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Early Childhood Outdoor Play and Learning Spaces (ECOPALS): Achieving Design Quality

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Introduction

Child care has become an essential part of everyday life. In 2011, more than half of Canadian parents reported using some type of child care for children aged 4 or younger.[1] These children spend most of their waking hours in childcare, year-round, so it is important that nurturing environments are provided to stimulate child development across all domains. Although receiving little policy attention, evidence suggests that the design of naturalized outdoor environments can contribute substantially and uniquely to health promotion in early childhood.[2] Because child development facilities are highly regulated, quality must be measurable and created through evidence-based design. Progress is slowly being made in that direction.[3,4] Design guidelines based on available evidence influence practice.[5,6,7] Even so, the 2017 Canadian national report on early childhood education does not mention “outdoor”, “playground”, “natural”, or “nature”, even though the cover shows a child in nature.[8]

Subject

A new model of early childhood outdoor space is emerging, here termed Early Childhood Outdoor Play and Learning Spaces (ECOPALS), in response to the obesity crisis[9] and the children and nature movement,[10] designed to meet health promotion and child development goals.

Research on the value of outdoor play, particularly in support of physical health, has steadily advanced.[11] Increased portable play equipment and natural elements in play areas are recommended as a means of increasing physical activity.[12]

Problems

Standardized measures of ECOPALS quality are required to advance the state of the art.

Inequities in health and child development remain problematic in low resource communities. However, recent studies suggest that exposure to biodiverse spaces may be *equigenic*; i.e., support health equity.[13]

Regulations are indoor-centric and variable because childcare licensing policy is largely the responsibility of Canadian provinces and U.S. states. When childcare provision started growing rapidly in the 1970's, the main focus, understandably, was *building* standards to protect children's health, hygiene, and safety.

Building codes control facility design. Childcare building provision, as the dominant investment, is a mix of new construction and re-purposed facilities. The latter are more likely to serve low resource communities and present building adaptation challenges.

Outdoor regulations mainly reference basic health and safety requirements. Outdoor space is still considered as if it were a conventional playground furnished with manufactured play equipment and runnable open space. However, early childhood outdoor spaces are closely supervised, used every day (weather permitting), and need to provide broad activity choices for children.

Traditional "health and safety" codes of practice that discount nature still dominate children's environments policies;[14] however, counter arguments promote the positive impacts of nature on human development[15] and call for a "culture of reasonableness" balancing risk with developmental benefit.[16]

Teacher pre-service education traditionally does not emphasize “outdoor classroom” activity; however, pre-service teacher knowledge and self-confidence can be motivated by outdoor coursework.[17]

Research Context

Potential ECOPALS exist in many shapes and sizes, ranging from outdoor spaces in home-based, unregulated, informal care serving a few children to large licenced centres with enrolments of several hundred. Across this range, many design requirements supporting child behaviours are similar.

Type of facility and context are variable, including geographic location, enrolment size, socioeconomic profile, urban/suburban/rural location, non-profit/for-profit/national chain ownership, attachment to institutions such as churches, YMCA centres, zoos, botanical gardens, nature centres, and museums. Research on the significance of these factors is lacking. Some, such as climate, may affect design approaches substantially.

Pre-K programs in primary/elementary schools, aimed at kindergarten readiness of vulnerable four-year-olds in the U.S. and Canada, are challenged by school systems that do not recognise the need for outdoor design innovation to serve younger children. Precedent is provided by independent schools with long-standing pedagogical traditions that utilize outdoor environments to support play and learning objectives.[18]

ECOPALS can be designed to support child development, modes of learning, and variable teacher roles.[19] Pedagogically convincing, empirical tests with positive results would greatly strengthen support for outdoor learning.

Key Research Questions

Primary question: Which ECOPAL design attributes support safe, joyful places that playfully stimulate child development and intended learning outcomes across all domains? These domains include social-emotional, social studies, cognitive, language and literacy, the arts, and maths, science and technology, as well as physical development (relatively well researched).

Secondary questions: How flexible are design attributes? Are they adaptable to a wide range of contexts (climate, topography, site size, etc.)? Are they physically “lumpy” and expensive to

implement like a concrete pathway or “incremental” and inexpensive like a raised deck or shade tree?

