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Multisensory Routine Map During Classroom Transition as a Strategy for Disruptive Behavior Among Pre-Kindergartners

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Abstract: Disruptive behavior minimizes the students' learning time. With this, the main objective of this action research was to reduce the frequency of occurrence of disruptive behavior during classroom transitions through the implementation of the researchers-made multisensory routine map in between routines. The visual, verbal, auditory, and tactile elements are inherent in this transition strategy as an intervention. It informed the participants of the behavioral expectations as they transitioned to the next routine. Nine pre-kindergarten students from a progressive preschool were the participants of the study. A mixed-method approach was utilized to gather qualitative and quantitative data. The recording tools used to identify the exhibited disruptive behavior were the Disruptive Behavior Checklist, which consisted of the five general classes of disruptive behavior (*gross motor, noise-making, orienting, verbalizations,* and *aggression*), and the ABC Model integrated in the checklist. Thematic analysis was used to analyze the qualitative data, while a frequency table and the Wilcoxon Signed-Rank test were used to analyze the quantitative data. There were no significant differences between the students' behavior exhibited before and during the implementation of the multisensory routine map. Also, results show a downward trend in the occurrence of disruptive behavior during and after the implementation of the multisensory routine map. Three themes emerged as factors that caused disruptive behavior before the implementation of the multisensory routine map during classroom transitions. These were *peer influence, low frustration tolerance,* and *high energy and sensory-seeking behaviors*. Two themes emerged as factors that caused disruptive behavior during classroom transitions within the implementation phase. These were *challenges in emotional regulation* and *peer influence.* Moreover, while the use of the multisensory routine map presented minimal differences in behavior, the study further suggests the consistent and long-term use of this intervention strategy to guide students' behavior as they transition to the next routine.

Key Words: action research; disruptive behavior; multisensory routine map; routines; classroom transitions

1. INTRODUCTION

Predictable routines provide stability and clear expectations for young children (Gonzalez-Mena, 2011). Transitions, which signal activity changes, can cause frustration and disruptive behaviors when unclear or inconsistent (Ostrosky et al., n.d.). Effective transitions maximize learning time (Ergin & Bakkaloğlu, 2017). Dr. David Anderson notes that children often struggle with transitions due to difficulty stopping preferred activities, leading to resistance or meltdowns. Educators must assess students' ability to manage transitions before implementing them.

1.1 Problem and Rationale

Researchers observed that some pre-kindergarten students at a progressive school exhibited disruptive behaviors during unprepared transitions, which disrupt class flow and reduce instructional time. This prompted an action research study on managing such disruptions. In this action research, the operational definition of the disruptive behavior is the *uncooperative and unfavorable behavior*

of students that interrupts the shift to the next class routine which minimizes the learning time for teaching instruction (Shala, 2021; Lansing Community College, 2018; Wangdi & Namgyel, 2022; Bektiningsih et al., 2023).

A Multisensory Routine Map was implemented in Preschool A's Monday, Wednesday, and Friday morning classes to improve transitions, enhance instructional time, and provide teachers with an effective behavior and transition management strategy. The research questions that guided this study are the following:

1. How do students behave before, during, and after the implementation of the multisensory routine map during classroom transitions?
2. What factors caused the disruptive behavior of students before and during the implementation of the multisensory map during classroom transitions?
3. Has the implementation of a multisensory routine map reduced the occurrence of the students' disruptive behavior during classroom transitions?
4. Is there a significant difference between the behavior of the students before and during the implementation of the multisensory map during classroom transitions?
5. How did the implementation of a multisensory routine map reduce the occurrence of the students' disruptive behavior during classroom transitions?

1.2 Scope and Delimitation of the Study

This study aimed to reduce disruptive behavior among pre-kindergarten students during transitions by using a multisensory routine map. The intervention targeted four key transition periods: *Arrival* to *Circle Time*, *Circle Time* to *Mindfulness Minutes*, *Exploration* to *Active Play*, and *Snack Time* to *Story Time*. The study also considered external influences on behavior, such as peer, teacher, and material interactions. Conducted over five weeks, the short timeframe limited the ability to observe long-term effects.

