

Article

Dimensions of the Culture of Space in Early Childhood Education and Care

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Abstract

This paper examines the concept of the culture of space in early childhood education and care (ECEC), building on contemporary perspectives that understand space as an active factor in children's development, learning, and socialization. The study aims to identify and define the dimensions of the culture of space in relevant interdisciplinary literature and to examine their representation in national and international strategic documents related to ECEC. The analysis is based on socio-constructivist perspectives, the phenomenology of space, the concepts of place identity and sense of place, and the Reggio Emilia approach. The findings indicate that the culture of space comprises interconnected physical, social, symbolic, cultural, digital, and pedagogical dimensions that shape children's experiences and support belonging, identity formation, cultural awareness, spatial competences, and sustainable relationships with the environment. International policy documents published by OECD, UNESCO, and UNICEF emphasize that well-designed learning environments and sensitivity to cultural context are essential indicators of ECEC quality. Space should be understood as a culturally and pedagogically constructed medium that actively supports children's development, identity formation, and community building.

Keywords: children's perception of space; cultural heritage; learning environment; place identity; Reggio Emilia approach; sense of belonging

1. Introduction

The spaces in which young children live and learn are not neutral containers of development. Their material arrangement, accessibility, sensory qualities, social organization, and cultural meanings shape what children can do, with whom they can interact, and whether they experience themselves as recognized members of a community. In early childhood education and care (ECEC), space is therefore simultaneously architectural, relational, symbolic, cultural, and pedagogical. It structures everyday practices while also communicating assumptions about childhood, learning, autonomy, safety, and participation. Nevertheless, educational quality frameworks often reduce space to measurable structural conditions—such as surface area, equipment, hygiene, and safety—without adequately considering how children experience, interpret, and transform their environments.

A distinction between space, place, and environment is useful in addressing this conceptual problem. Space denotes the material and relational field in which activities occur, whereas place emerges when space acquires personal, social, and cultural significance through lived experience (Relph 1976; Tuan 1977). Environment is broader still, encompassing the interacting physical, social, cultural, organizational, and pedagogical conditions within which development occurs (Weinstein and David 1987; Tindall 2022).



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These concepts are neither interchangeable nor mutually exclusive. Together, they reveal how material settings become meaningful educational places through everyday use, relationships, memories, and practices.

Phenomenological and environmental–psychological perspectives have demonstrated that people form relationships with places through embodied experience, emotional attachment, and the attribution of meaning (Proshansky et al. 1983; Scannell and Gifford 2010; Seamon 2012). Place identity develops when features and meanings of the physical environment become incorporated into a person’s self-understanding (Proshansky et al. 1983; Adam 2012), while sense of place encompasses both emotional attachment and the meanings attributed to particular locations (Stedman 2003, 2016; Knaps et al. 2022). These relationships are not necessarily harmonious or positive: places may produce security and belonging, but they may also embody exclusion, stigma, surveillance, or anxiety (Manzo 2005; Parr 2011). Consequently, spatial quality cannot be inferred from design characteristics alone.

This relational understanding becomes increasingly relevant under conditions of urbanization, mobility, cultural pluralization, environmental change, and digitalization. Children’s spatial experiences now extend across homes, ECEC institutions, neighbourhoods, public and natural environments, cultural institutions, and digitally mediated settings. However, access to safe, stimulating, culturally meaningful, and inclusive environments remains uneven. Spatial restrictions, commercialization of public life, adult perceptions of risk, and unequal access to green and cultural spaces can constrain children’s mobility and participation (Holloway and Valentine 2000; Penn 2005; Pia and Bezboruah 2025). At the same time, standardized educational environments may weaken connections with local histories, languages, and communities, producing what Relph (1976) describes as placelessness.

Although research has examined educational architecture, place attachment, cultural heritage, learning environments, institutional culture, and digital spaces, these strands have largely developed separately. The concept of the culture of space offers a means of examining how material arrangements, relationships, meanings, values, and pedagogical intentions become interconnected in children’s lived environments. However, the construct remains insufficiently defined in ECEC research, and its representation in curriculum and policy documents has not been systematically compared.

2. Culture of Space (Spatial Culture)

Culture is expressed not only through language, knowledge, customs, and symbolic practices but also through the organization and use of space (Adams 2023). Communities inscribe values and social relations into buildings, streets, landscapes, and institutions (Bobovec et al. 2020; Pia and Bezboruah 2025). These environments simultaneously enable and constrain particular practices (Stedman 2003; Masterson et al. 2017). Space is therefore culturally produced, but its meanings are continuously interpreted, negotiated, and contested.

Phenomenological accounts distinguish abstract space from place as a locus of experience, security, memory, and belonging (Relph 1976; Tuan 1977). Environmental psychology similarly explains place identity as the incorporation of environmental meanings into individual and collective identity (Proshansky et al. 1983). Scannell and Gifford’s (2010) Person–Process–Place model further demonstrates that attachment arises through the interaction of personal and collective experience, affective and cognitive processes, and the physical and social characteristics of place. Material affordances and socially constructed meanings should therefore be examined together rather than treated as competing explanations (Stedman 2003; Masterson et al. 2017; Raymond et al. 2017).

In this study, the culture of space refers to the dynamic relationship through which people and communities design, use, interpret, regulate, and transform environments. It concerns not only what a space contains but also whose practices it supports, which memories and identities it makes visible, and who is authorized to modify it.

2.1. The Child and Space

Children encounter space through embodied, sensory, emotional, and social experience. They do not merely occupy environments designed by adults but explore, reinterpret, and appropriate them through movement, play, imagination, and interaction (Hart 1987; Yilmaz Yildirim et al. 2023). Hart (1987) describes children's environments as a *phenomenal landscape*: a world that children know by moving through it, feeling it, and acting upon it. Accordingly, children's spatial knowledge cannot be adequately understood only through adult assessments of functionality or safety.

Children's rights also have an unavoidable spatial dimension. Articles 30 and 31 of the United Nations Convention on the Rights of the Child protect children's participation in cultural life and the right of minority children to enjoy their culture, language, and religion, as well as the rights to play, leisure, and recreation (United Nations 1989). Although these provisions do not explicitly establish a right to space, their realization depends on access to environments where children can play, gather, explore, express cultural identities, and participate in community life. The issue is therefore not only whether environments are available but also whether they are accessible, inclusive, culturally responsive, and open to children's agency. These rights are closely connected with the child's right to family, identity, and culture, which are fundamental prerequisites for developing a sense of belonging and personal identity (Visković 2021).

This distinction is significant because adult norms and socioeconomic inequalities structure children's access to space. In many urban contexts, independent mobility and presence in public space have been restricted by surveillance, traffic, commercialization, and conflicting representations of children as simultaneously vulnerable and disruptive (Holloway and Valentine 2000; Penn 2005). Research on child-friendly neighbourhoods consequently identifies play opportunities, active mobility, access to services, quality public space, contact with nature, belonging, and supportive learning environments as interdependent conditions for children's well-being (Pia and Bezboruah 2025). However, the designation *child-friendly* should not be based solely on adult-defined infrastructure; it also requires attention to children's own experiences and to the unequal distribution of spatial resources.

Children's relationship with place develops through repeated participation in everyday environments. Direct engagement, play, and movement can gradually produce familiarity, emotional security, spatial competence, and attachment (Ryan 1998; Bourke 2016). Children interpret architectural characteristics in relation to their previous experience and frequency of use, suggesting that spatial meaning is learned through everyday encounters rather than derived from physical form alone (Yilmaz Yildirim et al. 2023). Environments adapted to children's scale and capacities may support autonomy and exploration, whereas spaces organized exclusively around adult proportions and control may produce dependence or insecurity (Khan et al. 2020). These relationships are nevertheless not uniform: age, ability, gender, cultural background, family practices, and prior experience may lead children to interpret the same environment differently.

ECEC institutions are particularly consequential because they are among the first collective environments children encounter outside the home. Their spatial organization influences opportunities for movement, privacy, sustained play, social interaction, and independent decision-making. Clearly organized activity areas, predictable pathways,

accessible materials, and a balance between shared and quiet spaces can facilitate concentration and small-group interaction, while overcrowding or poorly defined areas may contribute to fragmented play (Olds 2001; Kritchevsky et al. 2023). Likewise, connections between indoor and outdoor environments can broaden possibilities for movement and inquiry (Nelson et al. 2020).

Natural and mixed outdoor environments provide particularly diverse opportunities for sensory exploration, physical activity, imaginative play, and interaction with changing materials. Sand, water, soil, vegetation, rocks, and varied terrain afford forms of manipulation and experimentation that are less available in standardized playgrounds (Herrington 2005; Brussoni et al. 2017; Berti et al. 2019). Their educational value does not reside simply in the presence of “nature,” but in whether children can meaningfully engage with natural elements regularly and with an appropriate balance between protection and manageable risk. Excessive restriction may reduce the very autonomy, resilience, and environmental responsibility that outdoor education is expected to foster (Brussoni et al. 2017; Višnjić Jevtić et al. 2021).

Educational architecture also communicates a pedagogical image of the child. Traditional spaces organized around fixed seating, visibility, and centralized adult authority tend to support transmission-oriented practices, whereas flexible environments may create possibilities for collaboration, inquiry, and choice (Fisher and Dovey 2016). The Reggio Emilia approach develops this insight through the metaphor of the environment as the “third teacher.” Piazzas, ateliers, transparent boundaries, documentation displays, and connections between indoor and outdoor spaces are intended to support encounters, inquiry, and multiple forms of expression (Ceppi and Zini 1998; Gandini 2011; Bobbio 2020). However, the metaphor should not be interpreted as attributing independent agency to architecture. The environment becomes pedagogically active through reciprocal relations among children, educators, materials, documentation, and community life (Strong-Wilson and Ellis 2007).

