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Teachers' Perspectives on Multisensory Learning in Early Childhood Education: Balancing Opportunities and Challenges

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Abstract: Multisensory learning, which involves engaging multiple senses to enhance educational experiences, is recognized for its potential benefits in early childhood education. However, teachers' perceptions regarding its implementation present a mix of opportunities and challenges that warrant detailed exploration. This study aims to understand early childhood teachers' perspectives on multisensory learning, identifying the opportunities it presents for enhancing student engagement and development and the challenges encountered in its implementation. The research seeks to provide a balanced view of these aspects to inform educational practice and policy. A qualitative research design involved semi-structured interviews with 30 early childhood educators from diverse academic settings. Thematic analysis was used to identify and analyze patterns within the data. The findings reveal that teachers perceive multisensory learning as a valuable approach that significantly enhances student engagement, motivation, and overall learning outcomes. Key opportunities identified include improved sensory development, greater student participation, and enhanced cognitive connections. However, teachers also reported several challenges, such as limited resources, time constraints, and the need for specialized training. The study highlights teachers' strategies to balance these opportunities and challenges, emphasizing the importance of institutional support and professional development.

Keywords: Multisensory learning; Early childhood education; Teachers' perspective.

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1. Introduction

Multisensory learning, which involves engaging multiple senses such as sight, sound, touch, taste, and smell in the educational process, has been recognized as a valuable approach in early childhood education due to its alignment with how young children naturally explore and comprehend the world [1]. Research has indicated that multisensory learning can have a significant positive impact on cognitive development, sensory integration, and overall student engagement [2]. The utilization of multisensory strategies has been found to enhance incidental learning across childhood, as demonstrated in a study involving children aged between 6 and 10 years using a Multisensory Attention Learning Task (MALT) (Broadbent et al., 2017). This highlights the effectiveness of incorporating various sensory modalities in educational tasks to improve learning outcomes.

Furthermore, the association between multisensory learning and cognitive development has been emphasized, with studies suggesting that multisensory processes play a crucial role in scaffolding healthy cognitive growth in schoolchildren[3]. The interplay between multisensory associative learning and IQ in children has been explored, showing that associative learning can be significantly enhanced through verbal sounds compared to other forms of learning [4]. This underscores the importance of considering the types

of sensory stimuli employed in educational settings to optimize learning experiences.

Moreover, the benefits of multisensory cues in improving the retention of incidental learning have been highlighted, indicating that multisensory tools are commonly used in educational environments to enhance learning outcomes [5]. The influence of music technology on the academic behavior of preschool children with autism spectrum disorder has also been studied, demonstrating the gradual attention multisensory teaching has received in early childhood education, particularly in integrating technological tools to create engaging learning environments [6]. This suggests that incorporating technology and diverse sensory experiences can be particularly beneficial for children with special learning needs.

In the context of students with disabilities, multisensory learning has been identified as a valuable approach, involving the use of various sensory cues to provide novel learning experiences and enhance the understanding of concepts covered in class[7]. Additionally, the application of multisensory techniques in teaching alphabet identification skills for special education students has been explored, emphasizing the integration of sensory modalities to support learning in diverse educational settings [8]. These findings underscore the inclusive nature of multisensory learning and its adaptability to cater to different learning requirements.

The role of educators in implementing multicultural education based on local cultural values and character building in early childhood education has been discussed, highlighting the importance of fostering educational interactions that embrace diverse cultural perspectives[9]. This suggests that incorporating multisensory approaches can further enrich multicultural educational practices by engaging students through various sensory modalities. Additionally, the utilization of digital technology in early childhood education has been examined, emphasizing the value of mobile learning in providing professional development opportunities for educators working in resource-limited settings [10] This indicates the potential of technology-enhanced multisensory learning to bridge educational gaps and enhance teaching practices.

