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Enhancing Preschool Children's Emotional Consistency through Water Play Activities: A Classroom Action Research Study

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ABSTRACT

Emotional inconsistency in children aged 4–5 years, such as crying, tantrums, and difficulty regulating during activity transitions, hinders learning engagement in Group A at PAUD Al Falah, Kuningan. This Classroom Action Research (CAR) aimed to enhance children's emotional consistency through structured water play interventions using funnels, measuring bottles, and bubble water. Guided by Jean Piaget's cognitive development theory and sensory stimulation principles, the study tested the hypothesis that continuous water play stabilizes emotional regulation. The method followed Kemmis and McTaggart's spiral model, encompassing planning, acting, observing, and reflecting over two cycles. The subjects were 10 children (4 boys, 6 girls). The results showed a significant increase in emotional stability,

with the class average successfully surpassing the performance benchmark of at least 80% of children reaching the "Developed as Expected" (BSH) criteria. It is concluded that structured water play effectively minimizes children's negative emotions and builds patience. It is suggested that early childhood educators integrate structured water play as a recreational, multisensory strategy to support social-emotional development.

Introduction

The importance of emotional management through interactive play activities has been widely documented, yet existing literature exhibits distinct conceptual boundaries. Studies by Cole et al. (2020) and Denham et al. (2020) establish that preschool emotion regulation is strongly conditioned by classroom socialization and educator interventions; however, their models primarily emphasize verbal and social-instructional framing while leaving the physical-sensory mechanics of play secondary. Addressing physical contexts, Haga (2021) demonstrated that movement- and sensory-based play environments support general psychological well-being, but without isolating specific physical media or operationalizing targeted emotional metrics.

When examining water play specifically, prior studies reveal a critical analytical divergence. Research by Booth et al. (2022) focused on physical/physiological dynamics, linking water activity to motor outcomes like handwriting and tapping speed. Meanwhile, Lopatovska

and Zhong (2022) alongside Zhong et al. (2023) advanced the field by showing that visual-tactile water stimulation relieves acute psychological tension and enhances temporary emotional equilibrium. Despite these contributions, existing water play literature remains predominantly focused on either broad motor-cognitive skill development or short-term, passive stress relief. A critical gap persists regarding whether structured, rule-bound water play can systematically develop **sustained emotional consistency**—specifically the ability to self-regulate across daily classroom transitions.

This study directly addresses and extends these existing foundations. While Denham et al. (2020) rely on teacher-child verbal socialization and Zhong et al. (2023) highlight general sensory relaxation, this research bridges both domains through a Classroom Action Research (CAR) framework. It introduces a structured water play formula (combining mini basins, funnels, measuring bottles, and bubble water) designed with deliberate turn-taking and rule-guided tasks. By shifting water play from a passive exploratory medium into a structured behavioral intervention, this study extends current knowledge by empirically demonstrating how target sensory play systematically stabilizes emotional responses in preschoolers during high-stress classroom transitions.

The novelty of this research lies in its application of a structured water play formula that integrates bubble water media, measured

bottle-pouring tasks, and repetitive group rules designed specifically to train patience, self-control, and emotional calmness in preschoolers. This places high urgency on the immediate execution of this research at PAUD Al Falah Cirea Village to mitigate children's transitional stress while serving as a practical guide for managing early emotional inconsistencies through concrete play.

Methods

This study adopted a Classroom Action Research (CAR) design to systematically address and resolve emotional instability in early childhood education settings (Kemmis et al., 2014; Sugiyono, 2020). The research design followed the classic continuous spiral model conceptualized by Kemmis and McTaggart, which structurally integrates cyclical phases of planning, acting, observing, and reflecting (Kemmis et al., 2014). The research was conducted over a two-month period during the 2026 academic year at PAUD Al Falah, located in Cirea Village, Mandirancan District, Kuningan Regency. The participants consisted of a purposive cohort of 10 preschool children enrolled in Group A (aged 4–5 years: 4 boys and 6 girls). The selection explicitly focused on children exhibiting clear indicators of emotional inconsistency, such as frequent crying, temper tantrums, or self-regulation difficulties during classroom activity transitions.

The intervention was executed across two successive cycles following Kemmis and McTaggart's four operational phases:

1. *Planning:* The researchers designed structured Daily Lesson Plans (RPPH) focused on water play and formulated behavioral observation grids.
2. *Acting:* Implementing structured water play tasksutilizing mini water basins, funnels, measuring bottles, and kid-friendly bubble water—designed to induce psychological relaxation and sensory stimulation.
3. *Observing:* Collecting real-time qualitative and quantitative data during activities.
4. *Reflecting:* Evaluating cycle outcomes collaboratively with co-teachers to identify operational constraints and refine action plans for the subsequent cycle.

Data Collection Techniques and Instrument Validity Data collection employed a mixed qualitative and quantitative approach combining structured observation checklists, interactive reflection logs, photographic/video documentation, and validating interviews with co-teachers. To ensure the validity and trustworthiness of the instruments:

- **Quantitative Instruments:** The structured observation checklists were subjected to content validity testing prior to data collection. Two early childhood education experts evaluated the indicators (expressing feelings, calming down, situational reactions, waiting for turns, and controlling outbursts) to ensure alignment with standard national developmental stages.