Children’s participation is therefore central to the culture of educational space. Participation should extend beyond allowing children to select decorations or choose among activities predefined by adults. Children can identify meaningful, uncomfortable, or inaccessible places; document spatial barriers; propose changes; and evaluate how new arrangements affect play and relationships. Drawings, photography, models, conversations, guided walks, and participatory mapping are particularly appropriate for making children’s embodied and non-verbal spatial knowledge visible (Hart 1987; Yilmaz Yildirim et al. 2023).

Space is also a medium through which cultural identity and heritage are encountered. Landscapes, buildings, objects, languages, rituals, and community narratives connect children with collective memory and support the development of personal and sociocultural identity (Maroević 2001; Cifrić 2010; Kuščević 2015; Kuščević and Brajčić 2023). Experiential engagement with museums, historic places, local stories, and material traces of the past can make heritage comprehensible in early childhood (Jermstad 2025). However, cultural representation within ECEC spaces requires critical attention.

Digital technologies further complicate the relationship between child and space by extending interaction into virtual and hybrid environments. Digital settings can support exploration, creative role-play, intercultural exchange, documentation, and communication (Dudek 2005; Loudoun et al. 2024; Podrug Krstulović and Radeljak Gudelj 2024). At the same time, they introduce questions of safety, commercial influence, inclusion, privacy, and displacement of embodied and social experience (UNICEF 2022; Nikolopoulou 2024). The relevant pedagogical question is therefore not whether digital space should replace or oppose physical space, but how technology can be integrated purposefully while preserving

movement, sensory engagement, face-to-face relationships, and play. The child–space relationship is ultimately hybrid, relational, and negotiated across physical, cultural, social, and digital environments.

2.2. *The Child and Space in International Educational Programs and Policy Documents*

International and national ECEC frameworks increasingly recognize the environment as a condition of educational quality, although they conceptualize its significance unevenly. Starting Strong III treats indoor and outdoor environments as structural and pedagogical quality factors that should support play, exploration, interaction, and well-being (OECD 2012). More recent OECD documents extend attention to digital competence and safe technology use (OECD 2023), while the UNESCO–UNICEF global report situates children’s environments within wider questions of infrastructure, green space, equity, inclusion, and community resources (UNESCO and UNICEF 2024).

Curriculum frameworks provide a more explicit relational interpretation. The Croatian National Curriculum for Early and Preschool Education conceptualizes the learning environment as a network of physical and social relations supporting autonomy, identity, participation, and belonging (Ministry of Science, Education and Sports 2015). Australia’s Early Years Learning Framework V2.0 similarly connects learning environments with the principles of Belonging, Being and Becoming; responsiveness to local communities; sustainability; and recognition of Aboriginal and Torres Strait Islander perspectives (Australian Government Department of Education 2022).

2.3. *Aim of the Study*

Previous research has examined particular aspects of space, including the concept of the environment as the “third teacher,” place identity, and cultural heritage. However, an integrated framework encompassing the dimensions of the culture of space in early childhood education and care (ECEC) has not yet been developed. This paper addresses this gap by proposing a conceptual framework for understanding these dimensions.

The culture of space has become increasingly important in contemporary societies shaped by urbanization, globalization, and digitalization. As children spend more time in institutional and virtual environments, greater attention must be paid to how spatial characteristics influence their sense of security, autonomy, identity, belonging, and connection to cultural heritage. International policy documents and strategic frameworks likewise emphasize well-designed learning environments as an essential prerequisite for children’s well-being and the quality of educational processes.

Drawing on relevant scientific literature and international policy documents, this paper examines the concept of the culture of space, identifies its fundamental dimensions, and considers their relevance to ECEC. Particular attention is given to how these dimensions contribute to children’s well-being.

Based on the stated aim, this paper addresses the following research questions:

1. What dimensions of the culture of space can be identified in contemporary pedagogical literature?
2. How is the culture of space reflected in national and international policy and curriculum documents related to early childhood education?
3. How can these findings be synthesized into a unified conceptual framework defining the culture of space in education?

3. Materials and Methods

3.1. Research Design

This study employed a conceptual review based on the qualitative content analysis of the scientific literature and national and international ECEC policy and curriculum documents. Relevant sources were identified through a structured literature search and analyzed using combined deductive and inductive approaches. Rather than providing an exhaustive synthesis, the study aimed to develop an integrated conceptual framework of the culture of space by synthesizing interdisciplinary theoretical perspectives and policy documents. Specifically, it identified the key dimensions of the culture of space in contemporary theoretical and pedagogical literature and examined their representation in ECEC strategic and curriculum documents.

3.2. Literature Search and Data Sources

The scientific literature was searched in Scopus, Google Scholar, and ResearchGate, while additional books, articles, and policy documents were identified through Google searches of official institutional websites. Scopus served as the primary bibliographic database, whereas Google Scholar functioned as a multidisciplinary search engine and ResearchGate as a supplementary retrieval platform for identifying additional relevant publications and accessible full-text sources. The first phase of the search was conducted between March and May 2025, with the literature and policy documents updated in July 2026. The search strategy combined keywords related to the study topic with the term education, including *culture of space*, *spatial culture*, *sense of place*, *place identity*, *place attachment*, *learning environment*, *early childhood education*, *ECEC*, *Reggio Emilia*, *children and space*, *cultural heritage*, and *digital spaces*. Simplified keyword combinations were used where required by platform-specific search functions. Advanced search options and filters were applied in Scopus, whereas results retrieved from Google Scholar and ResearchGate were manually screened according to predefined inclusion and exclusion criteria. Because Google Scholar and ResearchGate generate dynamic search results that vary over time and according to indexing algorithms, the reported numbers of retrieved records should be regarded as approximate platform-level estimates rather than reproducible database counts. These figures are reported for transparency regarding the search process rather than as reproducible search counts.

Consistent with the conceptual nature of this review, the final selection of publications was based on purposive screening for conceptual relevance rather than exhaustive evidence retrieval. Publications were selected based on titles, abstracts, and, where necessary, full texts to identify seminal, highly cited, and theoretically relevant works, including one Croatian article not indexed in the searched sources. The search covered journal articles published between 1960 and 2025, with literature on digital spaces updated to 2026, and policy and related documents published between 1989 and 2026. Eligible sources included peer-reviewed journal articles, books and book chapters by recognized authors, and policy documents issued by international organizations (OECD, UNESCO, UNICEF) and national ministries, published in English, Italian, or Croatian. Conference abstracts, duplicate records, studies unrelated to education or children's environments, and documents lacking conceptual relevance were excluded. Duplicate records retrieved from multiple sources were identified by comparing titles, authors, publication year, and DOI (where available), with Scopus as the primary search. Each included publication was counted only once and assigned to its primary retrieval source for reporting purposes. The literature search strategy and study selection process are presented in Table 1.

Table 1. Literature Search Strategy and Study Selection Process.

Source	Search Terms + Child/ECEC	Initial Records (Raw Hits)	Screened	Included
Scopus	“culture of space”; “spatial culture”; “sense of place”; “place identity”; “place attachment”; “learning environment” + early childhood education/ECEC; “Reggio Emilia”; “children and space”; “cultural heritage”; “digital spaces” + children	10,130	312	49
Google Scholar	Simplified combinations of the same terms; peer-reviewed sources prioritized	990,190	280	23
ResearchGate (full text only)	Simplified combinations of the same terms; full-text availability required	23,217	145	12
Google (official institutional websites)	Google Search (using combinations of the same search terms) and searches of official institutional websites (OECD, UNESCO, UNICEF, Ministry of Science, Education and Youth of Croatia, and the Australian Government Department of Education) identified through the reviewed literature.	35	12	11
Total	After title/abstract screening, full-text checking, and assigning each included source to one primary retrieval source	1,023,545	745	95

The final corpus comprised theoretical and empirical studies, review articles, books, book chapters, professional publications, and policy documents addressing the relationships among space, culture, identity, children’s development, educational environments, cultural heritage, digital spaces, and learning. The included sources represented seminal and conceptually relevant contributions that addressed at least one dimension of the culture of space, demonstrated scientific or professional relevance, and were available in full text. Representative literature, authors, and their contributions are presented in Table 2.

Table 2. Literature category, representative authors/publications and their contribution.

Literature Category	Representative Authors/Publications	Contribution to the Analysis
Foundations of space, place and environmental theory	Jacobs (1961); Relph (1976); Tuan (1977); Proshansky et al. (1983); Halpern (2014); Lynch (2013); Bobovec et al. (2020)	Conceptual foundations of space, place, identity, and environmental psychology
Place identity and sense of place.	Scannell and Gifford (2010). Stedman (2003; 2008; 2016); Seamon (2012); Knaps et al. (2022); Bender (2024)	Symbolic and social meanings of place, attachment, belonging
Children and space	Hart (1987); Olds (2001); Herrington (2005); Berti et al. (2019); Pia and Bezboruah (2025); Yılmaz Yıldırım et al. (2023); Shu and Zheng (2025)	Children’s spatial experience, learning environments, outdoor environments
Educational environments and pedagogy	Ceppi and Zini (1998). Gandini (2011); Bobbio (2020); Tindall (2022); Weinstein and Woolfolk (1981)	Pedagogical dimension of space and learning environments
Culture, heritage and identity	Theologou (2020); Kuščević and Brajčić (2023); Maroević (2001); Cifrić (2010); Azzopardi et al. (2022)	Cultural dimension, heritage, identity, citizenship
Digital learning environments	Dudek (2005); Gómez-Galán (2018); UNICEF (2022); Loudoun et al. (2024); Nikolopoulou (2024); Jurić et al. (2026); Podrug Krstulović and Radeljak Gudelj (2024)	Digital dimension of the culture of space

3.3. Policy and Curriculum Documents

To complement the scientific literature, national and international policy and curriculum documents relevant to ECEC were analysed. These documents were selected because they explicitly address learning environments, children's rights, participation, sustainability, cultural identity, digital competences, and the educational role of space. Based on the analyzed documents, institutions (publishers), and analytical focus, the results are presented in Table 3.