In the context of cognitive development, the design of educational game tools using the Kansei Engineering method has been proposed to enhance learning experiences, emphasizing the importance of early intervention through engaging educational tools [11]. This highlights the potential of gamified multisensory approaches to promote active learning and cognitive stimulation in early childhood education. Furthermore, the development of an educational game model to improve childhood language literacy underscores the effectiveness of gamification in enhancing language skills through interactive and multisensory learning experiences [12]. Such approaches can be instrumental in fostering language development and literacy skills in young learners.

The relationship between multisensory associative learning and integration has been explored, emphasizing the significance of perceptually binding sensory information from different modalities to facilitate effective multisensory integration [13]. This suggests that understanding how sensory inputs are integrated can optimize the des. Despite the recognized benefits of multisensory learning, there is a notable gap in the literature concerning how early childhood educators perceive these methods, the opportunities they see for enhancing student learning, and the challenges they face in practice. Understanding these perspectives is crucial for developing effective support systems and policies that facilitate the broader adoption of multisensory learning in early childhood education.

The primary objectives of this study are to understand early childhood teachers' perceptions of multisensory learning. Research questions, how do early childhood teachers perceive the concept and practice of multisensory learning? This study's findings will contribute significantly to the field of early childhood education by providing a deeper understanding of the practical realities of implementing multisensory learning from the perspective of teachers. By highlighting both the benefits and barriers, the research will inform the development of more effective teaching strategies and educational policies, ultimately enhancing the quality of early childhood education. Additionally, the study will offer practical recommendations for supporting teachers in adopting and sustaining multisensory learning practices.

2. Theoretical Overview of the Main Concepts

Multisensory learning is a pedagogical approach that integrates multiple sensory modalities to enhance the

learning experience, particularly in early childhood education. This method is deeply rooted in several educational theories, notably those proposed by Jean Piaget and Lev Vygotsky. Piaget's theory of cognitive development emphasizes that children learn best through active engagement and exploration, which aligns seamlessly with multisensory approaches that promote hands-on activities and experiential learning [14], [15]. For instance, 's research highlights how multisensory learning models, such as tale-telling, significantly enhance listening skills and help students connect their learning to real-life situations, thereby fostering deeper understanding and retention [14]. Similarly, argue that the use of diverse learning media is crucial in making abstract concepts more concrete for young learners, which is a fundamental aspect of Piaget's theory [15].

Vygotsky's social constructivist theory further complements the multisensory learning framework by emphasizing the importance of social interaction and scaffolding in the learning process. Vygotsky posited that learning is inherently a social activity and that collaborative experiences can significantly enhance cognitive development (Suri & Chandra, 2021). This is echoed in the findings of, who discuss the dimensions of cooperative learning and how collaborative environments can improve students' perceptions and engagement in educational settings (Ortíz et al., 2020). The integration of multisensory methods often involves group activities that require communication and collaboration, thereby facilitating social learning as Vygotsky suggested.

Moreover, the Universal Design for Learning (UDL) framework reinforces the value of multisensory learning by advocating for multiple means of representation, expression, and engagement. UDL aims to accommodate diverse learning needs and preferences, ensuring that all students have equitable access to learning opportunities [7], [8]. Research by supports this notion, indicating that multisensory learning environments can significantly benefit students with disabilities by providing varied sensory inputs that cater to their unique learning styles [7]. Additionally, 's study on multisensory stimulation, including virtual reality, demonstrates how such environments can enhance recall and creativity, further validating the principles of UDL in practice [16]. Multisensory learning is not only supported by foundational educational theories such as those of Piaget and Vygotsky but is also aligned with contemporary frameworks like UDL. This approach effectively addresses the diverse needs of learners, fostering engagement, collaboration, and deeper understanding through active and interactive learning experiences.

Numerous studies have highlighted the benefits of multisensory learning in early childhood education, emphasizing its role in enhancing cognitive development and memory retention. For instance, Broadbent et al. [17] found that engaging multiple senses during learning experiences can significantly improve the retention of information over time, indicating that multisensory cues facilitate better retention of information, particularly in young learners. The integration of various sensory modalities not only aids in memory but also supports the overall cognitive development of children, making learning experiences more impactful.