1.3 Review of Related Literature

This section highlights the link between classroom transitions and student behavior. It discusses the role of various concepts in understanding how transitions are implemented and the factors that influence student behavior in the classroom.

Disruptive classroom behaviors often stem from boredom, attention-seeking, and learning difficulties (Bektiningsih et al., 2023). Robichaux (2016) categorizes these behaviors into five general classes, emphasizing the importance of addressing them to improve learning environments. During transitions, unclear or inconsistent routines can cause confusion and frustration, increasing the likelihood of such behaviors (Ostrosky et al., n.d.). Predictable routines and structured transitions help set expectations, offering children a sense of stability and improving classroom management (Gonzalez-Mena, 2011; Ergin & Bakkaloğlu, 2017).

The implementation of a multisensory routine map aligns with research supporting structured, sensory-rich environments that enhance focus and reduce behavioral disruptions (Seiberlich, 2016). Multisensory learning, engaging sight, sound, touch, and movement, boosts participation and supports diverse learning styles (Enguito, 2019; Bahri et al., 2024). Visual cues and physical signals further ease transitions, helping students anticipate activities and promoting independence (Kim et al., 2023; Better Kid Care, 2020). Studies by Brulé et al. (2016) and Cullen & Metala (2019) show that multisensory tools improve engagement, collaboration, and spatial understanding, even among students with visual impairments.

Effective classroom management strategies, such as Kounin's model, emphasize momentum, smoothness, and the teacher's ability to manage overlapping activities while maintaining awareness and control (Martella et al., 2012). Similarly, the ABC Behavior Model provides a structured approach for analyzing and responding to disruptive behavior, helping educators tailor interventions based on antecedents, behaviors, and consequences (Cooper et al., 2007, as cited in Meadan et al., 2014; Park & Lynch, 2014).

In essence, integrating predictable routines, multisensory learning, and behavior analysis tools creates a comprehensive strategy for reducing disruptive behaviors and fostering smoother transitions in early childhood classrooms.

Conceptual Framework

This study aimed to reduce disruptive behavior during classroom transitions by implementing a multisensory routine map. The research was conducted in three phases: pre-intervention, intervention, and post-intervention. During the pre-intervention phase, researchers documented the occurrence of disruptive behaviors among students during classroom transitions, as well as the contributing factors prior to the implementation of the intervention strategy. During the intervention, the routine map, incorporating visual,

auditory, and tactile elements, was used to support smoother transitions, guided by Kounin's principles of Smoothness and Momentum. Educators managed transitions even with uncooperative behavior. Consistent with the ethical principle of beneficence, the intervention was integrated into the regular classroom routine to maintain consistency and preserve its positive impact. Post-intervention analysis focused on behavioral patterns during transitions from Arrival to Circle Time, Circle Time to Mindfulness Minutes, Exploration Time to Active Play Time, and Snack Time to Story Time to assess the routine map's effectiveness. The conceptual framework is represented in the figure below:

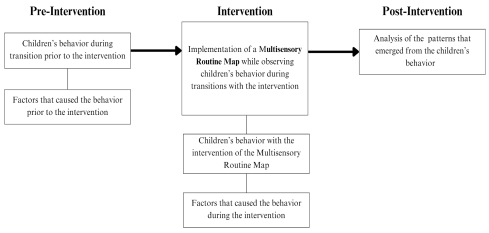

Fig 1. Conceptual Framework for Reducing Disruptive Behavior through the Implementation of a Multisensory Routine Map During Classroom Transitions.