Table 3. Documents, institutions and analytical focus.

Document	Institution	Analytical Focus
Starting Strong III	OECD (2012)	Quality dimensions of ECEC; curriculum, workforce, family engagement and quality monitoring
Starting Strong VII	OECD (2023)	Digital technologies, digital competences, children's well-being and safe digital environments
Results from TALIS Starting Strong	OECD (2025)	ECEC workforce, professional development, pedagogical practices, staff well-being and quality of learning environments
Global Report on Early Childhood Care and Education	UNESCO and UNICEF (2024)	Equity, inclusion, sustainability, community engagement and quality learning environments
National Curriculum for Early and Preschool Education	Ministry of Science, Education and Sports (2015)	Child identity, culture, values, holistic development and educational environment
Early Years Learning Framework	Australian Government Department of Education (2022)	Belonging, Being and Becoming; play-based learning, identity and learning environments
Guide to the National Quality Framework (First published, 2018—Last updated, 2026)	Australian Children's Education and Care Quality Authority (2026)	Quality standards, learning environments, inclusion, leadership, continuous improvement and partnerships with families and communities

3.4. Data Analysis

The literature and policy documents were analyzed using qualitative content analysis, combining deductive and inductive coding through an iterative process of reading, coding, comparison, and refinement, with thematic saturation confirmed by recurring codes. Initial deductive categories were based on key theoretical concepts (spatial culture, place identity, sense of place, educational environments, cultural heritage, environmental psychology, digital spaces, and space as the third teacher in ECEC). Inductive coding also identified additional themes, such as children's participation in shaping educational environments, flexible and digital learning spaces, sustainability, and the integration of the local community and cultural heritage. The author continuously compared, refined, and merged codes into six dimensions of the culture of space: physical, social, symbolic, cultural, digital, and pedagogical. Triangulation was achieved by comparing findings from the scientific literature with national and international policy and curriculum documents, retaining only conceptually consistent or complementary dimensions. The development of the analytical categories is presented in Table 4.

Table 4. Development of analytical categories.

Deductive Categories (Literature)	Examples of Inductively Developed Categories	Final Dimension
Educational environment; built environment	Flexible learning spaces; indoor–outdoor integration	Physical
Place identity; sense of place	Children’s belonging; emotional attachment	Symbolic
Culture; cultural heritage	Local community; intercultural awareness	Cultural
Human relationships; participation	Children’s agency; collaborative learning	Social
Digital environments	Digital learning spaces; ICT integration	Digital
Space as the third teacher; spatial pedagogy	Child-centered organization of space	Pedagogical

4. Results

The results address each of the three research questions and integrate evidence from the literature and policy document analysis to develop a comprehensive conceptualization of the culture of space in education.

4.1. Analysis Related to Research Question 1

The analysis of contemporary scholarly and pedagogical literature suggests that space can be conceptualised as a complex and multidimensional construct encompassing several interrelated dimensions:

(1) the **physical dimension**, referring to the architecture, furnishings, and natural and built features of the environment that shape children’s everyday experiences and learning opportunities (Halpern 2014; Olds 2001; Herrington 2005; Bobovec et al. 2020; Beach et al. 2025);

(2) the **social dimension**, encompassing the relationships, communication, collaboration, participation, and sense of community developed within educational settings (Jacobs 1961; Gandini 2011; Valentine 2014; Pia and Bezboruah 2025);

(3) the **cultural dimension**, reflecting the values, traditions, cultural heritage, identity, and sense of belonging that are expressed and transmitted through educational environments (Theologou 2020; Maroević 2001; Visković 2018, 2021; Adams 2023; Kuščević and Brajčić 2023);

(4) the **symbolic dimension**, comprising the meanings, memories, place identity, sense of place, and feelings of belonging that individuals associate with particular environments (Relph 1976; Tuan 1977; Proshansky et al. 1983; Knaps et al. 2022);

(5) the **digital dimension**, including virtual environments and technology-mediated experiences that complement physical settings while shaping learning, communication, and culture (Dudek 2005; Gómez-Galán 2018; UNICEF 2022; Podrug Krstulović and Radeljak Gudelj 2024; Loudoun et al. 2024; Nikolopoulou 2024; Jurić et al. 2026);

(6) the **pedagogical dimension**, which conceptualises the environment as an active participant in the educational process, where its design, organisation, accessibility of materials, and institutional culture support children’s learning, development, well-being, participation, autonomy, exploration, and creative expression while reflecting the shared pedagogical values, beliefs, norms, and image of the child embraced by the educational community (Ceppi and Zini 1998; Olds 2001; Gandini 2011; Stanković 2008; Schein 2010; Visković 2018, 2021; Bobbio 2020; Tindall 2022; Beach et al. 2025).

These dimensions do not operate independently. They are closely interconnected and unified by culture as the fundamental framework through which people act and assign

meaning to space. Culture is expressed not only through customs, values, and beliefs but also through the physical environment in which communities live, interact, and construct their identities (Adams 2023). The physical characteristics of an environment influence how people perceive and use space; the social dimension shapes interpersonal relationships and community; the symbolic dimension attributes places to meaning and identity; the cultural dimension transmits heritage, values, and shared ways of life; and the digital dimension expands opportunities for communication, learning, and participation in contemporary society (Dudek 2005; Gómez-Galán 2018).

Accordingly, the *culture of space* can be understood as the quality of the relationship between people and their environments, encompassing how spaces are designed, experienced, and used. A culture of space is characterized by environments that foster identity, belonging, collaboration, respect for diversity, and responsibility towards the community, in contrast to placeless environments that lack meaning, identity, and connections with the people and communities who inhabit them (Relph 1976).

Although the six dimensions are interdependent, they are analytically distinguished by the primary process through which space becomes educationally and culturally significant. The physical dimension identifies the material conditions and affordances of an environment. The social dimension examines the relationships and participatory practices enacted within it. The symbolic dimension addresses how individuals and groups interpret a place and develop emotional and identity-related attachments to it. The cultural dimension focuses on the shared languages, traditions, knowledge, heritage, and ways of life that space represents, transmits, and enables participants to negotiate. The digital dimension extends the analysis to technology-mediated environments. In contrast, the pedagogical dimension concerns the intentional educational purposes and practices through which educators and children organize and use all these spatial conditions. This conceptualization demonstrates that the physical, social, symbolic, cultural, digital, and pedagogical dimensions together constitute a holistic culture of space presented in Table 5.

Table 5. Conceptualization of dimensions.

Dimension	Analytical Focus	Core Question	Main Indicators
Physical	Material and sensory conditions of space	What does the environment enable or constrain?	Layout, accessibility, furniture, materials, lighting, acoustics, nature, indoor–outdoor connections
Social	Relationships, participation, and agency within space	Who interacts, participates, and makes decisions?	Communication, collaboration, inclusion, children’s agency, family involvement, power relations
Symbolic	Meanings, emotions, and attachments associated with place	What does the place mean to its users?	Place identity, sense of place, memories, symbols, emotional attachment, perceived safety
Cultural	Collective knowledge, heritage, values, and ways of life represented through space	Whose cultures and histories are represented and negotiated?	Languages, traditions, heritage, local narratives, cultural diversity, intercultural dialogue
Digital	Participation in technology-mediated environments	How is children’s digital participation organized?	Digital creation, communication, collaboration, media literacy, safety, access, educator mediation
Pedagogical	Intentional educational organization and use of space	Why and how is the environment used for learning?	Pedagogical philosophy, flexibility, accessible materials, educator mediation, documentation, child-led transformation

Concepts such as belonging, identity, values, and community connect the dimensions but do not erase their analytical differences. Their classification depends on the process being examined. Belonging is social when it concerns participation and recognition within relationships; symbolic when it concerns emotional attachment to a particular place; cultural when it concerns recognition within shared histories and cultural repertoires; and pedagogical when it is treated as an intentionally supported educational aim. Similarly, identity is symbolic as a lived relationship between self and place; cultural when grounded in collective languages, heritage, and ways of life; and social when negotiated through membership and interaction. Values belong to the cultural dimension when they form part of collectively developed systems of meaning, to the symbolic dimension when they are attributed to a particular place, and to the pedagogical dimension when they guide intentional educational decisions. The dimensions therefore represent distinct analytical lenses applied to interconnected spatial processes rather than mutually exclusive empirical domains. Concepts that connect the dimensions are represented in Table 6.

Table 6. Concepts that connect dimensions.

