



# Addressing Nature-Based Learning for Children in Urban Environments with Limited Access to Green Spaces and resources



Stuyvesant High School in Manhattan, New York



Outdoor Spaces in Urban Schools



Battery Park City School , New York City

# SECONDARY RESEARCH

Nature Deficit Disorder (NDD) is a significant problem area as over 60% of the world's children now live in urban settings with decreasing access to natural play spaces

Urbanization in New York City and across the United States has significantly **impacted children's access to green spaces**, which are vital for their physical, mental, and social development.

Recent decades have seen a **decline in nature-play opportunities for children, particularly those living in cities**, due to urbanization, reduced independent mobility due to safety concerns, and a loss of free time to structured activities.

Many existing digital tools for outdoor engagement have been designed with adult-determined learning or recreational objectives in mind, **rather than supporting child-directed nature-play**

PROBLEM STATEMENT

**“How mobile applications enhance children's learning and development through nature-based experiences in urban environments with limited outdoor access and resources?”**

What ethical considerations should guide the design of mobile technologies that support, rather than replace, direct nature experiences?"

# KEY FINDINGS

1

## **Children's Perspectives on Nature & Technology Are Underrepresented**

Co-designing with children reveals that they value a mix of digital and physical play and prefer apps that connect them to real-world experiences, not just gamified nature simulations.

2

## **Contextual Factors Influencing Environmental Literacy and Behavior**

Children's environmental literacy, including their affiliation with nature, environmental knowledge, and pro-environmental behavior are not uniform processes but are shaped by the local environmental and social context

3

## **The Potential of Technology to Mediate and Enhance Nature Connections**

Smart technologies can enhance children's nature explorations, discoveries, and connections in urban environments, offering opportunities for nature education, play, and exploration.

# RESEARCH METHODS

1

## Evaluating Models and Frameworks

To study how existing design choices shape children's environmental experiences and development.

2

## Semi-structured interviews with children (10-13 age), educators and parents

Journey mapping, participatory design

3

## Observations in Urban Schools

Analyze how children and stakeholders interact with existing nature-sensitive tools in educational setting

Thematic analysis

# DEVELOPMENTAL QUESTIONS

How do children perceive and experience nature-sensitive technologies and what are the gaps with nature engagement?

Does nature-based mobile learning contribute to or counteract Nature Deficit Disorder?

What ethical concerns arise when designing mobile applications for nature engagement in children?

# THANK YOU

by SINDHU RAJI

Questions & Feedback ?

