

Children's Agency and Action in Nature Preschool: A Tale of Two Programs

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Abstract

Integral to sustainability is the active role of citizens to promote and participate in sustainable practices. In this report from the field, we describe two projects that demonstrate how early childhood educators supported children's development of ecologically sustainable practices by facilitating a shift from learning in and about environments to acting in ways that promote regeneration of the natural environment. Two practitioner-researchers, each paired with a critical friend, used the Project Approach as a framework for facilitating children's complex, authentic connections to, understandings of, and actions for their ecosystems, demonstrating the potential of the field of Early Childhood Education for Sustainability (ECEfS).

Keywords: Early Childhood Education for Sustainability (ECEfS), Education for Sustainability (EfS), practitioner research, Project Approach, nature preschool

Introduction

As nature-based programs for young children have gained global popularity, examination of effective teaching practices in these environments has emerged. A characteristic of some nature programs is a full-day outdoor experience immersed in the natural world; other programs access natural environments in ways tangential to classroom settings. In both contexts, children learn about their local environments and develop deep relationships with them. Although this is an inherent goal for environmental education and common in nature-based learning environments, education for sustainability (EfS) advocates argue that children's experiences should entail more than just developing a love of nature (Elliott & Young, 2015). Specifically, integral to sustainability is the active role of citizens to promote and participate in sustainable practices. In this report from the field, we describe two projects that demonstrate how early childhood teachers supported children in making a shift from learning in and about their environments to acting for them.

Theoretical Framework

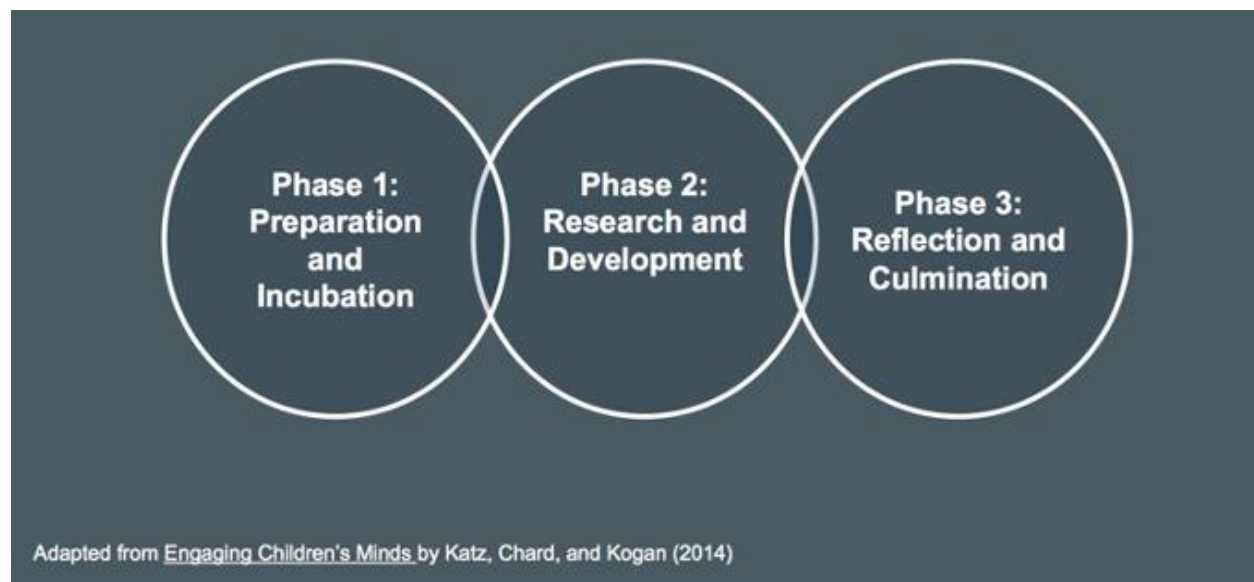
Two nature-based preschool cohorts, one located in the U.S. and the other in Australia, each engaged in a child-led project, with their teachers serving as practitioner-researchers, closely examining their own teaching practices and the children's learning processes. Throughout the two projects, teachers collaborated with a *critical friend*, a peer professional who provided provocations, resources, and feedback to help each teacher reflect upon and further the work they engaged in with the children (Costa & Kallick, 1993). The study was informed by constructivist and sociocultural constructivist theories (Piaget, 1959; Rogoff, 2003; Vygotsky, 1978), which the teachers used to guide their teaching methods: viewing the children as active protagonists of their own learning, and building knowledge and understanding through experience and collaboration with peers and adults. Additionally, an interpretive theoretical paradigm sheds light on the essence of the socially co-constructed learning and the meanings that the participants ascribed to the actions taken within the projects (Mukherji & Albon, 2015). A narrative inquiry methodology embodying both "the phenomenon under study and the research method" also guided this study (O'Toole & Beckett, 2013, p. 72). A narrative comprises a framework around a theme or phenomenon, a chronology of events, and a narrator—in this instance a practitioner-researcher embedded in the narrative creation (Liamputtong & Ezzy, 2005).