Concept	Dimension	Analytical Focus
Belonging	Social	Participation, recognition, inclusion, and membership within relationships and communities.
	Symbolic	Emotional attachment and personal connection to a particular place.
	Cultural	Recognition within shared histories, traditions, languages, and cultural repertoires.
	Pedagogical	An educational objective intentionally supported through teaching practices and the organization of space.
Identity	Symbolic	The lived relationship between self and place; place identity and personal meaning.
	Cultural	Identity grounded in shared heritage, languages, traditions, and collective ways of life.
	Social	Identity negotiated through interaction, participation, and group membership.
Values	Cultural	Collectively shared systems of meaning, beliefs, norms, and traditions represented through space.
	Symbolic	Values attributed to a particular place through personal or collective meanings.
	Pedagogical	Values guiding intentional educational decisions and pedagogical practice.
Community	Social	Relationships, participation, collaboration, and shared practices among members.
	Cultural	Community as a bearer of shared history, heritage, and cultural knowledge.
	Pedagogical	Community intentionally fostered through educational practices and partnerships.

The model is therefore coherent not because each dimension operates independently, but because each identifies a different mechanism through which space acquires educational significance: material provision, relational enactment, meaning attribution, cultural representation and negotiation, digital mediation, and pedagogical intentionality. Their interaction produces the lived culture of space in ECEC.

4.1.1. The Physical Dimension

The physical dimension refers to the material, architectural, sensory, and environmental characteristics of learning and play settings, including spatial layout, furniture, lighting, acoustics, accessibility, natural elements, materials, and indoor–outdoor connections. It concerns how these characteristics enable or constrain children’s movement, exploration, interaction, privacy, autonomy, and well-being, while the pedagogical dimension focuses on how educators intentionally organize and use these spatial possibilities.

Its theoretical foundations lie in environmental psychology and socio-ecological approaches, which view physical environments as active influences on behaviour rather than neutral settings (Stedman 2003; Zimring et al. 2005; Masterson et al. 2017; Tindall 2022). The concept of built pedagogy argues that architecture reflects educational values: traditional environments tend to support discipline and educator control, whereas flexible spaces promote autonomy, collaboration, and inquiry (Fisher and Dovey 2016; Baker 2012). Similarly, the Reggio Emilia approach conceptualizes the environment as the “third teacher,” emphasizing spatial organization, aesthetics, material accessibility, and support for children’s relationships and expression (Ceppi and Zini 1998; Gandini 2011).

Research consistently links high-quality physical environments with children’s safety, well-being, engagement, autonomy, play, and learning. Clearly organized activity areas, child-scaled furniture, accessible materials, quiet spaces, and opportunities for movement support children’s choice-making and sustained engagement (Olds 2001; Khan et al. 2020). Flexible environments accommodate different forms of interaction but should remain predictable enough to provide security and belonging (Kritchevsky et al. 2023; Berti et al. 2019). Strong indoor–outdoor connections promote physical activity, exploration, and social play (Nelson et al. 2020), while natural environments with sand, water, soil, trees, rocks, and varied terrain foster sensory exploration, creativity, independent play, and prosocial behaviour (Herrington 2005; Brussoni et al. 2017; Berti et al. 2019).

The physical dimension is strongly represented across most policy documents. *Starting Strong III* identifies indoor and outdoor environments, safety, spatial standards, and space per child as key quality indicators (OECD 2012). The UNESCO and UNICEF report broadens this perspective by including WASH conditions, green spaces, neighbourhood quality, and community infrastructure, linking physical environments with equity and access (UNESCO and UNICEF 2024). The Croatian National Curriculum associates the physical environment with autonomy, choice, creativity, exploration, and participation (Ministry of Science, Education and Sports 2015), while the Australian frameworks emphasize safe, inclusive, accessible, sustainable, and intentionally designed environments (Australian Government Department of Education 2022; Australian Children’s Education and Care Quality Authority 2026). In contrast, TALIS *Starting Strong* and *Starting Strong VII* address the physical dimension mainly through working conditions and digital infrastructure (OECD 2023, 2025).

For practice, ECEC environments should provide recognizable yet adaptable activity areas, accessible materials, child-scaled furniture, quiet spaces, opportunities for movement, and settings for both individual and collaborative activities. Attention should also be given to natural light, acoustics, ventilation, accessibility, educators’ working conditions, and integrated indoor-outdoor environments with regular access to nature and open-ended materials. Children should participate in decisions about spatial organization, materials, displays, and environmental changes, while educators should observe how different spaces influence engagement, withdrawal, conflict, and belonging.

However, several tensions remain. Safety, hygiene, accessibility, and minimum space standards are necessary but insufficient for creating meaningful environments. Flexibility must be balanced with predictability, and appropriate developmental risk distinguished

from hazards (Curtis 2010). Adult preferences for order, visibility, and supervision may conflict with children's need for complexity, privacy, sensory diversity, and opportunities to transform space (Curtis 2010; Fisher and Dovey 2016; Gandini 2011). Moreover, architecture cannot compensate for restrictive pedagogical practices or poor relationships, and access to high-quality facilities and natural environments remains socially unequal. Consequently, the physical dimension should be evaluated primarily by its capacity to support safety, accessibility, autonomy, participation, play, and belonging, rather than by appearance or cost (Olds 2001; Herrington 2005; Gandini 2011; OECD 2012; Ministry of Science, Education and Sports 2015).

4.1.2. Social Dimension

The social dimension of the culture of space refers to the relational processes through which educational environments become places of interaction, participation, community, and belonging. Unlike the physical dimension, which focuses on material and architectural characteristics, the social dimension concerns the relationships established within and through space among children, educators, families, and communities. In this analysis, the social dimension emerged through integrating the deductive categories of human relationships and participation with the inductively identified categories of children's agency and collaborative learning.

Theoretically, the social dimension is based on the understanding that spaces acquire meaning through everyday social practices. Adams (2023) argues that people shape the identity of places through use and interpretation, while Jacobs (1961) links vibrant places to everyday community life. Philo (2000) distinguishes space as a setting for interaction from place as a socially meaningful environment created through shared experiences, and Valentine (2014) shows that identity develops through relationships with both people and places. Consequently, belonging depends not only on social group membership but also on participation in shared environments such as educational settings and local communities. Similarly, Valera et al. (1998) argue that symbolic places reinforce collective identity.

Research shows that children actively participate in the social construction of places. Hart (1987) describes children's environments as phenomenal landscapes that they experience and shape, while Bourke (2016) emphasizes children as co-creators rather than passive users of urban space. A review by Pia and Bezboruah (2025) demonstrates that child-friendly neighborhoods support social interaction, participation, and belonging, extending the social dimension beyond ECEC institutions into the wider community.

Kjørholt (2004) further conceptualizes childhood as a symbolic and social space where identities, values, and power relations are negotiated. Educational environments therefore regulate whose voices are heard and how power is distributed, making children's participation central to the social dimension. Participation in decisions about everyday life and shared activities strengthens agency, responsibility, engagement, and belonging, reflecting children's social position within the institution.

The Reggio Emilia approach provides the clearest ECEC articulation of this perspective. Gandini (1993, 2011) argues that knowledge develops through relationships, communication, collaboration, and shared inquiry, positioning the environment as a cultural and relational medium. Documentation makes learning visible to children, educators, and families, supporting shared interpretation and dialogue rather than merely recording activities (Edwards and Rinaldi 2009). Likewise, Yahya and Wood (2017) describe play as a "third space" where children connect home and preschool experiences, negotiate differences, and construct shared meanings.

Across policy documents, the social dimension is consistently reflected through relationships, participation, inclusion, family partnerships, community engagement, and

belonging. *Starting Strong III* emphasizes respect for diversity, democratic participation, and collaboration among ECEC institutions, families, and communities, while recognizing families, libraries, museums, and community organizations as learning resources (OECD 2012). UNESCO and UNICEF (2024) similarly highlight relationships among families, educators, and communities, while demonstrating that participation and belonging are shaped by poverty, discrimination, marginalization, and unequal access to quality ECEC. The Croatian National Curriculum presents the educational environment as a network of shared aspirations that promotes communication, interaction, participation, cultural diversity, belonging, responsibility, and partnerships with families and communities (Ministry of Science, Education and Sports 2015). The *Early Years Learning Framework* likewise connects children's learning and identity with secure relationships and connections to family, community, culture, and place (Australian Government Department of Education 2022). Together, these documents show that educational environments become socially meaningful through reciprocal relationships and participation rather than through material characteristics alone.

In practice, this dimension requires attention to the quality of relationships and genuine opportunities for participation. Children should be able to initiate interactions, build friendships, negotiate rules, contribute to decisions, and experience their ideas as valued. Their drawings, narratives, photographs, and observations should be recognized as legitimate knowledge for evaluating experiences and planning projects. Documentation should facilitate dialogue among children, educators, and families, and families should be recognized as partners who contribute knowledge about children's languages, cultures, and communities. Collaboration with neighborhoods, libraries, museums, and cultural organizations can further strengthen children's sense of belonging to the wider community (Edwards and Rinaldi 2009; Gandini 2011; Strong-Wilson and Ellis 2007; OECD 2012; Ministry of Science, Education and Sports 2015; Australian Government Department of Education 2022).

However, important tensions remain. Strong communities may foster a sense of belonging while simultaneously excluding certain identities or practices. Institutional norms may privilege dominant languages, family structures, or cultural practices, and participation can become tokenistic if adults retain decision-making power. Collaboration should not be treated as the only desirable form of participation, since children differ in temperament, communication, language competence, and need for solitude. Research also shows that children's participation in public space is constrained by adult perceptions, surveillance, commercialization, and unequal access to community resources (Holloway and Valentine 2000; Penn 2005; Valentine 2017). Therefore, the social dimension must encompass not only interaction and cooperation but also recognition, agency, inclusion, exclusion, and power, emphasizing that educational space becomes a meaningful social place when children can participate, build relationships, contribute to shared meanings, and experience themselves as recognized members of a community (Edwards and Rinaldi 2009; Gandini 2011; Ministry of Science, Education and Sports 2015; Australian Government Department of Education 2022, Visković and Višnjić-Jevtić 2024).