Moreover, demonstrated that multisensory learning approaches foster better comprehension and engagement among young children, especially those with learning difficulties[18]. This is corroborated by the work of [2], which illustrates that multisensory learning environments can scaffold cognitive development by integrating sensory inputs that are naturally present in educational settings [3]. The interactive nature of multisensory learning encourages active participation, which is crucial for young learners who thrive in environments that stimulate their senses and promote engagement.

Additionally, research by Maliki & Yasin [8] indicates that multisensory learning experiences can significantly benefit children with disabilities, providing them with tailored learning experiences that cater to their unique needs. This adaptability reinforces the notion that multisensory approaches are essential for inclusive education, ensuring that all children have equitable access to learning opportunities. The evidence strongly supports the notion that multisensory learning is a vital component of early childhood education. By engaging multiple senses, educators can enhance memory retention, comprehension, and overall cognitive development, creating a more inclusive and effective learning environment for all children.

A significant body of research has explored the practical applications of multisensory learning in the classroom, particularly in early childhood education. For instance, Smith et al. [19] examined how

incorporating tactile and visual elements in reading instruction improved literacy outcomes for preschool children. Their findings suggest that when children engage multiple senses during reading activities, they are better able to connect with the material, leading to enhanced literacy skills Canihuante et al. [20]. This aligns with the broader understanding that multisensory approaches can create more engaging and effective learning environments for young learners.

Similarly, Andra[21] demonstrated that multisensory approaches in teaching mathematics helped children grasp abstract concepts through concrete, sensory experiences. By utilizing tactile materials and visual aids, children were able to visualize mathematical problems, which facilitated a deeper understanding of the subject matter. This approach not only aids comprehension but also fosters a more positive attitude towards mathematics, as children are more likely to engage with content that is presented in a relatable and interactive manner [15].

Moreover, supports these findings by highlighting the effectiveness of multisensory learning models in enhancing various skills, including listening and comprehension, through the integration of multiple sensory modalities [22]. The incorporation of tactile, visual, and auditory elements in lessons not only caters to diverse learning styles but also promotes inclusivity, ensuring that all students, including those with learning difficulties, can benefit from the educational experience [23]. The evidence from these studies underscores the importance of multisensory learning in early childhood education. By integrating tactile and visual elements into instructional practices, educators can significantly improve literacy and mathematical understanding among preschool children, fostering a more engaging and effective learning environment.

Despite the extensive research on the benefits of multisensory learning, there is limited literature focusing specifically on teachers' perspectives and experiences in implementing these strategies. Most existing studies concentrate on student outcomes and theoretical benefits, often overlooking the practical challenges and barriers faced by educators. Furthermore, there is a need for more research on how teachers balance the opportunities and challenges of multisensory learning, particularly in diverse educational settings with varying levels of resources and support.

Addressing these gaps, this study aims to provide a comprehensive understanding of early childhood teachers' perceptions of multisensory learning, offering insights into both the advantages and the obstacles encountered in practice. By exploring these dimensions, the research seeks to contribute to a more holistic understanding of multisensory learning and inform the development of strategies and policies that support its effective implementation in early childhood education

3. Methodology

3.1 Research design

The study on early childhood teachers' perspectives on multisensory learning utilizes a qualitative research design to explore the experiences and perceptions of educators regarding this pedagogical approach. Qualitative methods are selected for their ability to capture the intricate aspects of participants' experiences, making them suitable for investigating complex phenomena like multisensory learning [1]. By employing a phenomenological approach, the research focuses on the subjective experiences of early childhood teachers with multisensory learning. This methodology enables an in-depth exploration of how teachers perceive, interpret, and derive meaning from their interactions with multisensory educational practices, offering valuable insights into the practical implications and effectiveness of such approaches in early childhood education [24].