Methods

Narrative inquiry also aligns with the *Project Approach* as an evolving and responsive learning journey over time (Katz, Chard & Kogan, 2014). The Project Approach was employed by the teachers in this study to plan and implement emergent investigations following the interests of the children in their respective classes. Selected as a teaching and curriculum approach because of its alignment with the constructivist and sociocultural constructionist theories, a project is defined as "an in-depth investigation of a real-world topic" through which "children gain deep understanding and knowledge by seeking answers to their questions through rich sensory, firsthand investigations" (Chard, Kogan & Castillo, 2017, p. 1). Projects unfold over a series of three interwoven, interdependent phases (see

Figure 1) and include multiple opportunities for children to represent their ideas, questions, and discoveries through a variety of media, including the creative arts, dialogue, play, writing, and the use of graphic organizers (Katz, Chard, & Kogan, 2014). Each phase has specific goals which provide structure to the project. Phase one is dedicated to narrowing ideas to a focused topic, recording current understandings of the topic, and generating questions for further investigation. In phase two, participants research the topic of interest, using methods such as engaging in field visits, interviewing experts, observing phenomena related to the topic, and/or conducting literature or internet research. As the project progresses, artifacts, such as drawings, photographs, and transcripts, are collected and collaboratively reflected upon by teachers and children to further the project work. When interest wanes, or all questions have been explored, the third phase is undertaken to synthesize the learning and reflect upon the process of the project. A culminating experience, often an artifact or event, documents and celebrates the work. In addition, opportunities are sought to share the project outcomes with the children's community. Throughout the project, teachers serve as facilitators, documentors, and co-learners alongside the children while encouraging children to actively engage in the uncovering of new knowledge.

Figure 1. Three phases of the Project Approach



The Project Approach is adaptable to diverse settings and has potential for tangible outcomes (Ji & Stuhmcke, 2014). Particularly, the importance placed upon documenting and elevating children's learning to share new knowledge with the community beyond the classroom in the third phase of the Project Approach corresponds to the essential advocacy and activism orientations in EfS (Davis, 2014). To promote the goals of EfS, in this study, practitioner-researchers were committed to the children's creation of culminating artifacts that would educate their local community about the natural flora and fauna within their respective

environments. In this way, children not only can become advocates for the natural environment, but their self-concept can expand to include viewing themselves as active citizens contributing to society.

To best capture this journey, we implemented four data collection tools: a video diary of children's nature excursions with teachers, audio recordings of children's focus groups in which they reflected on their shared experiences, practitioner-researcher reflective journals, and the actual artifact(s) created by the children during the study. The intent was to create an in-depth story about the co-constructed learning journey during Project Approach implementation. Following, each project is discussed in a narrative summary derived from reflection upon and analysis of this data, and common themes and a synthesis of the two projects are discussed in the final section of the report.