4.1.3. Symbolic Dimension

The symbolic dimension refers to the personal and shared meanings that give educational space its significance. It encompasses place identity, sense of place, memories, emotional attachment, symbolic representations, and the meanings that provide children with recognition, security, and a sense of belonging. Unlike the physical dimension, which concerns material and architectural characteristics, or the social dimension, which focuses on relationships and participation, the symbolic dimension examines how children in-

interpret and emotionally appropriate places. It also differs from the cultural dimension: while culture provides values, traditions, and representations, the symbolic dimension concerns how children connect these elements to their identities and lived experiences. Thus, a family photograph, local artefact, national symbol, or natural element becomes symbolically significant only when it evokes recognition, memory, attachment, belonging, or exclusion.

The dimension is grounded in phenomenological, environmental-psychological, and socio-constructivist perspectives. Tuan (1977) argues that space becomes place through experience, familiarity, and value, while Relph (1976) conceptualizes place as an emotional and symbolic context for identity and lived experience, warning that standardized environments may lack meaning through placelessness. Environmental psychology explains this transformation through concepts such as place identity, defined as the part of personal identity formed through relationships with the physical environment (Proshansky et al. 1983), and place attachment, understood as the interaction between people, psychological processes, and place characteristics (Scannell and Gifford 2010). Stedman (2003, 2008, 2016) distinguishes attachment from place meanings, arguing that attachment reflects the strength of a relationship, whereas meanings explain why a place matters. Knaps et al. (2022) show that meanings emerge from both environmental characteristics and socially constructed interpretations, while Valera et al. (1998) add the collective perspective through symbolic space, demonstrating that symbolic meaning cannot be reduced to physical form or social interaction alone.

ECEC research confirms that relationships with meaningful places develop early in childhood. Children experience environments through embodied, sensory, emotional, and repeated experiences rather than abstract categories (Yılmaz Yıldırım et al. 2023). Their drawings function as symbolic representations of experiences, emotions, and memories (Piaget 1955; Piaget and Inhelder [1948] 2016), while Hart's (1987) concept of the "phenomenal landscape" emphasizes that children actively experience, interpret, remember, and shape their environments. Stanković (2008) further shows that attachment, identification, and belonging emerge through meaningful places such as favourite corners, trees, pathways, or activity areas associated with security, autonomy, imagination, competence, or relationships. Consequently, symbolic importance depends on lived experience rather than architectural quality alone.

Because preschool is one of children's first institutional environments, the symbolic meanings developed there influence a sense of belonging and later attitudes toward education. Familiarity and predictability support symbolic continuity, whereas unnecessary changes may undermine security and belonging (Australian Government Department of Education 2022). The symbolic dimension also extends beyond preschool, as children construct meanings through neighbourhoods and urban environments (Bourke 2016). Child-friendly neighbourhoods promote belonging (Pia and Bezboruah 2025), while children's interpretations of architecture depend on personal experience and frequency of use; adaptive reuse of historic buildings may strengthen attachment and connections with heritage (Yılmaz Yıldırım et al. 2023). Symbolic meanings are therefore visible in children's memories, preferences, attachments, and representations of places.

Policy analysis shows that the symbolic dimension is acknowledged only implicitly. The Early Years Learning Framework V2.0 links learning with "Belonging, Being and Becoming". It emphasizes relationships with family, community, culture, and place as foundations of identity and belonging, but it does not explicitly address place meanings or emotional attachment (Australian Government Department of Education 2022). The Croatian National Curriculum similarly promotes identity, belonging, security, and representation of children's family and cultural backgrounds without clearly distinguishing

cultural representation from children's own place meanings (Ministry of Science, Education and Sports 2015). The Guide to the National Quality Framework addresses identity, participation, and belonging but does not conceptualize educational environments as carriers of memory or attachment (Australian Children's Education and Care Quality Authority 2026). The symbolic dimension is even less explicit in Starting Strong III, TALIS Starting Strong, and the UNESCO–UNICEF Global Report, where identity and belonging are discussed mainly through inclusion, relationships, cultural context, or educational quality rather than place meanings (OECD 2012, 2025; UNESCO and UNICEF 2024). This comparison reveals a gap between theory and policy: while theory provides developed concepts of place identity, attachment, memory, and meaning, policy documents rarely explain how such meanings develop.

In practice, educators should focus not only on what environments contain but on how children experience and interpret them. Children's drawings, photographs, stories, maps, guided walks, and conversations can help identify meaningful, safe, avoided, or memorable places. Educational environments should make children's presence visible; preserve traces of shared experiences; connect with families, communities, and nature; and provide continuity through familiar landmarks and routines. Equally important, children should be able to modify, name, reinterpret, and co-create places rather than encounter meanings predetermined by adults. The quality of the symbolic dimension, therefore, depends less on the number of displayed symbols than on whether children recognize themselves in the environment and contribute to its meaning (Hart 1987; Gandini 2011; Edwards and Rinaldi 2009; Strong-Wilson and Ellis 2007; Visković 2018; Yılmaz Yıldırım et al. 2023).

However, symbolic meanings are subjective and may be both positive and negative. Places can evoke security and belonging but also anxiety, exclusion, surveillance, stigma, or distress (Manzo 2003, 2005; Parr 2011, Manzo and Devine-Wright 2013). Symbols that strengthen one group's identity may marginalize another, making symbolic inclusion impossible to evaluate solely through adult intentions or visual inspection. Familiarity also supports attachment, yet excessive stability may restrict children's agency and the environment's responsiveness to changing identities. Furthermore, symbolic meanings are difficult to assess using standardized measures because they are subjective, relational, and develop over time. Young children may not fully express them verbally, requiring multimodal and participatory approaches. Although symbolic meanings emerge through physical, social, and cultural conditions, distinguishing the symbolic dimension remains analytically valuable because it explains how these conditions become personally and collectively meaningful.

4.1.4. Cultural Dimension

The cultural dimension refers to the ways educational spaces embody, transmit, negotiate, and transform the cultural knowledge, values, languages, traditions, and practices of the communities in which children live. Space becomes cultural not simply through culturally recognizable objects, but when it enables children to engage with family and community cultures, tangible and intangible heritage, local histories, linguistic diversity, and different ways of knowing. Unlike the symbolic dimension, which concerns the personal meanings attached to place, the cultural dimension focuses on the collective cultural frameworks through which these meanings are created, negotiated, and renewed, asking whose cultures, histories, and knowledge are represented and who participates in shaping them.

Theoretically, this dimension is grounded in the reciprocal relationship between culture and space. Culture is expressed through beliefs, language, customs, art, knowledge, and everyday practices, as well as through the spaces where communities develop and interact

(Adams 2023). Cultural heritage illustrates this relationship by connecting past, present, and future through tangible and intangible traces of human activity, making space a carrier of collective memory while culture shapes how space is understood and used (Cifrić 2010; Mijatović 2005; Kuščević and Brajčić 2023). Heritage therefore includes not only monuments and artefacts but also traditions, languages, narratives, local knowledge, cultural practices, and community–place relationships.

Research demonstrates that heritage contributes to cultural identity, citizenship, critical thinking, and civic values (Theologou 2020; Delgado-Algarra and Cuenca-López 2020; Santisteban et al. 2020; Azzopardi et al. 2022). Its educational value lies in helping children interpret heritage in relation to contemporary life rather than simply transmitting the past. Cultural identity is consequently understood as dynamic and shaped through creativity, responsibility, and intercultural dialogue (Labus 2014). This perspective also reflects Relph's (1976) concept of placelessness, suggesting that educational environments may meet functional standards while remaining culturally generic if children cannot recognize their families, languages, neighbourhoods, or community experiences within them.

The ECEC literature emphasizes that children are active participants in culture. Yahya and Wood (2017) distinguish home as the “first space,” preschool as the “second space,” and play as the “third space,” where children connect, reinterpret, and negotiate different cultural practices and identities. Heritage education likewise becomes meaningful through experiential learning, allowing children to explore and interpret the past (Redvaldsen 2023). Museums and heritage sites support learning when children can investigate, play, and interact with historical artefacts rather than receive decontextualized information. The Kon-Tiki project further demonstrates that storytelling, artistic expression, museum activities, project-based learning, and play strengthen motivation, a sense of belonging, and relationships with cultural heritage (Jermstad 2025). Within the Reggio Emilia approach, documentation makes children's experiences visible, while the environment reflects the identities of children, families, and communities and promotes shared interpretation and intercultural dialogue (Edwards and Rinaldi 2009; Gandini 2011). Together, these studies show that cultural space is created through participation and interpretation rather than decorative representation alone.

