexts. The large rise in the number of

children attending preschool in Singapore, which the Singapore Department of Statistics claimed in 2021 to have gone from 84.4% in 2010 to 97.7% in 2020, is another reason that contributes to the inspiration behind this study. This rise was reported to have occurred between the years 2010 and 2021.

This movement highlights how critical it is to enhance the practices of early childhood education to offer comprehensive assistance for the expansion and development of children. Understanding the role that music-based activities play becomes increasingly relevant when coupled with the Singaporean government's strong emphasis on providing high-quality early childhood education. This is reflected in the implementation of the curriculum framework, Nurturing Early Learners (NEL), developed by the Early Childhood Development Agency (ECDA) (ECDA, 2021). Understanding the role that music-based activities play becomes increasingly relevant when coupled with the Singaporean government's strong emphasis on providing high-quality early childhood education. The NEL framework acknowledges the substantial role that music plays in fostering children's overall development, which calls for an in-depth awareness of the music-based activities that are widespread in the surrounding environment. This is because the NEL framework acknowledges that music plays a role in promoting children's overall development.

As a consequence, this study aims to evaluate the influence that music-based activities have on the socio-cognitive development of preschoolers within an early childhood education setting comparable to that of Singapore. This study aims to fill a gap in the existing research by investigating how preschool teachers believe music-based activities affect children's social and cognitive skills, identifying the activities that have the most significant potential to assist children in developing, and determining the extent to which demographic factors and teachers' opinions are linked to one another. To accomplish this goal, this research will consider Singapore's cultural environment, as well as the diverse demands that the people of Singapore have concerning the integration of musically-based activities into early childhood education. This study will give educators and policymakers in Singapore useful insights by disclosing the role of music-based activities in the socio-cognitive development of Singaporean preschool children. These insights will be provided by showing the position of music-based activities in the socio-cognitive development of Singaporean preschool children. Once they have these insights, teachers and policymakers can establish specific interventions and guidelines for introducing music-based activities into the early childhood education curriculum. Because of how they accomplish this, these activities will effectively foster socio-cognitive development. Furthermore, they will do it in a manner that is aligned with the specific requirements of Singapore's varied population.

Methodology

This This research employed a descriptive-correlational design. The aim of the descriptive aspect of this design was to explore and provide a detailed account of the early childhood teachers' profiles in terms of age, highest educational attainment, and years of teaching experience. It also aimed to present the level of respondents' perceptions of the influence of music-based activities on the learners in terms of social skills, and cognitive skills, as well as the level of respondents' confidence in integrating music-based activities and its perceived effectiveness. The descriptive-correlational design utilized in this study is a research method that aims to describe and examine the relationship between variables without inferring causality. It involves collecting data to describe the current state of a phenomenon and analyzing the associations between variables of interest. Prominent researchers who support the use of the descriptive-correlational design include Williams et al. (2018) and Putkinen et al. (2021). In their studies, Williams et al. (2018) explores the relationship between music-based activities and children's socio-cognitive development, while Putkinen et al. (2021) investigate the impact of music-based activities on social and cognitive skills. Both studies highlight the relevance of the descriptive-correlational design in understanding the influence of music-based activities on learners' skills. The research environment of this study is located in a private school in Singapore—The Schoolhouse. The research respondents for this study consist of 32 female early childhood education teachers represent a diverse range of teaching levels across four different teaching categories within the preschool setting: Playgroup Teachers, Nursery Teachers, K1 Teachers, and K2 Teachers, each comprising 8 individuals or 25.00 percent of the total respondents.

The research instrument utilized in this study was an adapted questionnaire, constructed with the guidance of three prior studies that were integral to the thematic foundation of our research. These studies, conducted by Pihko, Virtala, and Saarikivi (2021); Jeanneret and Hallam (2020); and Evans and McPherson (2021) respectively, dealt with similar thematic areas and therefore provided a robust framework for the development of our questionnaire. The questionnaire from Pihko, Virtala, and Saarikivi (2021), titled "The Potential Benefits of Early Childhood Music Education: A Socio-Cultural Study," was retrieved from the University of Turku database. Jeanneret and Hallam (2020)'s research, named "Impact of Music Education on the Socio-Personal Development of Children: A Systematic Review," was accessed from the Education Research International repository. Finally, the questionnaire from Evans and McPherson (2021)'s study, "Children's engagement with music: the effects of musical activity on social interaction," was obtained from the Music Education Research platform. The adoption of these instruments was carefully done to

resonate with the unique context of the study. Before employing this adapted questionnaire for data collection, a pilot study was conducted to verify the effectiveness of the instrument within our specific research environment. The pilot study provided the researcher with a chance to identify potential limitations, assess the clarity of the questionnaire items, and adjust the instrument accordingly, ensuring its reliability and validity within the context of the study.