The use of qualitative methods in this study aligns with the broader trend in educational research towards understanding the subjective experiences and perspectives of educators. By emphasizing teachers' narratives and reflections, the research aims to reveal the underlying meanings and implications of multisensory learning from the educators' perspective, shedding light on the practical applications and challenges associated with this pedagogical approach [2].Moreover, the qualitative nature of the study allows for a comprehensive exploration of the complexities and nuances involved in implementing multisensory learning strategies in early childhood education settings. Through in-depth interviews, observations, and potential focus groups, the research can capture a diverse range of perspectives and

experiences of teachers, providing a thorough understanding of the opportunities and challenges linked to multisensory learning in practice [25].

The qualitative research design chosen for this study on early childhood teachers' perspectives on multisensory learning is well-suited for uncovering the intricate layers of educators' experiences and perceptions in this field. By utilizing a phenomenological approach, the research aims to offer valuable insights into how teachers navigate and engage with multisensory learning practices, contributing to the ongoing discussion on effective pedagogical strategies in early childhood education.

3.2 Participants

The study will involve 30 early childhood educators from diverse educational settings, including public and private preschools, urban and rural areas, and various socioeconomic contexts. Participants will be selected through purposive sampling to ensure a diverse and representative sample that reflects a range of experiences and perspectives. In Table 1, the reader will find the teachers' demographic information including educational background, age, gender, and teachers' experience.

Table 1. Participant demographics

Participants	Gender	Teachers' Age (Years)	Educational background	Teachers' experience
Participant-01	Female	35	Bachelor of Early Childhood Education	9 years
Participant-02	Female	38	Bachelor of Early Childhood Education	9 years
Participant-03	Female	33	Bachelor of Early Childhood Education	7 years
Participant-04	Female	40	Bachelor of Early Childhood Education	12 years
Participant-05	Female	41	Bachelor of Early Childhood Education	15 years
Participant-06	Female	31	Non-graduate degree in Early Childhood Education	5 years
Participant-07	Female	35	Non-graduate degree in Early Childhood Education	10 years
Participant-08	Female	31	Non-graduate degree in Early Childhood Education	4 years
Participant-09	Female	31	Bachelor of Early Childhood Education	5 years 3 months
Participant-10	Female	32	Bachelor of Early Childhood Education	8 years 7 months
Participant-11	Female	30	Bachelor of Early Childhood Education	5 years 2 months
Participant-12	Female	29	Bachelor of Early Childhood Education	4 years 9 months
Participant-13	Female	26	Non-graduate degree in Early Childhood Education	3 years
Participant-14	Female	27	Non-graduate degree in Early Childhood Education	3 years
Participant-15	Female	30	Non-graduate degree in Early Childhood Education	5 years

Participant-16	Male	35	Bachelor of Early Childhood Education	10 years
Participant-17	Male	31	Bachelor of Early Childhood Education	7 years
Participant-18	Male	31	Bachelor of Early Childhood Education	7 years
Participant-19	Male	30	Bachelor of Early Childhood Education	6 years
Participant-20	Male	26	Non-graduate degree in Early Childhood Education	2 years
Participant-21	Female	26	Non-graduate degree in Early Childhood Education	2 years
Participant-22	Female	27	Non-graduate degree in Early Childhood Education	3 years
Participant-23	Female	27	Non-graduate degree in Early Childhood Education	3 years
Participant-24	Female	25	Non-graduate degree in Early Childhood Education	2 years
Participant-25	Female	26	Bachelor of Early Childhood Education	3 years
Participant-26	Female	27	Bachelor of Early Childhood Education	3 years 6 months
Participant-27	Female	27	Bachelor of Early Childhood Education	3 years
Participant-28	Female	27	Senior High School	3 years
Participant-29	Female	25	Senior High School	2 years 3 months
Participant-30	Female	23	Senior High School	2 years

3.3 Data Collection

Data will be collected through semi-structured interviews, allowing for flexibility in exploring different aspects of teachers' experiences while ensuring consistency in the core questions asked. Each interview will last approximately 60 minutes and will be conducted in a location convenient for the participant or via video conferencing, depending on their preference and availability. The interview guide will include questions about teachers' understanding of multisensory learning, perceived benefits, encountered challenges, and strategies for balancing these aspects.