Policy documents recognize the cultural dimension to varying degrees. The United Nations Convention on the Rights of the Child establishes children's rights to participate in cultural life and to preserve their culture, language, and religion (United Nations 1989, pp. 30–31). Starting Strong III links ECEC quality with identity, belonging, diversity, democratic participation, and respect for different cultures while recognizing families, museums, libraries, cultural institutions, and local communities as learning resources (OECD 2012). However, culture is treated primarily as a curricular and inclusion issue rather than as a characteristic of educational space. The UNESCO–UNICEF Global Report emphasizes how discrimination, inequality, and marginalization shape children's cultural experiences (UNESCO and UNICEF 2024), while the Croatian National Curriculum explicitly connects culture, space, identity, family culture, institutional culture, cultural heritage, national identity, and openness to other cultures (Ministry of Science, Education and Sports 2015). Similarly, the Early Years Learning Framework V2.0 emphasizes cultural and linguistic identity, diverse ways of knowing, and children's relationships with family, community, culture, and place, particularly through Aboriginal and Torres Strait Islander perspectives (Australian Government Department of Education 2022). Overall, the policy supports the cultural dimension but tends to frame it in terms of diversity and inclusion rather than in terms of the cultural production of space.

Culturally responsive environments should move beyond symbolic displays of diversity by integrating children's family languages, local histories, community knowledge,

and culturally meaningful experiences into everyday learning. Partnerships with families, museums, libraries, artists, elders, and the local community should support play, inquiry, storytelling, and creative expression. Children and families should also participate in deciding which cultures, languages, and narratives are represented in the educational environment. Educators can evaluate this dimension by considering whose cultures and perspectives are visible and whose remain absent (Gandini 2011; Edwards and Rinaldi 2009; OECD 2012; Visković 2018; Višnjić Jevtić et al. 2021; Ministry of Science, Education and Sports 2015; Australian Government Department of Education 2022).

However, important tensions remain. Superficial cultural representation may reinforce stereotypes or treat children as representatives of homogeneous groups. Emphasizing dominant national or local heritage may marginalize minority, migrant, Indigenous, multi-lingual, or non-traditional family experiences. Heritage itself is selective and shaped by power relations, while policy commitments to diversity do not automatically create culturally responsive environments without educator preparation, community partnerships, and shared decision-making. The cultural dimension therefore represents the capacity of ECEC environments to support cultural continuity, recognition, negotiation, and transformation by integrating heritage education, cultural identity, interculturality, children's rights, community participation, and culturally responsive pedagogy (Theologou 2020; Kušćević and Brajčić 2023; UNESCO and UNICEF 2024; Australian Government Department of Education 2022; Visković 2018, Višnjić Jevtić et al. 2021; Visković et al. 2023). A culturally developed educational space enables children to recognize their own cultural worlds, encounter others' cultural worlds, question exclusion, and participate in constructing the institution's shared culture.

4.1.5. Digital Dimension

The digital dimension of the culture of space refers not simply to the presence of technology but to the norms, relationships, competencies, and pedagogical practices through which children engage with virtual and technology-mediated environments. Digital spaces become educational environments when they support exploration, communication, representation, collaboration, and participation. Thus, the quality of a digital environment depends not on the amount of technology available but on how access, interaction, agency, safety, and connections with physical experience are organized.

Theoretical foundations are provided by Dudek's (2005) concept of "digital landscapes," which highlights children's movement between physical and virtual environments, and Gómez-Galán's (2018) argument that educational architecture must adapt to digital society through flexible spatial and technological arrangements. The RITEC framework further evaluates digital environments in relation to children's competence, creativity, inclusion, emotional regulation, empowerment, safety, self-actualization, and social connection (UNICEF 2022). Together, these perspectives emphasize that the digital dimension should be assessed through the quality of children's experiences rather than technological sophistication.

ECEC research shows that digital environments can become meaningful spaces for imaginative play, exploration, inquiry, creative expression, communication, and documentation when they complement rather than replace play and direct experience (Loudoun et al. 2024; Jurić et al. 2026). Platforms such as eTwinning can also support protected collaboration and intercultural learning between geographically distant groups (Podrug Krstulović and Radeljak Gudelj 2024). Meaningful participation, however, requires more than technical skills: it also depends on critical understanding, online safety, responsible digital citizenship, and awareness of how digital media shape communication and ex-

perience (Nikolopoulou 2024). Educators' digital competence and active mediation are therefore central to this dimension.

Policy documents address the digital dimension unevenly. *Starting Strong VII* provides the most comprehensive treatment by linking digital technologies with children's well-being, inclusion, learning, play, communication, and educator competence, while emphasizing that technology should enrich rather than replace direct experience and social interaction (OECD 2023). UNICEF's RITEC framework similarly highlights safety, agency, creativity, and social connection as interconnected aspects of digital well-being (UNICEF 2022). In contrast, *Starting Strong III* (OECD 2012), the *Early Years Learning Framework* (Australian Government Department of Education 2022), and the UNESCO–UNICEF Global Report (UNESCO and UNICEF 2024) do not consistently conceptualize virtual environments as educational spaces. The *Guide to the National Quality Framework* and *TALIS Starting Strong* focus primarily on digital safety, communication technologies, professional learning, and educator preparedness, indicating that policy recognition is increasing but remains fragmented.

In practice, ECEC settings should promote purposeful, supervised, and developmentally appropriate use of digital environments. Educators should select technologies according to their educational value, actively support children's participation, discuss online behaviour and safety, and ensure that digital activities encourage communication, creativity, inquiry, and collaboration rather than passive consumption. Digital experiences should also be integrated with physical activity, outdoor exploration, storytelling, cultural heritage, and documentation—for example, by recording investigations, communicating with other groups, or interpreting experiences from museums and local communities (Dudek 2005; Loudoun et al. 2024; Podrug Krstulović and Radeljak Gudelj 2024; Nikolopoulou 2024; OECD 2023; Jurić et al. 2026). Such approaches position children as active creators while maintaining educators' responsibility for privacy, inclusion, content selection, and interaction quality.

Nevertheless, important tensions remain. Digital environments can enhance children's agency, creativity, access, and social connection, but poorly mediated use may reduce movement, sensory experience, imaginative play, and face-to-face interaction (Dudek 2005; Eisenman 1992). Additional challenges include unequal access, commercialized content, privacy and data protection, exposure to inappropriate material, and differences in educators' digital competence. Supervision should therefore be understood as pedagogical mediation rather than mere control. The defining principle of the digital dimension is balance: digital spaces should expand children's educational experiences while remaining closely connected to embodied play, relationships, and authentic experiences in physical environments.

4.1.6. Pedagogical Dimension

The pedagogical dimension refers to the intentional organization, interpretation, and continuous adaptation of educational environments to support children's play, learning, participation, and development. Unlike the physical dimension, which describes the material characteristics of space, the pedagogical dimension explains why spaces are organized in particular ways, how educators and children use them, and which forms of learning and participation they enable. Within the proposed framework, it functions as a mediating dimension that transforms the affordances of physical, social, symbolic, cultural, and digital environments into lived curricular experiences.

Its theoretical foundations derive from research showing that educational environments consist of interconnected physical, social, organizational, and institutional components shaped by pedagogical philosophy (Weinstein and Woolfolk 1981; Weinstein and David 1987; Tindall 2022). The concept of built pedagogy demonstrates that spatial orga-

nization reflects assumptions about childhood, knowledge, authority, and learning: fixed environments tend to reinforce teacher-centred instruction and control, whereas flexible settings support autonomy, collaboration, and inquiry (Baker 2012; Fisher and Dovey 2016). Socio-ecological perspectives further argue that educational outcomes emerge through interactions among personal, social-organizational, and physical conditions rather than architecture alone (Zimring et al. 2005; Tindall 2022). Accordingly, the pedagogical significance of space depends on the interaction between spatial possibilities, institutional culture, educators' decisions, and children's actions.

The ECEC literature illustrates this most clearly through the Reggio Emilia concept of the environment as the "third teacher," where space actively participates in learning alongside children and educators (Strong-Wilson and Ellis 2007). Piazzas, ateliers, flexible activity areas, accessible materials, and indoor–outdoor connections become pedagogically meaningful only when they support children's choice, exploration, collaboration, communication, withdrawal, developmentally appropriate risk-taking, and expression through multiple symbolic languages (Ceppi and Zini 1998; Gandini 2011; Bobbio 2020; Curtis 2010). Pedagogical documentation further strengthens this process by making learning visible and open to shared interpretation by children, educators, and families (Edwards and Rinaldi 2009). Similarly, predictable activity areas promote security and sustained play, whereas poorly organized or constantly changing environments may fragment children's experiences (Kritchevsky et al. 2023). Thus, the pedagogical dimension is defined not by a particular spatial model but by the coherence between educational intentions, spatial organization, children's agency, and reflective practice.

Policy and curriculum documents strongly support this dimension, although they rarely define it explicitly as part of spatial culture. *Starting Strong III* links the quality of indoor and outdoor environments with child-centered curricula, play, exploration, interaction, and independence (OECD 2012). The *Early Years Learning Framework V2.0* positions educators as intentional designers of relational, play-based, and place-responsive environments (Australian Government Department of Education 2022), while the *Guide to the National Quality Framework* integrates intentional teaching, assessment, reflection, leadership, and physical environments within a unified quality framework (Australian Children's Education and Care Quality Authority 2026). The Croatian National Curriculum similarly identifies the kindergarten environment as the foundation of curriculum and connects spatial organization with autonomy, choice, collaboration, communication, and participation (Ministry of Science, Education and Sports 2015). The dimension is also reflected in *TALIS Starting Strong* through its emphasis on staff practices, individualized support, professional development, and pedagogical leadership (OECD 2025); in *Starting Strong VII* through developmentally appropriate uses of technology that complement play and direct experience (OECD 2023); and in the UNESCO-UNICEF Global Report through its focus on play, curriculum, professional competence, teaching practices, and educator–child interaction (UNESCO and UNICEF 2024). Nevertheless, these documents emphasize pedagogical principles more than the everyday processes through which educators and children negotiate and transform space.