2. METHODOLOGY

This study used an action research design with mixed methods to address classroom challenges and enhance student outcomes. Nine pre-kindergarten students (eight boys and one girl) from Preschool A were selected as participants. The primary research instrument was the Disruptive Behavior Checklist, which included a checklist and field notes sections. The checklist featured six columns, including an ABC chart to explore questions like "Why did the behavior occur?" (Antecedent), "What was the specific behavior displayed?" (Behavior), and "What did the teacher do?" (Consequence). This tool enabled researchers to compare student behavior before and during the intervention, assessing changes in disruptive behavior through detailed observations and insights.

Intervention Strategy

The intervention strategy used was a multisensory routine map, a hand-held visual map displaying the class routine with pictures and labels, featuring a magnetic toy car that moves along a magnetic road. This design was inspired by boys who exhibited more disruptive behavior and showed interest in cars. The car represented transitions between activities, and a new classroom role, the "transition leader" or "taxi driver," was introduced to encourage positive behavior. Cooperative students were selected to move the car during transitions, while peers engaged with sound effects like honking and engine noises. A bell was also used to signal transitions and gain students' attention. The figure below presents the multisensory routine map that was integrated into the routine of the class.

Fig 2. Image of the multisensory routine map

Data Gathering Procedure

This study used a Disruptive Behavior Checklist, based on Thomas, Becker, and Armstrong's (1968) framework, to observe and categorize students' disruptive behaviors in a pre-kindergarten class. Data collection spanned five weeks, focusing on transition periods of *Arrival* to *Circle Time, Circle Time* to *Mindfulness Minutes, Exploration Time* to *Active Play Time,* and *Snack Time* to *Story Time*. After obtaining ethical approval and parental consent, researchers gathered baseline data over three days. During the four-week intervention, a multisensory routine map was implemented with engaging elements such as a "taxi driver" role and auditory stimuli to encourage cooperation, while managing disruptions with gentle reminders. Researchers recorded behavior using the checklist and field notes. For Post-intervention, they analyzed the data to identify patterns and assess the approach's effectiveness, combining quantitative and qualitative insights.

Ethical Considerations

In compliance with Republic Act 10173, or the Data Privacy Act of 2012, the researchers ensured the protection of participants' personal information. They also followed the De La Salle University Code of Ethics and Guide to Responsible Research, completing the Research Ethics checklist. Additionally, Parent Consent Forms were distributed and obtained before implementing the action research.

Data Analysis

The quantitative data measured the frequency of each class of disruptive behavior per student and was analyzed using an ungrouped frequency distribution, presented in a multi-bar graph. The One-Tailed Wilcoxon Signed-Rank Test was applied to assess significant differences between the pre-intervention and the

intervention phases. Meanwhile, qualitative data was analyzed through Thematic Analysis, identifying recurring themes from observation notes to uncover factors causing disruptive behavior. These insights helped address the study's research questions.

3. RESULTS AND DISCUSSION

This chapter presents and discusses the study's results based on the established research questions, with a detailed discussion following the presentation of findings.

Research Question 1: How do students behave before, during, and after the implementation of the multisensory routine map during classroom transitions?

Before the implementation of the multisensory routine map, participants exhibited various disruptive behaviors during classroom transitions, including *gross motor, noise making, orienting, verbalizations,* and *aggression*. During the intervention, these behaviors persisted but were reduced, with specific instances still occurring. In the post-intervention phase, notable improvements were observed, particularly in *gross motor* and *verbalizations* during high-energy transitions such as *Arrival* to *Circle Time* and *Exploration* to *Active Play Time*.

Research Question 2: What factors caused the disruptive behavior of students before and during the implementation of the multisensory routine map during classroom transitions?

Researchers explored the reasons behind the behaviors (antecedents) and the specific actions exhibited to better understand the students' disruptive behaviors. Using thematic analysis, they identified key themes, which are presented in Table 1, as contributing factors to the occurrence of these behaviors.

