

Lake Superior Zoo School Logic Model (8/4/2020 draft)

Situation: Given local childcare shortages (Wilder Research, 2018) and SES, racial, and ethnic inequities within the nature preschool movement (Schimke, 2018), the Lake Superior Zoo is uniquely positioned to further their conservation mission and serve the community by providing fulltime care that expands and diversifies the number of preschool age children reaping the physical, cognitive, and social developments of nature play during the critical developmental window of early childhood.

Zoo School Vision: All children will develop the knowledge, mindset, and skills to love the diverse world around them and to flourish in Kindergarten and beyond.

Zoo School Mission: To inspire the healthy social emotional, physical, creative, and cognitive development of young children through close-up experiences with animals & nature.

Inputs	Strategies	Outputs	Learning Outcomes	Desired Behavior	Intended Impact
<p>Staff with knowledge, skills, and dispositions for supporting nature-based ECH learning and dev</p> <p>Evidence base</p> <p>Stakeholders</p> <p>Resources</p> <p>Zoo grounds, animals</p> <p>Indoor and outdoor learning/playing spaces</p>	<p>Consistent warm, responsive, & supportive care</p> <p>Learning experiences across developmental domains that emerge from:</p> <ul style="list-style-type: none"> - daily, sustained periods of child-directed, unstructured nature play - holistic, developmentally appropriate, teacher-directed, nature-rich, playful learning experiences - developmentally-responsive, social-emotional learning opportunities grounded in SEL curriculum (Second Step and Conscious Discipline) - nature- and animal-rich storytelling and literature - close-up animal observations and interactions - opportunities to care for animals and nature <p>Interactive socialization regarding children's interest in wildlife, nature and the world around them</p> <p>Modeling of empathy, prosocial behavior, nature affinity, and stewardship</p>	<p>Full day, full week nature preschool</p> <p>Preschoolers who have secure attachments with teachers, positive relationships with peers, and engaged in active, joyful, and meaningful nature-rich experiences</p>	<p>Learning and development across MN ECIP areas:</p> <ul style="list-style-type: none"> - Approaches to Learning - Social and Emotional Learning (SEL) (*including empathy and self-regulation skills) - Language, Literacy & Communication - Arts - Social Systems - Physical Movement Dev - Mathematics - Scientific Thinking <p>Environmentally-Oriented Outcomes:</p> <ul style="list-style-type: none"> - Curiosity and wonder toward nature - Reawakening/deepening of an affinity toward nature - Feelings of trust, autonomy and confidence within nature interactions - Wildlife and nature connections - Sense of interdependence & expanded sense of self/env. identity - Emerging ecological/wildlife knowledge - Affective, cognitive, and motivational empathy 	<p>Demonstration of skills and furthering of progress across developmental domains</p> <p>Respectful and caring behaviors toward others, animals, and nature</p> <p><i>As children grow:</i></p> <ul style="list-style-type: none"> - Prosocial behavior (interacting with/ responding to others in prosocial ways) - Environmental stewardship & conservation behavior 	<p>Children flourishing in Kindergarten and throughout their lives</p> <p>Strong and sustainable social and ecological communities with citizens who co-exist compassionately, collaboratively, equitably, productively & peacefully and who respect, value & conserve wildlife and wild places</p>

Lake Superior Zoo

Close up animal encounters

Visitors engaged in free choice learning

Connections to Wildlife

Conservation Behavior

Wildlife Conservation

Theory of Change (Strategies ⇌ Outputs)

- Daily interactions between caregivers and young children have a significant influence on children's neurological development, psychological capacities and social adjustment, and overall growth and development (WHO, 2004).
- Warm, responsive, and supportive care fosters secure and positive attachments between children and caregivers and a sense of community where children can flourish (Zhou et al., 2002).
- Developmentally-appropriate environmental education for young learners involves developing empathy and curiosity through frequent and on-going play-based learning experiences and explorations that engage the senses and are authentic, multidisciplinary, and locally-based (NAAEE, 2010). Providers of early childhood EE programs have a shared and collective responsibility for helping children meet a common set of developmentally appropriate expectations that are conducive, but not limited to, environment/nature-related learning.
- Holistic, emergent, playful learning is developmentally appropriate and responsive; when coupled with unhurried, nature-rich experiences and settings, young children engage in active and joyful ways (Liu et al., 2017).