In practice, the pedagogical dimension requires educators to treat spatial organization as an ongoing curricular process. Environments should offer flexible yet recognizable activity areas, accessible open-ended materials, integrated indoor–outdoor experiences, opportunities for interaction and withdrawal, and sufficient continuity to support security and sustained inquiry. Children should participate in organizing, evaluating, and transforming their environments, while observation and pedagogical documentation should guide changes according to their interests and experiences. The key criterion is not adherence to a particular architectural model but whether the environment supports autonomy,

play, participation, multiple forms of expression, inclusion, and meaningful connections with families and local communities (Ceppi and Zini 1998; Gandini 2011; Olds 2001; Strong-Wilson and Ellis 2007; Visković and Višnjić-Jevtić 2024).

Several tensions nevertheless remain. Intentional organization may become overly prescriptive, limiting the agency it aims to support. Flexibility must be balanced with continuity, while autonomy and developmentally appropriate risk must coexist with supervision, accessibility, and safety (Curtis 2010). Well-designed environments may still reproduce traditional pedagogy if institutional routines, staffing, or educators' beliefs do not support participation, whereas reflective educators can enhance constrained environments despite limitations in space, equipment, staffing, or access to natural and digital resources. The main limitation is spatial determinism—the assumption that design alone produces learning. Instead, the proposed framework conceptualizes pedagogical space as relational and dynamic, with educational meaning continually emerging through interactions among design, institutional values, educators' decisions, and children's appropriation and transformation of their environments.

4.2. Analysis Related to Research Question 2

The analysis of the Early Years Learning Framework for Australia (EYLF V2.0, Australian Government Department of Education 2022) indicates that the physical, social, cultural, and pedagogical dimensions of the culture of space are strongly represented through its emphasis on intentionally designed learning environments, relationships, cultural diversity, and responsive pedagogy. The symbolic dimension is reflected only implicitly through concepts of belonging, identity, and place, while the digital dimension is largely absent, as digital environments are not conceptualized as part of the culture of educational space.

Similarly, the Guide to the National Quality Framework (Australian Children's Education and Care Quality Authority 2026) strongly emphasizes the physical, social, and pedagogical dimensions, particularly through Quality Areas addressing physical environments, relationships, and educational programs. The cultural dimension is well integrated through commitments to equity, diversity, and Aboriginal and Torres Strait Islander perspectives, whereas the symbolic dimension remains implicit and the digital dimension is addressed mainly from regulatory, communication, and online safety perspectives rather than as an educational space (Australian Children's Education and Care Quality Authority 2026).

The Croatian National Curriculum for Early and Preschool Education (Ministry of Science, Education and Sports 2015) adopts a holistic understanding of educational space, strongly representing the physical, social, cultural, and pedagogical dimensions. Space is viewed as an active pedagogical resource that supports exploration, autonomy, collaboration, and participation. The symbolic dimension is addressed indirectly through identity and belonging, while the digital dimension is limited primarily to digital competence, documentation, and communication rather than digital environments as educational spaces.

In contrast, TALIS Starting Strong (OECD 2025) focuses primarily on educational quality, professional practice, and leadership. Consequently, the pedagogical and social dimensions are most prominent, whereas the physical, cultural, and digital dimensions receive limited attention and the symbolic dimension is largely absent. The report conceptualizes quality mainly through pedagogical processes rather than through the multidimensional concept of the culture of space.

Starting Strong VII: Empowering Young Children in the Digital Age (OECD 2023) presents a different pattern by placing the digital dimension at the centre of its framework. Digital technologies are conceptualized as resources supporting learning, communication, participation, and professional development, while the pedagogical and social dimen-

sions are also strongly represented. By comparison, the physical, cultural, and symbolic dimensions receive only limited or implicit attention.

Starting Strong III: A Quality Toolbox for Early Childhood Education and Care (OECD 2012) primarily conceptualizes space as a physical, social, and pedagogical resource supporting ECEC quality. Although diversity and local contexts are acknowledged, the cultural dimension remains implicit, while the symbolic and digital dimensions are largely absent.

Finally, the UNESCO/UNICEF Global Report on Early Childhood Care and Education (UNESCO and UNICEF 2024) strongly emphasizes the physical, social, and pedagogical dimensions by focusing on learning environments, safety, play, teaching quality, and relationships. In comparison, the cultural dimension is addressed only indirectly, while the symbolic and digital dimensions receive relatively limited attention. Table 7 contains the seven policy documents discussed in the text, and the conceptual figure is fully visible, legible, and cited consistently.

Table 7. Analysis of the dimensions in documents.

Document	Physical	Social	Symbolic	Cultural	Digital	Pedagogical
EYLF V2.0 (Australian Government Department of Education 2022)	Strong	Strong	Implicit	Strong	Largely absent	Strong
Guide to the National Quality Framework (Australian Children's Education and Care Quality Authority 2026)	Strong	Strong	Implicit	Strong	Weak	Strong
Croatian National Curriculum (Ministry of Science, Education and Sports 2015)	Strong	Strong	Implicit	Strong	Weak	Strong
TALIS Starting Strong (OECD 2025)	Weak–Moderate	Strong	Absent	Implicit	Weak	Strong
Starting Strong VII (OECD 2023)	Limited	Strong	Implicit	Limited	Strong	Strong
Starting Strong III (OECD 2012)	Strong	Strong	Absent	Implicit	Absent	Strong

4.3. Analysis Related to Research Question 3

The findings of the literature and policy analysis can be synthesized into a unified conceptual framework of the culture of space in education (Figure 1). The framework conceptualizes the culture of space as a multidimensional and relational construct in which educational space is understood not as a neutral physical setting but as a culturally and pedagogically produced environment. At the centre of the framework is the culture of space, which represents the dynamic relationships among children, educators, families, communities, and educational environments. It comprises six interrelated dimensions: physical, social, symbolic, cultural, digital, and pedagogical, each representing a distinct analytical perspective on how educational space is experienced, interpreted, and organized.

The physical dimension provides the material conditions of space; the social dimension encompasses relationships and participation; the symbolic dimension concerns meaning, identity, and attachment; the cultural dimension reflects shared values, heritage, and collective identities; the digital dimension extends the framework to technology-mediated environments; and the pedagogical dimension integrates all other dimensions through the intentional organization and use of educational space. The dimensions are mutually interdependent rather than separate. Their continuous interaction shapes children's experiences, learning, participation, identity, and belonging, defining the overall quality of the culture of space in educational settings.

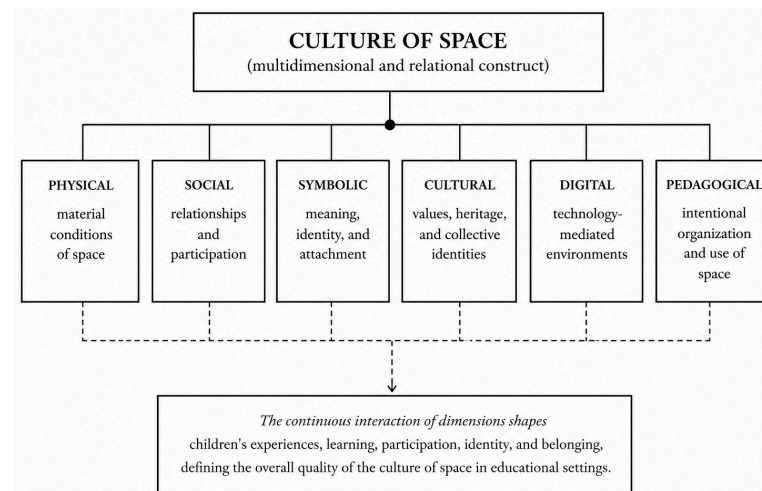


Figure 1. Culture of Space.

Within this framework, the culture of space is understood as a multidimensional and dynamic system encompassing physical, social, symbolic, cultural, digital, and pedagogical dimensions.

Together, these dimensions provide the conditions through which educational environments promote children’s holistic development and well-being.

5. Discussion

The importance of space in early childhood education and care (ECEC) is already well established in research on learning environments, educational architecture, and the Reggio Emilia approach (Strong-Wilson and Ellis 2007; Gandini 2011; Berti et al. 2019). The specific contribution of this study lies in conceptualizing the culture of space as an integrative framework that brings together physical design, social relationships, symbolic meanings, cultural heritage, digital environments, and pedagogical values as interconnected dimensions of a unified educational reality. The triangulation of evidence from interdisciplinary literature and national and international policy documents reinforces the credibility of the proposed framework. Although these sources differ in purpose and level of abstraction, their convergence around the identified dimensions supports the conceptual validity of the culture-of-space framework while also revealing dimensions that remain underrepresented in current policy discourse.

Bronfenbrenner’s ecological theory of human development provides an important theoretical basis for understanding this integration (Bronfenbrenner 1979; Crawford 2020). From an ecological perspective, a child’s development cannot be attributed to isolated environmental features because it emerges through reciprocal interactions between the developing person and a nested system of settings and relationships. The ECEC room, outdoor area, and digital platform may be understood as parts of the child’s microsystem, where material affordances, peer relations, educator practices, and symbolic meanings are directly experienced. Connections among the ECEC setting, family, neighbourhood, cultural institutions, and community form a mesosystem through which spatial meanings and expectations are reinforced, translated, or contested. Decisions concerning funding, regulation, staffing, architecture, digital infrastructure, and access to public or natural spaces operate at the exosystem level, even when children do not participate in those decisions directly. Cultural values, dominant images of childhood, heritage narratives, inclusion norms, and policy priorities constitute the macrosystem, while changes associated with migration, urbanization, digitalization, and institutional development add a chronosystemic dimension. The proposed culture-of-space framework makes these ecological relations

analytically visible by showing how broad cultural and policy conditions become embodied in the everyday places that children experience.