Table 1. Themes that Emerged as Factors that Caused Disruptive Behavior During Pre-Intervention and Intervention Phases

Phase	Themes
Pre-Intervention	Peer Influence
	Low Frustration Tolerance
	High Energy and Sensory-Seeking Behavior
During Intervention	Persistent Challenges with Emotional Regulation
	Peer Influence

Pre-intervention

Theme 1: Peer Influence

The pre-intervention analysis showed that peer influence played a significant role in student behavior during transitions, due to mimicking or reacting to one another out of social curiosity, leading to disruptions such as verbal outbursts and off-task conversations. This emphasized the importance of addressing social dynamics in classroom interventions. Structured strategies can foster positive peer interactions and help redirect attention, thereby reducing disruptive behavior and supporting smoother transitions (Seiberlich, 2016).

Theme 2: Low Frustration Tolerance

During the pre-intervention phase, students exhibited low frustration tolerance during transitions and waiting periods, resulting in disruptive behaviors such as clapping, singing, verbal outbursts, and difficulty following instructions. Although often linked to ADHD, these behaviors also reflect broader emotional responses to delays (Wang, 2014; Jiménez-Soto et al., 2022). Studies indicate that unclear expectations and prolonged waiting times are key contributors to such disruptions (Shahzad et al., 2020; Hemmeter et al., 2008). Implementing structured strategies can help reduce frustration and support emotional regulation, leading to smoother transitions (Seiberlich, 2016).

Theme 3: High Energy and Sensory-Seeking Behavior

During the pre-intervention phase, students displayed high-energy and sensory-seeking behaviors such as running, jumping, and climbing during transitions, signaling a need for physical movement and sensory input. These behaviors often disrupted the classroom and reflected that prolonged stillness may not be developmentally appropriate for all students (Robichaux, 2016). Research supports that unstructured energy and boredom can lead to such disruptions, emphasizing the importance of incorporating movement-based or guided physical transition strategies to help manage energy levels and reduce disruptive behavior (Bektiningsih et al., 2023; Seiberlich, 2016).

During Intervention

Theme 1: Persistent Challenges with Emotional Regulation

During intervention, some students continued to struggle with emotional regulation during transitions, displaying behaviors such as aggression, verbal outbursts, and restlessness. These reactions were often triggered by frustration, unmet expectations, changes in routine, or perceived unfairness—for example, not being chosen as the "taxi driver." Such responses highlight the need for individualized support strategies for students with emotional regulation challenges (Bektiningsih et al., 2023). Research by Seiberlich (2016) supports the use of visual cues, such as the multisensory routine map, to help these students better manage their emotions and improve transition outcomes.

Theme 2: Peer Influence

In the intervention phase, peer influence remained a key factor in student behavior during transitions, with students often imitating or reacting to one another, resulting in both positive and disruptive behaviors. This highlights the importance of addressing social dynamics and implementing interventions that promote positive peer interactions (Özkan Yıldız et al., 2024). Research also supports the integration of social-emotional strategies in the form of the multisensory routine map to help students build emotional regulation and social skills during transitions (Bektiningsih et al., 2023).

Post Intervention

Data analysis from the pre-intervention to the intervention phase revealed a clear reduction in disruptive behaviors, indicating that consistent routines, such as the multisensory routine map, helped students manage their behavior during transitions.

Research Question 3: Has the implementation of a multisensory routine map reduced the occurrence of the students' disruptive behavior during classroom transitions?

This section presents the results of disruptive behavior frequencies observed in the classroom transition periods across the pre-intervention and intervention phases. The data is displayed through multiple bar graphs for each transition period, with an interpretation of the results.

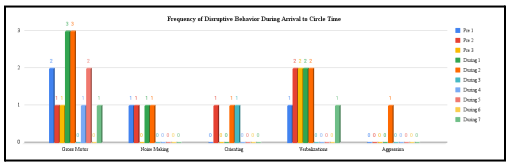

Fig 3. Frequency of Each Class of Disruptive Behavior During Arrival to Circle Time for Pre-Intervention and During Intervention Days

During the Arrival to Circle Time transition, gross motor and noise-making behaviors slightly decreased during pre-intervention, while verbalizations increased. During the intervention, most disruptive behaviors declined, with gross motor dropping to zero by day three and aggression appearing briefly but not persisting.