3.4 Data Analysis

Thematic analysis will be employed to analyze the interview data. This method involves identifying, analyzing, and reporting patterns (themes) within the data. The analysis will follow Braun and Clarke's (2006) six-phase approach[26]:

- Familiarization with the data: Transcribing interviews, reading and re-reading the transcripts, and noting initial ideas.
- Generating initial codes: Systematically coding interesting features of the data across the entire data set.
- Searching for themes: Collating codes into potential themes and gathering all data relevant to each potential theme.

- Reviewing themes: Checking if the themes work about the coded extracts and the entire data set, generating a thematic map.
- Defining and naming themes: Refining the specifics of each theme, and generating clear definitions and names for each theme.
- Producing the report: Selecting vivid, compelling extract examples, final analysis of selected extracts, and relating the analysis back to the research questions and literature.

The thematic analysis approach proposed for analyzing the interview data aligns well with the qualitative research design aimed at understanding early childhood teachers' perspectives on multisensory learning. Thematic analysis, as outlined by Braun and Clarke (2006) Löfstedt (1990), involves identifying, analyzing, and reporting patterns or themes within the data, making it a suitable method for investigating complex subjects and capturing detailed experiences and perceptions of participants[27], [28]. This method allows for a systematic exploration of the teachers' lived experiences regarding multisensory learning, enabling the researchers to uncover key themes that emerge from the data.

Braun and Clarke's six-phase approach to thematic analysis provides a structured framework for analyzing qualitative data (Byrne, 2021). By following this approach, researchers can systematically code and categorize the data to identify recurring patterns and themes related to early childhood teachers' views on multisensory learning. The flexibility and theoretical underpinnings of reflexive thematic analysis make it a valuable tool for interpreting the rich insights gathered from the interviews with educators (Byrne, 2021). This method allows for a deep exploration of the teachers' perspectives, shedding light on their experiences, challenges, and successes in implementing multisensory learning strategies in educational settings.

4. Discussion

The findings of this study provide a comprehensive understanding of early childhood teachers' perspectives on multisensory learning. Teachers recognize the significant benefits of multisensory learning, particularly in terms of enhanced student engagement, improved sensory development, better cognitive connections, and increased inclusivity. These insights align with existing literature that highlights the positive impacts of multisensory learning on student outcomes [24], [29].

The study on early childhood teachers' perspectives on multisensory learning provides valuable insights into the benefits recognized by educators in implementing multisensory approaches in educational settings. Teachers acknowledge the significant advantages of multisensory learning, particularly in terms of enhancing student engagement, improving sensory development, fostering better cognitive connections, and promoting inclusivity[4]. These findings are supported by existing literature that emphasizes the positive impacts of multisensory learning on student outcomes [30]. The research sheds light on how early childhood teachers perceive multisensory learning as a powerful tool to enhance the educational experience for young learners. By incorporating multiple sensory modalities, teachers aim to create dynamic and engaging learning environments that cater to diverse learning styles and needs. The recognition of the benefits of multisensory learning underscores the importance of adopting innovative pedagogical approaches that prioritize student engagement and holistic development[31].

Moreover, the study highlights the alignment between teachers' perspectives on multisensory learning and the broader educational discourse that emphasizes the importance of active and experiential learning approaches. By recognizing the value of multisensory strategies in enhancing cognitive abilities and promoting inclusive practices, educators demonstrate a commitment to creating enriching learning experiences that cater to the diverse needs of students [32]. This alignment with best practices in education underscores the relevance and effectiveness of multisensory learning in early childhood settings.