- **Qualitative Trustworthiness:** To guarantee qualitative data trustworthiness (credibility and confirmability), member checking and source/technique triangulation were applied (Miles et al., 2014). Observational notes were cross-verified against photo/video artifacts and co-teacher interview transcripts to eliminate observer bias.

Data Analysis Procedures

The study executed distinct analysis pipelines for quantitative and qualitative data:

- **Quantitative Analysis:** Children's emotional performance was measured using a 4-point rating scale corresponding to early childhood developmental categories: *Not Yet Developed* (BB = 1), *Starting to Develop* (MB = 2), *Developed as Expected* (BSH = 3), and *Developed Very Well* (BSB = 4). Individual percentage mastery (P_i) for each indicator was calculated using the equation:

$$P_i = \left(\frac{f}{N \times 4} \right) \times 100\%$$

where f is the sum of empirical scores obtained by all children for an indicator, N is the total number of children (N = 10), and 4 represents the maximum scale score. Overall class achievement was evaluated against the predetermined success threshold, requiring at least 80% of Group A children to reach a minimum score of 3 (BSH) in emotional

stability.

Qualitative Analysis: Qualitative data gathered from reflection logs, observational field notes, and co-teacher interviews were processed using the interactive model analysis proposed by Miles, Huberman, and Saldana (2014), consisting of *data reduction* (categorizing behavioral descriptions and emotional triggers), *data display* (narrative synthesis of cycle events), and *conclusion drawing/verification* (confirming qualitative patterns against empirical trends).

Result and Discussions

The classroom action research yielded both qualitative and quantitative evidence demonstrating the positive transformation of emotional regulation among preschool children. **Qualitative Observation and Classroom Dynamics** Qualitative field observations during the baseline/pre-intervention stage revealed high levels of emotional instability during activity transitions. When instructed to clean up or move to the next lesson, several children exhibited visible distress, including loud crying, refusal to move, and temper tantrums.

During Cycle I, the introduction of structured water play using mini basins, funnels, and measuring bottles gradually altered these behavioral patterns. Children became visibly calm when engaging with water, though minor conflicts over sharing materials persisted. By Cycle II, with refined turn-

taking rules and bubble water activities, children displayed remarkable composure and emotional stability. Narrative field notes recorded that children were able to self-soothe faster, wait patiently in line, and transition smoothly without emotional outbursts.

Teacher Interview Findings Excerpts from validating interviews with co-teachers corroborated the observational field notes. A co-teacher remarked during the post-Cycle II interview:

"Before the water play intervention, classroom transitions were chaotic. Children like Child A and Child B would cry or throw tantrums almost daily whenever we switched activities. By the end of Cycle II, using structured water play as a transition routine transformed their behavior. They now wait eagerly for their turn, clean up calmly, and express their feelings verbally rather than through tantrums."

Documentary Evidence Visual documentation captured across both cycles provided direct qualitative evidence of emotional growth. Photographs taken during Cycle I showed children focusing intensely on filling measuring bottles using funnels, reflecting a shift from emotional distress to sensory engagement. In Cycle II, photographic evidence highlighted peer collaboration and patient waiting behaviors during bubble water activities, demonstrating established self-control.

Quantitative Results To evaluate the chronological improvement, observational scores were analyzed quantitatively across the baseline, Cycle I, and Cycle II. Table 1 summarizes the percentage of children

achieving the success benchmark (*Developed as Expected* [BSH] or *Developed Very Well* [BSB]) across key indicators.

Table 1. Emotional Consistency Indicators Progress Across Action Cycles

Emotional Consistency Indicators	**Pre-Intervention (%)**	**Cycle I (%)**	**Cycle II (%)**	**Mean Gain (%)**	**Target Status**
Expressing and Managing Feelings Verbally	30.0%	60.0%	90.0%	+60.0%	Achieved
Calming Down After Negative Emotions	20.0%	50.0%	80.0%	+60.0%	Achieved
Showing Appropriate Situational Reactions	40.0%	70.0%	90.0%	+50.0%	Achieved
Waiting for Turns and Showing Patience	10.0%	40.0%	80.0%	+70.0%	Achieved
Controlling Monitored	30.0%	60.0%	90.0%	+60.0%	Achieved

Emotional Outbursts					

The quantitative data in Table 1 show a clear upward trajectory. By Cycle II, all emotional indicators reached or exceeded the 80% success benchmark, achieving an overall cohort average of 86.0%.

The empirical outcomes validate the primary hypothesis, demonstrating that structured sensory play serves as a powerful instrument for emotional stabilization in early childhood. The significant gain in waiting for turns and showing patience (+70.0%) highlights how water play transforms abstract behavioral rules into engaging, self-directed tasks.