Results and Discussion

Table 1. Age of the Respondents

Age (in years)	f	%
Above 40	6	18.75
36-40	5	15.63
31-35	5	15.63
26-30	5	15.63
20-25	11	34.38
Total	32	100.00

Table 1 presents the age distribution of the teacher respondents. A total of 32 teachers participated, with the age groups spanning from 20 to over 40 years old. The largest age group represented in this sample was the 20–25-year range, encompassing 34.38% of respondents. This age group is typically early in their careers, which may imply that they are more likely to use recent pedagogical methods or embrace new educational trends, such as music-based activities for socio-cognitive development in preschool children.

On the other end, those above 40 years old made up 18.75% of the respondents. These teachers, having more experience, may offer insights grounded in years of practice and possibly more traditional methods of teaching. Their perspective on the effectiveness and applicability of music-based activities would be valuable. The 26-30, 31-35, and 36-40 age groups each made up 15.63% of the respondents. Their feedback could provide a balanced view, potentially combining the enthusiasm and receptiveness of younger teachers with the experience and perspective of older ones.

The diverse age distribution of teachers in this study implies varied experiences and perspectives, which could lead to a more comprehensive understanding of the impact of music-based activities on socio-cognitive development in preschool children. For example, younger teachers might be more inclined to experiment with innovative music-based activities, while older teachers could provide a historical perspective on the evolution and effectiveness of such methods. These differing perspectives could shed light on the strengths and potential areas for improvement of using music-based activities in preschool education.

Table 2. Highest Educational Attainment of the Respondents

Highest Educational Attainment	f	%
Master's Graduate	2	6.25
Diploma	2	6.25
College Graduate	28	87.50
Total	32	100.00

Table 2 presents the highest educational attainment of the teacher respondents. Out of the 32 total respondents, the vast majority (87.5%) are college graduates. These teachers likely have formal education in pedagogy and child development, providing them with a strong foundational understanding of effective teaching strategies. They may be well equipped to implement and evaluate the effectiveness of music-based activities in promoting socio-cognitive development in preschool children due to their background knowledge. The group of respondents with a Master's degree represents a small portion, only 6.25%. Teachers in this category are likely to have further specialized knowledge in education or a related field. They may bring a more research-informed perspective to the discussion, potentially highlighting the theoretical underpinnings of music-based activities' role in socio-cognitive development, as well as their practical application.

Another 6.25% of respondents have a diploma, which may indicate a more focused, potentially shorter course of study, perhaps directly related to early childhood education. The insights from these respondents could be particularly valuable in assessing the practicality and applicability of music-based activities in a real-world classroom setting. The differing levels of educational attainment among teachers suggest a variety of expertise levels, theoretical backgrounds, and practical experiences. All of these can contribute to a well-rounded understanding of how music-based activities impact socio-cognitive development in preschool children.

Table 3. Years of Teaching Experience of the Respondents

Number of Years of Teaching	f	%
More than 15	4	12.50
11-15	5	15.63
6-10	9	28.13
1-5	7	21.88
Less than 1 year	7	21.88
Total	32	100.00

Table 3 displays the distribution of the teacher respondents according to their years of teaching experience. The data shows a diverse range of teaching experiences, which may provide valuable insights into the implementation of music-based activities for socio-cognitive development in preschool children. The largest group consists of teachers with 6-10 years of experience (28.13%). This group has a substantial amount of experience and may have observed the long-term effects of various teaching strategies, including music-based activities, on children's socio-cognitive development. They would be capable of providing both theoretically grounded and empirically tested insights.