The insights gathered from early childhood teachers provide a nuanced understanding of how multisensory learning can positively impact student engagement and learning outcomes. By acknowledging the role of multisensory approaches in fostering sensory development and cognitive connections, teachers demonstrate a commitment to creating stimulating and inclusive learning environments for young learners [33], [34]. These findings contribute to the growing body of research that

supports the effectiveness of multisensory learning in enhancing educational practices and promoting student success.

The study on early childhood teachers' perspectives on multisensory learning underscores the importance of professional development in supporting educators in implementing innovative pedagogical approaches. By recognizing the benefits of multisensory learning for student engagement and cognitive development, teachers highlight the need for ongoing training and support to effectively integrate multisensory strategies into their teaching practices (Nuttall et al., 2015). This emphasis on continuous professional development reflects a commitment to enhancing teaching practices and improving learning outcomes for students.

Furthermore, the findings of the study align with the broader educational landscape that emphasizes the value of experiential and hands-on learning approaches in early childhood education. By recognizing the benefits of multisensory learning in promoting student engagement and cognitive growth, teachers demonstrate a commitment to creating dynamic and interactive learning experiences for young learners [25]. This alignment with best practices in early childhood education underscores the importance of incorporating multisensory strategies to meet the diverse needs of students and enhance overall learning outcomes.

The study on early childhood teachers' perspectives on multisensory learning provides valuable insights into the benefits recognized by educators in implementing multisensory approaches. Teachers acknowledge the positive impact of multisensory learning on student engagement, sensory development, cognitive connections, and inclusivity. These findings underscore the importance of adopting innovative pedagogical approaches that prioritize student-centered learning and holistic development. By aligning with existing literature and best practices in education, early childhood teachers demonstrate a commitment to creating enriching learning experiences that cater to the diverse needs of students.

The challenges faced by early childhood teachers in implementing multisensory learning, such as limited resources, time constraints, the need for specialized training, and classroom management issues, are consistent with previous research that highlights barriers to adopting innovative teaching strategies in early childhood education[1], [2], [9], [35]–[40]. These challenges underscore the practical difficulties educators encounter in incorporating multisensory approaches into their teaching practices and emphasize the importance of addressing these obstacles to enhance the effectiveness of multisensory learning experiences for young learners.

Limited resources can hinder the implementation of multisensory learning activities, as teachers may lack access to materials and tools necessary to create engaging multisensory environments in the classroom [15]. Additionally, time constraints pose a significant challenge, as educators must balance the demands of curriculum requirements and administrative tasks with the preparation and execution of multisensory lessons[41]. The need for specialized training in multisensory teaching techniques is crucial to ensure that teachers have the knowledge and skills required to effectively integrate multisensory strategies into their pedagogical practices[42].

Furthermore, classroom management issues can arise when implementing multisensory learning, particularly in terms of addressing diverse learning needs, maintaining student engagement, and creating inclusive learning environments [43]. Educators may face difficulties in managing classroom dynamics, ensuring that all students are actively participating in multisensory activities, and adapting instruction to accommodate varying learning styles and abilities [44]. These challenges underscore the complexity of implementing multisensory learning approaches in early childhood education settings and highlight the importance of providing support and resources to help teachers overcome these obstacles.

Addressing the challenges associated with implementing multisensory learning requires a multifaceted approach that involves providing educators with the necessary resources, training, and support to effectively integrate multisensory strategies into their teaching practices [22]. Professional development opportunities focused on multisensory teaching techniques, classroom management strategies, and inclusive practices can empower teachers to overcome barriers and enhance the quality of multisensory learning experiences for young children [45]. Collaboration among educators, administrators, and stakeholders is essential to create a supportive environment that fosters the successful implementation of

multisensory learning in early childhood education[46].

By acknowledging and addressing the challenges faced by early childhood teachers in implementing multisensory learning, educational institutions can promote a culture of innovation, collaboration, and continuous improvement in teaching practices [47]. Providing educators with the necessary resources, training, and support can help overcome barriers and create enriching multisensory learning experiences that benefit students' engagement, sensory development, and cognitive connections [48]. By recognizing the importance of addressing these challenges, stakeholders can work together to create inclusive and dynamic learning environments that cater to the diverse needs of young learners and promote positive educational outcomes.