This ecological reading also guards against spatial determinism. The findings do not suggest that flexible furniture, natural materials, an atelier, or digital equipment will by themselves produce autonomy, creativity, belonging, or inclusion. As the Reggio Emilia concept of the environment as the “third teacher” indicates, spatial arrangements become pedagogically meaningful through reciprocal relationships among children, educators, materials, and the wider community (Ceppi and Zini 1998; Strong-Wilson and Ellis 2007; Gandini 2011). The same physical arrangement may support collaboration in one institution and control in another, depending on rules of access, adult expectations, routines, and children’s opportunities to appropriate and transform space. Likewise, a culturally decorated environment does not necessarily promote cultural recognition if the narratives it represents are stereotypical or if children and families are excluded from selecting and interpreting them. These observations suggest that the educational significance of space depends less on its physical design than on the institutional culture through which it is enacted. Space becomes meaningful when it is embedded in collaborative relationships, shared values, and reflective pedagogical practices. In this sense, the identity of an ECEC institution is not produced by spatial features alone but emerges through a collaborative culture characterized by high-quality relationships, teachers’ professional development, and continuous learning, which simultaneously provides a supportive context for children’s identity development (Visković et al. 2023).

The policy analysis supports the need for such an integrative perspective. Across the reviewed documents, physical, social, and pedagogical dimensions are generally more explicit, whereas symbolic, cultural, and digital dimensions are unevenly developed. Starting Strong III foregrounds the quality of indoor and outdoor environments, interaction, and pedagogy (OECD 2012), while Starting Strong VII gives greater visibility to digital participation and educator competence but pays less attention to the symbolic and heritage-related qualities of place (OECD 2023). TALIS Starting Strong emphasizes staff practices, relationships, and professional conditions rather than the multidimensional culture of educational space (OECD 2025). The UNESCO and UNICEF report situates ECEC within wider conditions of equity, inclusion, infrastructure, and cultural context, yet place identity and cultural heritage remain comparatively implicit (UNESCO and UNICEF 2024). The Croatian National Curriculum and the Australian EYLF V2.0 connect environment more strongly with belonging, culture, family, community, and place (Ministry of Science, Education and Sports 2015; Australian Government Department of Education 2022). This emphasis is also consistent with interpretations of the United Nations Convention on the Rights of the Child that understand the rights to family, identity, and culture as mutually reinforcing foundations of children’s well-being, belonging, and identity development, which educational environments should actively support (United Nations 1989; Visković 2021). Considered together, these differences show the added value of the proposed framework: it reveals dimensions that may be overlooked when quality is assessed primarily through infrastructure, interaction, or pedagogical process alone.

For ECEC research, the framework offers a common conceptual vocabulary for studies that have often examined architecture, place attachment, cultural heritage, participation, institutional culture, and digital media separately. For curriculum design and teacher education, the culture of space positions spatial organization as a continuing curricular and ethical responsibility. Curricula should connect indoor and outdoor design with relationships, local places, family cultures, cultural heritage, sustainability, and critically mediated digital experience, rather than treating these as unrelated themes. Pre-service and in-service education should therefore prepare educators to read environments critically:

to identify how circulation, visibility, material access, displays, languages, routines, and digital interfaces enable or restrict agency and belonging. Educators also need competence in participatory design, culturally responsive and place-based pedagogy, pedagogical documentation, accessibility, digital ethics, and collaboration with architects, families, cultural institutions, and local communities. Such preparation would help educators move beyond the assumption that spatial quality is primarily an architectural matter and recognize their own role in the continuous production of educational space.

At the institutional level, the six dimensions can provide a structure for self-evaluation. An ECEC setting might examine whether its physical environment is safe, accessible, flexible, and connected with nature; whether its social organization supports respectful relationships and equitable participation; whether children and families can recognize themselves in the symbols, languages, memories, and narratives present; whether local and multiple cultural heritages are represented without tokenism; whether digital spaces are inclusive, safe, creative, and connected with embodied experience; and whether spatial decisions are congruent with stated pedagogical values. Because these questions concern relations rather than fixed objects, self-evaluation should combine observation and documentation with the perspectives of children, families, educators, and community partners. A setting should not receive a high evaluation simply because it possesses particular resources; it should demonstrate how those resources are lived, shared, interpreted, and revised.

Children's participation is central to this process because children are not only users of adult-designed settings but co-producers of spatial culture. Their participation should extend beyond choosing decorations or materials to identifying meaningful and uncomfortable places, documenting barriers, proposing changes, testing spatial arrangements, and evaluating their effects. Drawings, models, photographs, mapping, guided walks, conversations, and pedagogical documentation can make the perspectives of children of different ages and communicative abilities visible (Hart 1987; Khan et al. 2020; Yilmaz Yıldırım et al. 2023). Adults retain responsibility for safety, accessibility, equity, and feasibility, but these responsibilities should not be used to reduce participation to consultation without influence. Repeated cycles of listening, redesign, use, and reflection allow children to see how their contributions affect shared environments and thereby connect spatial decision-making with democratic participation, responsibility, and belonging.

Taken together, the findings define the culture of space as a dynamic, ecologically embedded system through which material, relational, symbolic, cultural, digital, and pedagogical conditions acquire coherence in children's lived experience. The value of the framework lies in making visible both the connections and the tensions among these conditions: flexibility may conflict with predictability, safety with risk and autonomy, heritage with cultural plurality, and digital opportunity with embodied and social experience. A universal spatial model cannot resolve these tensions. They require context-sensitive, participatory, and reflective decisions. The framework thus provides a basis for studying and improving not simply spaces for children, but the cultural processes through which children, adults, institutions, and communities continually make educational places.

Although the framework was developed in the context of ECEC, its analytical scope is not restricted to children or early childhood institutions. Physical conditions, social relations, symbolic meanings, cultural continuity, digital participation, and pedagogical or institutional values shape people's relationships with environments throughout the life course. Research on place identity, place attachment, and sense of place similarly demonstrates that meanings of place are continually constructed and transformed through experience, memory, social interaction, mobility, and changing life circumstances (Tuan 1977; Proshansky et al. 1983; Scannell and Gifford 2010; Masterson et al. 2017). Combined

with Bronfenbrenner's ecological perspective (Bronfenbrenner 1979), the six dimensions may therefore be adapted to examine schools, universities, workplaces, healthcare and residential care settings, public and cultural institutions, and digital communities. Such applications could illuminate how environments support or constrain autonomy, participation, belonging, cultural recognition, well-being, and intergenerational relationships at different stages of life.

6. Conclusions

6.1. Main Findings

This study advances the understanding of educational space by proposing a conceptual framework of the culture of space in early childhood education and care (ECEC). Drawing on an interdisciplinary review of the scientific literature and national and international policy documents, it identifies six interrelated dimensions—physical, social, symbolic, cultural, pedagogical, and digital—that together shape children's learning, identity, belonging, participation, and relationships with communities and the environment.

The framework integrates concepts that have largely been examined separately, including learning environments, place identity, sense of place, cultural heritage, educational architecture, and digital environments. It conceptualizes space, place, and environment as complementary rather than competing concepts: space provides the physical and relational context, place emerges through lived experience and meaning-making, and environment encompasses the dynamic conditions that support human development. Educational environments therefore become meaningful places through children's participation, relationships, and everyday experiences.

The findings further demonstrate that the culture of space extends beyond the boundaries of educational institutions. Children construct relationships with space across homes, neighborhoods, public spaces, cultural institutions, natural environments, and digital settings. Consequently, educational quality depends not only on the design of indoor learning environments but also on opportunities for children to engage meaningfully with the wider cultural, social, and ecological contexts in which they live.

6.2. Limitations of the Study and Implications for Future Research

Some limitations should be acknowledged. First, this study is based on qualitative analysis of scientific literature and policy documents and therefore proposes a conceptual rather than an empirically validated model. Future research should examine the applicability of the proposed framework across different educational and cultural contexts and develop reliable instruments to assess the dimensions of the culture of space.

Future empirical work should operationalize each dimension without losing their interdependence. Mixed-method and longitudinal designs could combine spatial observation, environmental audits, pedagogical documentation, interviews with educators and families, children's drawings, photographs, walking interviews, and participatory mapping. Rather than asking only whether a spatial feature is present, research should examine who can access it, how it is used, what meanings children attribute to it, which identities it recognizes, and how its use changes over time. Bronfenbrenner's framework further suggests that findings should be interpreted across ecological levels, linking children's direct experiences with family–institution relations, community resources, regulatory conditions, and wider cultural values. Comparative research across cultural and socioeconomic contexts is especially important because the meaning of a 'high-quality' space cannot be assumed to be universal.

Future research should also investigate the dynamic relationships among the six identified dimensions, explore children's own perspectives on meaningful educational

spaces, and examine how physical, social, symbolic, cultural, pedagogical, and digital environments interact to influence children's well-being, participation, identity formation, and educational outcomes. Particular attention should be given to the growing influence of digital environments and artificial intelligence on children's spatial experiences and their relationships with physical places.

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