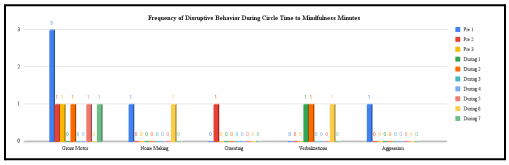

Fig 4. Frequency of Each Class of Disruptive Behavior During Circle Time to Mindfulness Minutes for Pre-Intervention and During Intervention Days

Figure 4 compares disruptive behaviors during the Circle Time to Mindfulness Minutes transition. During pre-intervention, behaviors like gross motor, noise-making, and aggression declined. During the intervention, most behaviors decreased or remained minimal, with no aggression and zero orienting, which showed improved transitions.

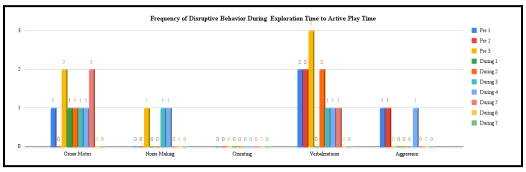

Fig 5. Frequency of Each Class of Disruptive Behavior During Exploration Time to Active Play Time for Pre-Intervention and During Intervention Days

Figure 5 compares disruptive behaviors during the Exploration Time to Active Play Time transition in pre-intervention and intervention phases. In pre-intervention, gross motor, noise-making, verbalizations, and aggression rose steadily, and orienting was absent. During the intervention, most disruptive behaviors stabilized, with minimal instances of aggression and no orienting observed.

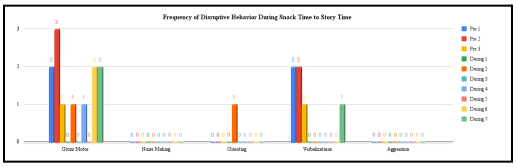

Figure 6. Frequency of Each Class of Disruptive Behavior During Snack Time to Story Time for Pre-Intervention and During Intervention Days

Figure 6 shows that during the Snack Time to Story Time transition, disruptive behaviors were barely present during pre-intervention and decreased in the intervention phase. Gross motor behavior briefly appeared, with minimal verbalizations and orienting, while noise-making and aggression were absent.

Gross Motor

Gross motor disruptions were the most common during transitions, especially in Arrival to Circle Time and Snack to Story Time. During the intervention, these behaviors significantly decreased, nearly disappearing in transitions like Circle Time to Mindfulness Minutes. This improvement is attributed to

the consistent use of the multisensory routine map, which established clear routines and expectations, aligning with research on the benefits of structured transitions (Özkan Yıldız et al., 2024; Seiberlich, 2016)

Noise-Making

Noise-making was generally low across all transitions, both before and during the intervention. Slight reductions were observed during transitions of Circle Time to Mindfulness Minutes and Exploration Time to Active Play Time. These suggest that the intervention helped reinforce expectations for quieter transitions, supporting Shahzad et al.'s (2020) view that effective transition strategies reduce noise and distractions.

Orienting

Orienting behaviors, characterized by difficulty staying focused, were moderately observed before the intervention, especially during Snack Time to Story Time and Circle Time to Mindfulness Minutes. During the intervention, orienting significantly decreased across all transitions, with notable improvement in Snack Time to Story Time. This improvement aligns with research highlighting the benefits of structured transitions and teacher guidance in enhancing focus and engagement (Özkan Yıldız et al., 2024).

Verbalizations

Before the intervention, verbalizations were prevalent during high-energy transitions such as Exploration Time to Active Play Time and Arrival to Circle Time. During the intervention, verbal disruptions decreased across all transitions, notably during Exploration Time to Active Play Time. This reduction suggests that visual and verbal cues helped manage behavior, aligning with findings by Shahzad et al. (2020).