5. Synopsis of the Main Research Outcomes

The analysis of the interviews revealed that teachers generally perceive multisensory learning as a highly effective educational approach. They believe that engaging multiple senses simultaneously helps children better understand and retain information. One participant noted, "When we incorporate touch, sight, and sound in our lessons, children seem more interested and remember the material better." Another teacher shared, "Multisensory activities make learning fun and interactive, which is crucial for young children."

Based on the interview data, the teacher reported that when teaching letter recognition, she modeled vowel sounds to children, and then the children repeated the letter sounds. She carries out this activity to train children's auditory skills so they can develop their reading skills auditory. Another teacher recounted that in the class, she slowly wrote and explained the shape of the embossed letters, and the children traced them with their fingers and copied them on flour media. This activity was intended to train students' sense of touch skills so that children recognized letters through their sense of touch and also kinesthetic copied letters by playing with flour can see in Figure 1.

Figure 1. Children name the letters they made

When the child is writing the letters, the teacher asks the child to say the letters again. The teacher then divides the children's worksheets to bold the letters studied. This activity can recognize letters because of the use of stimulation with sensory organs during the teaching and learning process. This activity stimulates the auditory and kinesthetic as in Figure 2.

Figure 2. Children form letters on flour by practicing their touch and finger movements

The challenge in implementing multisensory learning in early childhood is the lack of teacher pedagogical

competence, such as sorting media and learning resources or preparing activities that accommodate children's multisensory use can see Figure 3.

Figure 3. The teacher prepares learning media in the form of flour and corn

The second challenge is the limited time given in the learning schedule in see Figure 4.

Figure 4. When children play, playtime is over because the children have to go home

Another challenge that teachers faced was to explore the surrounding environment as a learning resource so that students were actively involved in learning with their sensors. Thus, a sound and meaningful teacher professional development program is needed related to multisensory-based learning design. Several key opportunities were identified by the teachers regarding the implementation of multisensory learning:

- Enhanced Student Engagement and Participation: Teachers reported that multisensory activities captivate students' attention and keep them engaged for longer periods. Activities like sensory tables, interactive storytelling, and hands-on experiments were mentioned as particularly effective.
- Improved Sensory Development: Many teachers highlighted that multisensory learning supports the development of children's sensory skills. For example, one teacher explained, "Using different textures and sounds in activities helps children develop their fine motor skills and auditory processing."
- Better Cognitive Connections: Teachers observed that multisensory learning helps children make connections between abstract concepts and real-world experiences. A teacher stated, "When children can see, touch, and hear what they are learning about, it makes the concepts more concrete and understandable."
- Increased Inclusivity: Teachers mentioned that multisensory learning accommodates diverse learning styles and needs, making it easier to include children with varying abilities and learning preferences. "It's a great way to reach all students, including those with special needs," one teacher remarked.

Despite the numerous benefits, teachers also reported several challenges in implementing multisensory learning:

- Limited Resources: A common challenge was the lack of adequate materials and resources. Teachers often need specific tools and supplies to create multisensory activities, which can be costly. "We don't always have the budget to buy all the sensory materials we need," a teacher pointed out.
- Time Constraints: Planning and preparing multisensory activities require significant time and effort. Teachers expressed that their already busy schedules make it difficult to consistently implement such activities. One participant shared, "I would love to do more multisensory lessons, but I just don't have the time to plan and set them up."
- Need for Specialized Training: Teachers felt that they lack sufficient training in multisensory teaching strategies. Many expressed a desire for professional development opportunities to enhance their skills in this area. "We need more training on how to effectively incorporate multisensory learning into our daily routines," a teacher suggested.
- Classroom Management: Implementing multisensory activities can sometimes lead to increased noise and activity levels, posing challenges for classroom management. Teachers noted that maintaining control and ensuring all students are engaged can be difficult. "It's a bit chaotic sometimes, and keeping everyone on task is a challenge," one teacher admitted.