Teachers with 1-5 years of teaching experience and those with less than a year of experience each constitute 21.88% of the total respondents. These groups, while relatively new to the profession, might be more familiar with contemporary teaching strategies and innovations, such as recent advances in music-based activities. Their experience could offer a fresh perspective on the potential and effectiveness of such approaches. The teachers with 11-15 years of experience represent 15.63% of respondents, and those with more than 15 years constitute 12.5%. These teachers, being the most experienced, could provide a seasoned perspective on the evolution of teaching strategies over time, including the use and benefits of music-based activities. Overall, the range of teaching experience within the respondent group means that there is a wealth of perspectives to draw from, potentially revealing a more nuanced understanding of how music-based activities can be used most effectively to promote socio-cognitive development in preschool children.

Table 4. Respondents' Perception of the Impact of Music-based Activities on the Learners' Social Skills

S/N	INDICATORS	Weighted Mean	Verbal Description
1	Music-based activities improve children's ability to cooperate with others.	4.69	Very High
2	Music-based activities encourage children to express themselves more confidently.	4.88	Very High
3	Music-based activities enhance children's communication skills.	4.59	Very High
4	Music-based activities promote empathy and understanding among children.	4.41	Very High
5	Music-based activities develop children's ability to work in a team.	4.81	Very High
	Aggregate Mean	4.68	Very High

The analysis reveals a "Very High" level of perception for all aspects of the impact of music-based activities, as indicated by weighted means ranging between 4.41 and 4.88. These include enhancing children's ability to cooperate with others, encouraging them to express themselves more confidently, enhancing their communication skills, fostering empathy and understanding, and fostering their teamwork skills. These findings are consistent with previous research that has highlighted the significant impact of music-based activities on enhancing social skills (Gooding, 2019; Habibi et al., 2020).

Notably, the aspect with the highest rating, with a weighted mean score of 4.88, was that music-based activities encourage children to express themselves with greater confidence. This result resonates with the researcher's personal experiences as a music educator, where she has witnessed how music empowers children to freely express their thoughts, emotions, and creativity. The confidence-building effect of music education aligns with the findings of Panteleeva et al.'s (2020) study, highlighting the correlation between music education and children's self-expression and confidence. With a weighted mean of 4.41, the aspect with the lowest rating, albeit still in the "Very High" category, was that music-based activities promote empathy and understanding among children. This finding suggests that despite the perception that music education fosters empathy significantly, there may be space for additional emphasis in this area. This is consistent with the findings of Rabinowitch et al. (2021), who emphasized the significance of specially designed musical activities for fostering empathy and comprehension. Lastly, the overall weighted mean of 4.68 indicates a significant perception of the impact of music-based activities on children's social skills. This finding supports the study's main conclusion regarding the transformative potential of music-based activities for sociocognitive development (Hallam, 2020). During the course of this study, the researcher observed a consensus among the teachers regarding the positive impact of music-based activities on the social skills of children. This perception provides a crucial endorsement of the school's approach to music education, validating its importance to the students' overall educational experience.

Table 5 illustrates the level of respondents' perception of the impact of music-based activities on the learners' cognitive skills. The researcher's evaluation is essential considering the growing evidence in recent research that suggests music plays an important role in the cognitive development of children (Zhou et al., 2020).

The data indicates a "Very High" level of perception regarding all aspects of the impact of music-based activities, as indicated by weighted means between 4.41 and 4.88. Enhancing children's memory, increasing their attention span, stimulating their problem-solving

skills, fostering their creativity, and contributing to their language development are among the areas covered.

Table 5. Respondents' Perception of the Impact of Music-based Activities on the Learners' Cognitive Skills

S/N	INDICATORS	Weighted Mean	Verbal Description
1	Music-based activities enhance children's memory skills.	4.78	Very High
2	Music-based activities improve children's attention span.	4.88	Very High
3	Music-based activities stimulate children's problem-solving skills.	4.41	Very High
4	Music-based activities encourage creativity in children.	4.88	Very High
5	Music-based activities contribute to children's language development.	4.72	Very High
	Aggregate Mean	4.73	Very High

This is consistent with recent research that has demonstrated the extensive impact of music activities on the development of cognitive skills (Schellenberg & Weiss, 2020). The two aspects with the highest weighted means were that music-based activities increase children's attention span and foster their creativity. As also suggested by Flaugnacco et al.'s (2020) study, which found a direct correlation between music education and the improvement of children's attention span and creative thinking, these results emphasize the importance of music education in fostering attentiveness and fostering creativity.