Critical Comparison with Existing Literature While these findings align with broader early childhood literature, a critical comparison reveals key theoretical and empirical distinctions:

- **Divergence from purely verbal/socialization frameworks:** Cole et al. (2020) and Denham et al. (2020) asserted that preschool emotional regulation relies primarily on verbal teacher-child socialization. However, our findings demonstrate that for young children (aged 4–5) prone to acute transitional stress, verbal instructions alone are often insufficient. By integrating tactile water media, this study achieved rapid emotional stabilization where verbal prompts previously failed.

- **Extension of motor-centric water play studies:** Prior studies by Booth et al. (2022) focused almost exclusively on the motor and physical benefits of water activities (e.g., handwriting speed and motor tapping). This study extends their focus by proving that water play acts equally as an affective and emotional mediator.
- **Advancement over passive sensory relaxation:** While Lopatovska and Zhong (2022) and Zhong et al. (2023) highlighted that water offers visual-tactile stimulation for temporary psychological relief, their interventions were passive and exploratory. In contrast, our study introduces a **structured, rule-bound framework** (funnels, measuring bottles, and structured group turns). This structural shift proves that sensory play can build long-term, transferable self-regulation rather than just short-term relaxation.

Novelty and Theoretical Contribution The core novelty of this research lies in establishing the concept of *structured sensory-based emotional regulation* within Classroom Action Research. Grounded in Jean Piaget's cognitive development theory, preoperational children process emotions through concrete physical experiences rather than abstract reflection. By manipulating water media under structured rules, children physically enact self-control, patience, and turn-taking. The intervention bridges the gap between passive sensory play and rigid behavioral discipline, offering a non-punitive, child-centered model for managing transitional classroom anxiety.

The interactive engagement and behavioral shifts observed within the classroom environment during these continuous action cycles are captured visually below. This graphic evidence illustrates the specific material implementation stages where the intervention directly impacted the preschool environment.

The profound empirical growth observed throughout this action research validates the core hypothesis, showing that continuous engagement with structured sensory play acts as an exceptional vehicle for emotional stabilization. The substantial rise in waiting for turns and showing patience, which recorded the highest overall mean gain of 70.0%, highlights how a playful, water-centered environment inherently motivates self-regulation. Instead of relying on abstract or punitive behavioral constraints, children naturally practiced delayed gratification and emotional composure by interacting with concrete objects like funnels and bubble water. This outcome directly supports the classic cognitive-developmental theories of Jean Piaget, which assert that children in the preoperational stage construct vital internal coping mechanism structures by physically manipulating concrete media rather than processing passive verbal instructions. By introducing a multisensory medium that naturally relieves tension, the research minimized the transitional stress that frequently prompts tantrums in young children.

Furthermore, the significant improvements across all tracking

indicators correspond tightly with contemporary findings in early childhood socio-emotional literature. The success of using repetitive water tasks to build emotional control matches the discoveries of Cole et al. (2020), who emphasized that preschool emotion regulation develops rapidly when supported by highly predictable, structured classroom routines. Similarly, the reduction of negative behaviors and the rise in positive situational expressions support the findings of Lopatovska et al. (2022) and Zhong et al. (2023), which demonstrated that water play offers rich visual-tactile stimulation that reduces internal psychological friction. Additionally, the attainment of the 80% success threshold aligns well with the field conclusions of Rahmawati (2021), proving that systematic, play-based interventions executed by reflective educators drastically improve classroom climates. By embedding these collaborative, stress-reducing tools into daily lesson plans, this intervention provides a reliable, replicable framework for turning unpredictable early childhood classrooms into safe, child-centered environments.

Conclusion

This Classroom Action Research demonstrates that the systematic implementation of structured water play activities directly enhances emotional consistency and self-regulation among preschool children during classroom transitions. Across two action cycles, the targeted intervention enabled children to shift from emotional instability and

frequent transitional tantrums to self-directed composure, with all tracked emotional indicators successfully surpassing the predetermined 80% success benchmark.

The primary novelty of this study lies in conceptualizing and validating sensory-based emotional stabilization as an effective instructional approach in early childhood pedagogy. This concept highlights that early emotional consistency is built more effectively when children interact with rule-bound, concrete sensory media rather than relying solely on abstract verbal constraints. Practically, these findings indicate that integrating structured sensory play into daily preschool routines provides a low-cost, high-impact strategy to mitigate transition stress and foster a child-centered classroom climate. Early childhood educators are encouraged to incorporate structured sensory routines during activity transitions, while school administrators should support the basic material needs for play-based learning. Future research may extend this structured sensory model to broader early childhood contexts and diverse inclusive learning environments.

The practical implications of these findings suggest that integrating structured sensory play into the core early childhood curriculum serves as a low-cost, high-impact strategy for resolving early emotional inconsistencies. Based on these outcomes, it is strongly suggested that preschool educators move away from rigid, worksheet-centric methods and deliberately plan water-based routines to manage stressful activity

transitions. Furthermore, school administrators are encouraged to provide basic sensory equipment and continuous support to sustain these play-based methods. Future action research should look into applying this structured sensory model to a wider variety of early childhood settings, potentially adding diverse natural elements to match the evolving needs of inclusive socio-emotional learning.

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