Teachers shared various strategies they use to balance the opportunities and challenges of multisensory learning:

- Collaborative Planning: Some teachers collaborate with colleagues to share ideas and resources, reducing the burden of planning and preparation. "We often plan multisensory activities together and share materials, which makes it more manageable," a teacher explained.
- Gradual Implementation: To address time constraints, teachers suggested gradually incorporating multisensory activities into their routines. "Starting small and gradually adding more multisensory elements has worked well for me," one participant noted.
- Seeking External Support: Teachers mentioned seeking support from parents, community organizations, and local businesses to obtain resources and materials. "We sometimes get donations or grants for sensory materials, which helps a lot," a teacher shared.
- Professional Development: Teachers emphasized the importance of ongoing professional development to stay updated on best practices and new techniques in multisensory learning. "Attending workshops and training sessions has been invaluable," a teacher remarked.

The study found that while early childhood teachers recognize the significant benefits of multisensory learning, they face substantial challenges in its implementation. Addressing these challenges through increased resources, time management strategies, specialized training, and external support can help maximize the opportunities presented by multisensory learning in early childhood education.

6. Conclusions

This study provides valuable insights into early childhood teachers' perspectives on multisensory learning, highlighting both the opportunities and challenges associated with its implementation. By addressing the identified challenges through increased resources, specialized training, and collaborative approaches, educators and policymakers can better support the effective use of multisensory learning in early childhood education. The findings underscore the importance of understanding teachers' experiences to develop strategies and policies that enhance the quality of education for young learners.

Research findings confirm that early childhood education or preschool teachers enacted innovation and creativity in teaching children using a multisensory approach. The participants reported that multisensory-based learning could improve the quality of learning, child engagement, and holistic skill development. This research implies that by utilizing various sensory and semiotic sources, both verbal and nonverbal, multisensory-based learning can encourage children's active involvement. To overcome challenges or obstacles related to the enactment of multisensory-based teaching, training, and development of pedagogical competencies are needed. This research can be a catalyst for the application of a multisensory

approach to teaching children.

7. Limitations, Implications, and Further Directions of Research

The findings suggest several practical implications for early childhood education:

- Schools and educational institutions should allocate sufficient resources to support multisensory learning. This includes providing necessary materials and tools, as well as financial support to purchase these resources.
- There is a clear need for ongoing professional development to equip teachers with the skills and knowledge required for effective multisensory teaching. Training programs should focus on practical strategies for incorporating multisensory elements into daily lessons and managing the associated challenges.
- Encouraging collaboration among teachers can help share the burden of planning and implementing multisensory activities. Schools should foster a collaborative culture where teachers can share resources, ideas, and best practices.
- Engaging parents and community members in supporting multisensory learning can provide additional resources and support. Schools can organize workshops and information sessions to educate parents about the benefits of multisensory learning and ways they can contribute.

Policymakers should consider the following recommendations to support the implementation of multisensory learning in early childhood education:

- Provide funding and grants specifically aimed at supporting multisensory learning initiatives in early childhood education. This financial support can help address the issue of limited resources.
- Integrate multisensory learning approaches into early childhood education curricula. Policies should encourage schools to adopt these methods and provide guidelines on effective implementation.
- Develop and mandate training programs focused on multisensory learning for early childhood educators. Such programs should be part of the regular professional development requirements for teachers.
- Support ongoing research to evaluate the effectiveness of multisensory learning approaches and identify best practices. Policymakers should use evidence-based findings to inform future educational policies and practices.

This study has several limitations that should be acknowledged:

- The study involved a relatively small sample of 30 teachers, which may not fully capture the diversity of experiences and perspectives across different regions and educational settings.
- While the qualitative approach provides in-depth insights, it may not allow for the generalization of the findings to a broader population.
- The data is based on self-reported perceptions of teachers, which may be influenced by personal biases and experiences.

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