Children's Voices in the Australian Rainforest: Balancing and Belonging

Children attending the Kindergarten Union Children's Services (KU) Ourimbah Preschool and Children's Center regularly engaged with the natural surroundings of the Newcastle University Ourimbah Campus, exploring the rich biodiversity offered by the rainforests, waterways, bushland and gardens. As spring emerged one year, so too did the curiosities of a group of preschoolers into the interactions of species, human and more-than-human, who visited and lived in the ponds on campus.

Interested in the children's understandings of diversity within an ecosystem, the class's practitioner-researcher, Rosanne, brought the children to visit two ponds, one an example of a healthy ecosystem and one an example of an unhealthy ecosystem, to serve as a provocation for discussion and discovery. The children quickly noticed the differences between the ponds: one had clear water, with native tadpoles thriving, and the other was full of algae and home to a non-native fish species, the *Gambusia* fish, introduced a century ago by humans to attempt to control the mosquito population in New South Wales. Through microscopic inspection and pondside observation, the children learned about the behavioral and physical characteristics of the fish and the tadpoles, becoming adept at differentiating between and identifying each species. This familiarity with the species led to a deeper understanding of the interaction between the species, including the realization that the *Gambusia* fish were preying upon the tadpoles, and the role of humans in the disruption of the natural ecosystems.

Facing this reality, the children focused on ways to re-establish balance in the ecosystem, exploring solutions including the building of a wall between the ponds and sending the fish back where they came from. Through discussions, drawings, play, and experimentation, children tried, revised, and discarded solutions. As they wrestled with the problem, at no time did they want harm to come to the invasive fish, now regarded as a toxic pest. They knew it belonged "somewhere, but not here," with some expressing sympathy for the fish that had been moved far from their true homes in North America.

Figure 2. Children attending the KU Ourimbah Preschool and Children's Center closely study a pond on their campus.



Rosanne took note of their theories and planned further provocations, including visits from experts to deepen the children's thinking and hikes further into the center's surroundings, widening the children's lens of the ecosystem beyond the two ponds. In addition to the *Gambusia* fish dilemma, the children discovered litter left by humans as another source of ecological disruption. The children continued to communicate their speculations, observations, and thoughts through a variety of media, adding more details and depth. Of note, maps and illustrations began to depict the placement of litter, predators, and native plants and animals, and children used body language to convey their understanding of the "tipping point" in ecological balance, when interference leads to disruption, as they had observed in the two ponds and as a consequence of litter.

In class discussions, the children expressed their desire to do something to help restore ecological balance, and were not intimidated by the scale of the problem. Rosanne listened to their concerns and helped them plan a course of action: they cleaned up litter, designed trash receptacles that could protect birds from the garbage deposited inside, wrote and illustrated messages urging the community to consider the effects of their actions on the environment, and created a biotopic map (Figure 3) of the location of native and non-native wildlife to educate those who visited the campus.

Figure 3. The biotopic map created by children attending the KU Ourimbah Preschool and Children's Center (Elliott & Pugh, 2020)



Throughout this project, the children deepened their relationship with the land they know and their understandings of the balance that must be maintained among species for optimal ecological health, which was captured through the video diary and reflected in the children's work throughout the project. They also demonstrated empathy for the invasive species, understanding that it was faultless in its placement and expressing concern about its feelings about being far from home. In addition, the children understood their own roles in society as being agentic for societal change as they submitted their trash receptacle designs to management, their map was displayed in a prominent local library location, and their environmental video messages were played in local theaters as part of a council environmental initiative. Rosanne summarized this understanding in her reflections, commenting that "the children were unperturbed about the enormity of the issues; rather they savored the opportunity to problem solve."

Forest or Pond? An Investigation of the Life Cycle of the Red Spotted Newt in the Midwestern U.S.

Every year, the children of the nature preschool at the Cincinnati Nature Center become intrigued by the vibrant red efts (immature or teenage newts) they find during their daily activities in the deciduous forest around their preschool. While most observe them and then accept them as part of the rich biodiversity of the

forest, one group of children became especially interested in observing the efts, sparking an investigation into the red spotted newt.

