Title: Learning to Try Again: How Nature-Based Experiences Support Persistence and Resilience in Early Childhood

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Summary

Our two-year study involving 714 preschoolers explored how nature-based outdoor experiences support resilience through persistence and problem-solving. Findings revealed improvements in children's persistence and competence across different starting profiles, highlighting the developmental value of authentic outdoor challenges and opportunities to try again.

Understanding Mastery Motivation in Young Children

Mastery motivation refers to children's intrinsic drive to tackle challenging tasks, persist through difficulties and their experience of joy in mastering new skills (Morgan et al., 1990). When preschoolers encounter a steep, muddy slope or a wobbly log, what keeps them trying? It is in these small everyday moments of overcoming obstacles outdoors that provide meaningful opportunities for children to develop persistence and confidence in navigating challenges, laying important foundations for resilience.

About the Study

To better understand how outdoor nature-based learning experiences support the development of resilience in preschoolers, the NTUC First Campus Centre for Early Childhood Transformative Practices (CECTP) and NTUC First Campus Outdoor School Singapore collaborated on a two-year research project aligned with Singapore's broader vision of making outdoor learning accessible to "every child, everywhere, every day" (ECDA, 2019). Our study involved 714 children (301 Kindergarten 1 and 413 Kindergarten 2) and 82 educators across 14 NTUC First Campus centres, with a subset of 225 children followed across 2025 and 2026 to examine patterns of developmental change over time.

Using a mixed-methods approach, educators rated children's mastery motivation using the Dimensions of Mastery Questionnaire (DMQ-18; Morgan et al., 2020) before and after participation in two- or three-day OSS outdoor programmes conducted at local nature parks and wetland reserves. The ratings were complemented by on-site field observations of children's persistence and problem-solving during authentic outdoor challenges, alongside parent surveys capturing children's outdoor experiences and persistence-related behaviours at home. Together, these sources offered a more comprehensive understanding of how children navigate challenges and develop persistence through nature-based experiences.

Research Findings

The educator-completed responses using the DMQ-18 revealed significant improvements in Cognitive/Object Persistence, Gross Motor Persistence and General Competence across both K1 and K2 cohorts in 2026. Children demonstrated greater persistence in thinking and physical challenges, while both cohorts also showed significant gains in their overall competence in managing moderately challenging tasks. Mastery Pleasure showed a modest increase in K1, and with significant improvements observed in K2. Conversely, Negative Reactions to Challenges saw a decrease in K1, while remaining relatively stable in K2. These contrasting patterns suggest that children's persistence and affective responses to challenges may develop differently across developmental stages.

Field observations brought these findings to life, revealing how children navigated authentic challenges along nature trails. Expressions of discomfort, frustration or hesitation did not necessarily signal disengagement. Children often voiced their frustrations while continuing to try, sometimes with gentle instructor support. Whether adjusting their footing on wobbly logs or attempting an obstacle again after a setback, children demonstrated persistence through physical problem-solving. Some expressed pride in attempting something new and unfamiliar, while others celebrated quieter moments of mastery through a smile or a tight grip on the gem they had just earned. These observations highlight how persistence can coexist with emotional discomfort. They also underscore the role of intentional adult facilitation in helping children navigate difficulties, recognise their efforts and find the courage to try again.

In addition, parent surveys revealed that children who were described by their parents as giving up easily at home began with lower persistence scores, yet demonstrated gains comparable to their peers. This encouraging finding suggests that nature-based experiences may support the development of persistence across children with varying initial dispositions and persistence habits.

Among the 225 children the studied followed across K1 (2025) and K2 (2026), the findings revealed significant improvements in persistence and competence following OSS programmes in both years, with descriptively greater gains observed in K2. Taken together, these findings suggest that repeated nature-based experiences may provide continued opportunities to strengthen mastery motivation and sustain developmental momentum as children grow.

Why It Matters

Nature-based environments present unpredictable situations that invite children to navigate challenges, explore solutions and make decisions in ways that may be less readily available in structured classroom settings. Our findings suggest that persistence and emotional responses to challenges may develop differently. While hands-on problem-solving offers opportunities to strengthen persistence,

navigating the emotional demands of these experiences may benefit from more intentional adult facilitation.

Educators play an important role in helping children recognise frustration as a natural part of learning rather than a sign of failure. By acknowledging these emotions and allowing children time and space to recover before they try again, adults support both children's persistence and their growing capacity to navigate setbacks.

Building resilience is not simply about encouraging children to persevere, but also about supporting them through the challenges and emotions that accompany learning. Moving forward, NTUC First Campus Outdoor School remains committed to refining nature-based programmes that create meaningful opportunities for children to exercise agency, develop persistence and grow in resilience.

To find out more, you may email us.

References:

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