The aspect rated lowest, but still within the "Very High" category, was that music-based activities foster problem-solving skills in children, with a weighted mean score of 4.41. This suggests that despite the perception that music education is a significant stimulant for problem-solving skills, there may be space for additional emphasis in this area. This conclusion is consistent with the findings of Thorgersen et al. (2021), who emphasized that music education must be designed strategically to maximize the development of problem-solving abilities. The total aggregate weighted mean of 4.73 highlights the high perception of the impact of music-based activities on children's cognitive abilities. This result supports the study's thesis regarding the crucial function of music in cognitive development, as supported by the research synthesis presented by Sala and Gobet (2021). Throughout the study, the researcher observed a strong consensus among respondents regarding the positive impact of music-based activities on children's cognitive abilities. This observation provides additional support for the

research objective by highlighting the contribution of music education to the cognitive skill development of young learners.

Table 6. Summary on the Level of Respondents' Perception of the Impact of Music-based Activities on the Learners

COMPONENTS	Weighted Mean	Verbal Description
Social Skills	4.68	Very High
Cognitive Skills	4.73	Very High
Grand Mean	4.71	Very High

Table 6 provides a summary of the respondents' perception of the impact of music-based activities on learners, considering both social and cognitive skills. The weighted mean scores indicate a very high level of perceived impact for both components. For social skills, the respondents' perception of the impact of music-based activities received a weighted mean score of 4.68. This suggests that engaging in music-related activities has a significant positive effect on learners' abilities to cooperate with others, express themselves confidently, enhance communication skills, promote empathy and understanding, and develop teamwork skills. These findings highlight the importance of incorporating music into educational settings to foster strong social skills among learners.

Regarding cognitive skills, the respondents' perception of the impact of music-based activities received a weighted mean score of 4.73. This indicates that engaging in music-related activities positively influences learners' memory skills, attention span, problem-solving abilities, creativity, and language development. The findings emphasize the role of music as a valuable tool for enhancing cognitive development in learners and supporting various aspects of their intellectual growth.

The grand mean of 4.71 further reinforces the overall perception of a very high impact of music-based activities on learners, encompassing both social and cognitive skills. This suggests that music-based activities have a positive and significant influence on learners' holistic development, supporting their social interactions, communication, cooperation, memory, attention, problem-solving, creativity, and language skills. These results have important implications for educators, policymakers, and practitioners involved in designing and implementing educational programs. Incorporating music-based activities into curricula and learning environments can provide a well-rounded approach to education, supporting the development of both social and cognitive skills.

Table 7. Respondents' Confidence in Integrating Music-based Activities and its Perceived Effectiveness

S/N	INDICATORS	Weighted Mean	Verbal Description
1	I feel confident integrating music-based activities into my teaching.	4.31	Very High
2	I believe music-based activities are effective in promoting socio-cognitive development in children.	4.66	Very High
3	I have sufficient resources and support to integrate music-based activities into my teaching.	4.31	Very High
4	I have observed positive changes in children's socio-cognitive development as a result of music-based activities.	4.56	Very High
	Aggregate Mean	4.46	Very High

This finding resonates with the assertion of Hallam (2019) and Ilari et al. (2020) that educators' confidence and positive beliefs about the effectiveness of music-based activities are key to their successful integration into the teaching process. Furthermore, the respondents felt they have sufficient resources and support to integrate these activities into their teaching, with a weighted mean of 4.31. This indicates that having adequate resources and support contributes significantly to teachers' confidence and motivation to incorporate music-based activities into their teaching (Custodero et al., 2020). The researcher noted a high level of agreement among respondents in observing positive changes in children's socio-cognitive development as a result of music-based activities, as indicated by a weighted mean of 4.56. This observation is consistent with the findings of Jaschke et al. (2019), which highlighted the potential of music-based activities in fostering socio-cognitive development in early learners. The total aggregate weighted mean for the responses stands at 4.46, further reinforcing the "Very High" level of confidence and perceived effectiveness of music-based activities among respondents. These findings affirm the assertions made in the literature by Jaschke et al. (2019), underlining the crucial role of teacher confidence and belief in the efficacy of music-based interventions.