Aggression

Aggression was the least frequent disruptive behavior, with isolated cases during Arrival to Circle Time before the intervention. During the intervention, aggression was largely eliminated across all transitions. This decrease in disruptions suggests that established routines, as noted by Seiberlich (2016), helped students manage their behavior better during transitions.

Gender Influence on Results of Disruptive Behavior

Out of the nine participants, only one girl (Student A) consistently displayed cooperative behavior during the pre-intervention and intervention phases by following the teacher's instructions and lining up quietly. In contrast, some boys exhibited disruptive behaviors such as verbalizations and aggression, aligning with research suggesting that girls often show more prosocial behaviors, while boys are more prone to externalizing behaviors such as aggression (Walker et al., 2002; Kožárová & Mikurčíková, 2022). However, the study found minimal aggression among boys during the intervention, highlighting that such behavior shouldn't be generalized across all boys.

Research Question 4: Is there a significant difference between the behavior of the students before and during the implementation of the multisensory routine map during classroom transitions?

The frequency of disruptive behaviors during different classroom transitions was tallied for both the pre-intervention and intervention phases. The average scores from these periods were then used to perform a one-tailed Wilcoxon Signed-Rank Test to determine if there was a significant difference in behavior before and during the implementation of the multisensory routine map.

Table 2. Wilcoxon Signed-Rank Test for Differences (Pre vs. During)

Routine Transition	Pre	During	d_i (Pre–During)	Rank	Rank Sum (T^+)
Arrival to Circle Time	0.80	0.57	0.23	1	1
Circle to Mindfulness	0.53	0.20	0.33	2	2
Exploration to Active Play	0.87	0.40	0.47	3	3
Snack to Story	0.73	0.23	0.50	4	4

The one-tailed Wilcoxon Signed-Rank Test showed a sum of positive ranks of W=10.0 and a p-value of 0.0625. Since the p-value is above the standard significance level of α=0.05, there is no statistically significant difference, but it suggests a downward trend. This indicates that with a longer implementation period, the multisensory routine map may lead to a significant reduction in disruptive behaviors.

Research Question 5: How did the implementation of a multisensory routine map reduce the occurrence of the students' disruptive behavior during classroom transitions?

The implementation of a multisensory routine map effectively reduced disruptive behaviors during classroom transitions by providing structure and supporting emotional regulation. Its predictable nature, incorporating visual and sensory elements, helped reduce anxiety, especially for students sensitive to routine changes (Seiberlich, 2016). The map also facilitated positive peer interactions and redirected social energy into productive behaviors (Bektiningsih et al., 2023). The "taxi driver" role served as positive reinforcement, motivating students to exhibit favorable behavior during transitions. This approach aligns with research emphasizing the importance of structured

routines in minimizing disruptive behavior and promoting self-regulation (Özkan Yıldız et al., 2024). Overall, the multisensory routine map created an environment that minimized disruptions by promoting emotional regulation, social interaction, and motivation.

4. CONCLUSIONS

This study explored using a multisensory routine map to reduce disruptive behavior during classroom transitions in a pre-kindergarten setting. The intervention showed a noticeable decrease in disruptions, although not statistically significant, suggesting potential for greater impact with longer implementation. The routine map effectively engaged students and encouraged cooperation, particularly during high-energy periods, but peer influence and emotional regulation challenges persisted. The intervention was effective because the multisensory routine map engages young children's visual, auditory, tactile, and kinesthetic senses. This sensory engagement captures their attention, encourages participation, and supports their emotional and cognitive readiness for the next classroom routine.

To enhance future studies, researchers recommend implementing the routine map consistently from the start of the school year, using durable and gender-neutral materials, and considering student personalities. A longitudinal study across multiple grade levels is suggested to assess long-term behavioral changes. Additionally, integrating the map within the Universal Design for Learning (UDL) framework and testing it in public schools could help evaluate its effectiveness with a broader student population.

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