Recent Research Results

Positive correlations between outdoor play and physical activity are well established.[11] Outdoors, children are more likely to meet recommended physical activity health and fitness requirements.

A behaviour mapping study[20,3] of 30 preschool ECOPALS demonstrated the importance of adjacency (number of activity settings touching each other) and centrality (location relative to the geographic center of the space), of activity settings in increasing physical activity.[3] These design attributes influence the *form* of site layout and relationships between activity settings.[a] As physical content, activity settings can be designed to extend the repertoire of play and learning affordances.[21] Thus, a pathway is ride-able, a lawn is run-able, a play structure is climb-able, etc.[21] Portable and loose part components such as wheeled toys, balls, and sticks, afford play and learning repertoires different to fixed components such as trees and shrubs.[21]

The presence of biodiversity is likely to engage multi-age groups of children, to stimulate social inclusion, and expand experiential learning outdoors. As children engage more freely with their surroundings and each other, more active, playful, social interaction is stimulated.[21,22]

Healthy eating can be supported via children’s gardening.[23]

Exposure to rich biodiversity stimulates cognitive play and helps young children gain tacit knowledge of natural materials and processes, through which an affective foundation of love of nature and later cognitive understanding can evolve.[24]

ECOPALS can provide a stage for civic education, instilling intergenerational conservation values and active environmentalism in society.[25]

Research Gaps

Investigations are needed regarding relationships between individual activity settings and play and learning behavioural repertoires supporting ECOPALS programmatic goals.

Tests of ECOPALS designs based on behaviour setting and affordance principles are lacking across a wide range of physio/climatic/cultural/institutional conditions to better understand contextual influences.

Surveys of regulators, licensing officers, quality assessors, and educators are required to investigate knowledge and attitudes regarding ECOPALS naturalization, and provide evidence supporting changes to policy, practice, and pre-service curricula.

Conclusions

The rapidly advancing focus on early learning and a growing desire to re-engage children with nature is driving the need to demonstrate the developmental importance of high-quality ECOPALS. Application of available research tools can create an urgently required, robust evidence base to inform early childhood policy, practice, and pre/post service professional development about the potential benefits of well-designed ECOPALS.

On both sides of the Canada-US border, research and practice issues are similar and link to a wider circle of contexts in high income countries. International collaborations among universities, professional organizations, and practitioners could increase collective impact.

Digitally-based, online professional development platforms provide multiple opportunities for sharing knowledge and its application through network extensions to universities and professional development programs in less-developed countries.

The emerging, transdisciplinary ECOPALS field must embrace many related disciplines (ecological and social sciences, child development, landscape design, conservation psychology, and more), to fully reach its potential to influence environmental values in society and ultimately to impact long-term climate change.

Implications for Parents, Services and Policy

Parents should try to choose child development facilities with ECOPALS designed with flowing, looping pathways, wheeled toys, other forms of portable play equipment, loose parts, many different types of settings besides manufactured play structures, and above all, shade trees and lots of nature.

Services providers should recognize ECOPALS naturalization as vital to healthy child development. Implement evidence-based best practices, which emphasize the importance of looping, curvy, wide (at least 1.5m), hard-surfaced pathways, wheeled toys, and a compact diversity of play and learning settings.

Policy makers should revise and expand regulatory frameworks beyond essential health and safety requirements, to include positive support of naturalized ECOPALSs containing diverse settings as "learning arenas."[26] Create and mandate defined risk/benefit assessment protocols to broaden the outdoor imperative and experiential life of children for their good health, and the health of society and planet.[27]

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Note:

[a] An activity (or behaviour) setting is an ecological unit defined by spatial / temporal boundaries that differentiates it from adjacent settings. Activity/behaviour settings are constructed from components that afford predictable patterns of behaviour and are likely to be observed commensurate with the affordances offered – open lawn for running, slide for sliding, tree for "hiding," etc. The theories of behaviour setting and affordance are based on the work of Roger Barker (1903-1990); and James Gibson (1904-1979) and Eleanor Gibson (1910-2002), respectively.