Throughout the research process, the researcher noted that respondents who were more experienced in integrating music-based activities into their teaching exhibited higher confidence levels. They were also more likely to observe positive changes in their students' socio-cognitive development. This has prompted the researchers to advocate for more comprehensive training for teachers to foster their confidence and skill in utilizing music-based activities in the classroom.

Table 8. Test of Relationship between the Impact of Music-based Activities and the Respondents' Confidence in Integrating Music-based Activities

Variables	r-value	Strength of Correlation	p - value	Decision	Remarks
Social Skills and Confidence	0.680*	Moderate Positive	0.000	Reject Ho	Significant
Cognitive Skills and Confidence	0.488*	Weak Positive	0.005	Reject Ho	Significant

*significant at $p < 0.05$

Table 8 presents the results of the test of relationship between the impact of music-based activities and the respondents' confidence in integrating such activities. The table includes the correlation coefficient (r-value), the strength of correlation, the p-value, the decision based on the p-value, and remarks regarding the significance of the relationship. For the relationship between social skills and confidence, the correlation coefficient is 0.680, indicating a moderate positive correlation. The p-value is 0.000, which is less than 0.05, indicating that the relationship is statistically significant. Therefore, the null hypothesis (Ho) is rejected, and it can be concluded that there is a significant positive relationship between the impact of music-based activities on social skills and the respondents' confidence in integrating these activities.

Similarly, for the relationship between cognitive skills and confidence, the correlation coefficient is 0.488, indicating a weak positive correlation. The p-value is 0.005, which is also less than 0.05, indicating that the relationship is statistically significant. Consequently, the null hypothesis (Ho) is rejected, and it can be concluded that there is a significant positive relationship between the impact of music-based activities on cognitive skills and the respondents' confidence in integrating these activities.

The results highlight that both social skills and cognitive skills have a positive influence on the respondents' confidence in integrating music-based activities. These findings imply that as the perceived impact of music-based activities on social and cognitive skills increases, the respondents' confidence in incorporating such activities into their educational practices also increases. This suggests that recognizing the positive effects of music-based activities on learners' skills can enhance educators' confidence and motivation to integrate these activities into their teaching strategies, leading to more effective and enriching learning experiences for learners.

Conclusion

The findings from the survey indicate that the respondents, who

are teachers, have a positive perception of the impact of music-based activities on learners' social and cognitive skills. The respondents strongly believe that music-based activities significantly improve children's abilities to cooperate, express themselves confidently, enhance communication skills, promote empathy and understanding, and develop teamwork skills. Similarly, the respondents perceive that music-based activities have a very high impact on learners' cognitive skills, including memory enhancement, attention span improvement, stimulation of problem-solving skills, encouragement of creativity, and contribution to language development. The overall perception of the impact of music-based activities on both social and cognitive skills is consistently rated as very high. Furthermore, the respondents express a high level of confidence in integrating music-based activities into their teaching practices. They believe that music-based activities are effective in promoting socio-cognitive development in children, and they have observed positive changes in children's socio-cognitive development as a result of these activities. The respondents also indicate that they feel confident in integrating music-based activities into their teaching and perceive that they have sufficient resources and support to do so. Moreover, the test of relationship reveals that there is a significant positive correlation between the impact of music-based activities on social and cognitive skills and the respondents' confidence in integrating these activities. This suggests that as the perceived impact of music-based activities on learners' skills increases, the respondents' confidence in incorporating them into their teaching also increases. The findings of this survey demonstrate that music-based activities have a significant positive impact on learners' social and cognitive skills, as perceived by teachers. The respondents express a high level of confidence in integrating music-based activities into their teaching practices and recognize the effectiveness of these activities in promoting socio-cognitive development in children. These findings highlight the importance of incorporating music into educational settings and provide valuable insights for educators and policymakers seeking to enhance teaching and learning experiences through the integration of music-based activities.

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