The group's teacher, Tisha, observing their interest, listened in on children's conversations, took notes, and facilitated a large group discussion during which she took dictation for the children and used a concept map to reflect back to them her understanding of their ideas. Moving rather quickly through phase one of the project, she began planning for what she thought might be a project that focused on the mapping of newt sightings. She arranged for a local naturalist to meet the class at one of the ponds on the grounds to be interviewed by the children about the newt larvae they discovered. As they questioned the naturalist, they focused instead on the behavior of the "mommy newts," particularly that young newts are left to fend for themselves. On the walk to the pond, the children had noticed a mature bird nesting with hatchlings. They used this observation to question the naturalist further, comparing the parenting strategies of the two different animals. Later, as the group played in a clearing, their play schema included taking on various familial roles, and re-enacting being dropped off at school. As Tisha discussed this with her critical friend, it became clear that the children were deeply considering a topic of high importance to them: the interdependence of members of a family (regardless of the species) necessary for survival, rather than the prospect of mapping the newt larvae.

Shifting the lens through which she viewed their work, Tisha circled back to phase one to assist the children in gathering together their thoughts. The children again compared the newt parenting styles to other animals they had observed during their daily explorations, specifically turtles and frogs. Over the next few days, they used direct observation, non-fiction books, and more knowledgeable peers and teachers to gather information about the life cycles of frogs and turtles. They began to see some similarities between what they knew about the life cycle of frogs in particular, with the limited knowledge they had begun gathering about the life cycle of the red spotted newt. Using this comparison, they posed investigative questions and moved into phase two of their work.

During their regular hikes, the children searched for red efts in the forest and larvae in the ponds. As they found both what they were looking for and other animals native to their environment, they compared and contrasted physical and behavioral attributes among the species, and documented their findings in individual field journals through drawings and dictated narrations. When visiting one pond, adult red spotted newts were discovered and observed eating frog eggs. This sparked a conversation among the children about the interdependence of species upon each other for survival:

M: "Look, it's flying in the water!"

F: "No, it's swimming. It's eating the frog eggs!"

C: "If the frog mom was there, it couldn't eat them."

M: "But she's not. She left like the newt mommy."

C: "She should have stayed."

F: "But then this newt mom wouldn't be able to eat. Or make more eggs."

Figure 4. Children at the Cincinnati Nature Center Preschool discuss their observations at a pond near their classroom



Another interview with a naturalist, an amphibians biologist, filled in more missing details of the life cycle for the children. She described the newt as having three distinct stages, baby (larvae), teenage (eft), and adult (newt), and explained the connection between the newt's lung development and its habitat. The children began representing the three stages in their art, dramatic play scenarios, sensory table explorations, and block play. They also demonstrated their understanding of the distinction between each stage by constructing or drawing corresponding habitats. Tisha documented their work with photographs and notes, and revisited their work with them during group meetings, serving as both a partner and a facilitator in their learning.

After a couple weeks of active investigation and reflection, the class had found answers to nearly all their initial questions and demonstrated a strong working knowledge of the red spotted newt life cycle, changing habitats, physical attributes, and behavior. During a group meeting, Tisha proposed that they move into the

third phase of the project, and posed a question to the group: What next? Now that they had gathered an array of information, and created a body of work illustrating what they found, what did the children think should be done with this knowledge? Through conversation, it was decided that the group would work together to create a book telling others the story of the newt life cycle. Together with Tisha, they spent their small group discussion times for the next week choosing photographs and text from the existing artifacts, as well as dictating new text, and constructed a first draft of the book. During a large group discussion evaluating their work, one child mentioned that a new library was being built in the community: "We should give them our book so everyone can read it!" The book was then produced using a photo editing company and copies distributed to the library, families of the authors, the nature center where the preschool was located, and other local early childhood centers.