Theory of Change (Outputs ⇌ Outcomes)

- Children joyfully and actively engaged in experiences are better able to attend to, interpret, and learn from experiences (Liu et al., 2017). Unstructured play affords joyful, active engagement and is conducive to supporting children's progress in MN ECIP areas (Ernst, 2019; Dankiw, 2020).
- As children spend time in nature, they develop feelings of trust, autonomy, and confidence, as well as connections with each other and the world around them; these connections support a sense of interdependence, a deepening affinity toward nature, and the beginnings of environmental identities, from which in due time can be drawn upon for participating in wildlife conservation and for visioning and creating a healthy, just, and sustainable future (Green, 2019; Ernst, 2019).
- Unstructured nature play fosters connections with and affinity toward nature, as does time in nature with a caring, "interactive socializer" adult role model (Chawla, 2009). While there are clear benefits for child-initiated nature play, promoted action experiences where caregivers actively encourage nature play and make opportunities available are also important (Reed, 1996). Social interactions within cultural contexts influence not only how children directly experience the world, but also how they integrate the values they are developing into their identity. Thus, caregivers become an important influencing factor on the extent to which children spend time in nature, but also on the extent to which they value nature experiences (Eccles & Wigfield, 2002).
- Affinity for wildlife and nature supports affective empathy toward the natural world (Kellert & Wilson, 1995), and an affective relationship between children and animals is a powerful building block for care for the natural world (Kellert, 2002). Empathy may mediate the relationship between connection to nature and conservation behavior (Gosling & Williams, 2010). Emotional empathy alongside cognitive empathy supports the motivational empathy that is related to caring behavior in social and conservation contexts (Malti et al., 2009).
- Empathy is more malleable in early childhood than in other developmental periods, and can be nurtured through secure attachments with caregivers and strategies that build emotional and cognitive empathy alongside self-regulation skills (Haye, 2009). Developmentally-tailored SEL curricula with frequent practice of skills in real life settings can supplement the empathy/SEL development that happens naturally in positive, play-based peer communities (Durlak et al., 2011; Robinson & Ernst, 2020).
- When children have an expanded sense of self that includes nature, supporting empathy toward nature/wildlife (stories, live animal encounters, empathic modeling, practice, and positive reinforcement) can reinforce empathy toward humans (and vice versa). Supporting interconnectedness in young children toward an expanded sense of self (environmental identity) can be an avenue for fostering empathy with wildlife and nature and with others (Tam, 2013; Green, 2019).
- Empathy can be a bridge to equity. Empathy can widen one's circle of moral concern and build connections that support equity and justice, which are integral parts of sustainable social and ecological communities (Silva Parker, 2013).

Empathy Theory of Change

Expanding affective relationship with the natural world

Connections to nature

Affinity toward natural world

Expanding social-emotional, cognitive, and language capacities

Emotional awareness, knowledge & expression

Emotional empathy with humans, wildlife, and nature

Emerging wildlife/ecological knowledge

Cognitive empathy/perspectives-taking

Expanding sense of self and emerging environmental identity

Management of emotion and behaviors (Changing external to internal sources of regulation; Self regulation skills and other developing regulatory capacities)

Expanding Empathic Concern

Motivational empathy (humans, wildlife, nature)

Other factors associated with conservation action

Normative beliefs
Self-efficacy
Internal locus of control
Procedural knowledge/skills
Constraint negotiation skills

Caring behaviors in social and conservation contexts of increasing complexity and efficacy as children grow