As Tisha reflected with her critical friend at the culmination of the project, she emphasized the impact of using the Project Approach, coupled with the support of a colleague, on her teaching practice as well as the role it played in providing a framework for the children's ecological advocacy. Throughout the process, she interpreted the children's play, artifacts, actions, and other evidence of their understanding to inform her teaching practice. Especially memorable to her was realizing that the children were drawn to understanding the life cycle of the newt through a very personal angle, that of the role of parenting, to which they brought their own understanding, formed by separating from their families each day for school. Based upon this empathy for the youth of another species, they formed a beginning understanding of the complex interdependence of a variety of species in an ecosystem. Tisha also found that using the framework to guide her decision making, especially in phase three, helped her facilitate the children's work, thus making it more visible to the rest of the community.

Synthesis

Both cohorts of children actively engaged in researching a topic of interest to them. The contexts of their preschools, one an Australian rainforest and one a North American deciduous forest, were pivotal in inspiring and gathering information about the topic of interest. The environment provided the spark and the laboratory for data collection. In each project, the children's interests were cultivated and followed by the practitioner-researcher, who also searched for the underlying threads of meaning beneath the children's motivations to study their chosen topics. These deeper themes or concepts—belonging, balance, interdependence, and empathy—all underpin the ethical mindset foundational to EfS (Davis, 2014; Davis & Elliott, 2014). The abilities of these children aged three to five years to participate in deep thinking substantiates the importance of beginning EfS in the earliest years, to build the foundations of interconnected ways of viewing the Earth and its inhabitants, both human and more-than-human, now and into the future. Further, both groups of children viewed themselves as capable of contributing knowledge to the larger community and acted upon this capacity through the creation of artifacts that promoted sustainable practices beyond the classroom walls. The teachers served as amplifiers of the children's voices, using their societal roles to pave routes of entry for the children's agency, again underscoring the importance of

promoting the goals of EfS in early educational experiences. The teachers took the children's work seriously and believed in the impact they could have, and the larger community responded positively, further reinforcing for the children that they can affect change. They will carry this experience forward into the rest of their development, possibly engaging in more acts of advocacy. In this way, by building advocacy skills through experiences, the field of early childhood education for sustainability, or ECEfS, has the potential to empower generations of children to make changes critical to the regeneration of natural environments and to examine the importance of balancing power and resources over time to promote both intergenerational and interspecies equities.

All people, including children, are participants within their respective cultural communities (Rogoff, 2003). While considering children as active participants within their communities is not a ubiquitous practice within all early childhood education pedagogies, this view of children's capabilities is critical to the ECEfS field in order for its inherent potential to be fully understood (Davis & Elliott, 2014). Providing opportunities for children's work to be seen within their respective communities, as demonstrated in these two projects, emphasizes this view of children as community participants for all involved: the children, their educators, and the rest of the community. As Rogoff (2003) explains, community members need to interpret their own actions in terms of their relevance to the community. The use of a framework like the Project Approach, when paired with collegial support, provides the regular points of reflection necessary for this interpretation, for both children and their educators. Communities, with their values and expectations, change over time as do the individuals within communities. Facilitating the types of authentic, complex connections to community demonstrated in the two projects discussed here can shape the future expectations for children and their education within communities, creating the pathways for lasting change essential to a more sustainable approach to living.

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Rosanne Pugh *is Director at KU Ourimbah Preschool and Children's Centre, University of Newcastle-Ourimbah Campus. Rosanne established the first Forest School to be inspected and judged "Outstanding" by Her Majesty's Inspectorate,*

England. Against a background in practice-based research and publications, Rosanne continues to work in Education for Sustainability in Australia.

Tisha Luthy, MS, is the Nature School Director at the Cincinnati Nature Center. As the founding director, she designed and implemented programming designed to foster preschool children's deep connection to nature while engaging in nature-based inquiry. The preschool program has since grown to serve multiple classes of preschool children, as well as children through second grade.

Dr. Victoria Carr, Professor of Early Childhood Education/Human Development and Executive Director of the Arlitt Center for Education, Research, and Sustainability at the University of Cincinnati, conducts research related to play and learning environments, teacher pedagogies, and children's experiences in nature.

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