Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

NCCA

Learning environments that work: softening the boundaries

A paper prepared for the symposium,

Early Educational Alignment: Reflecting on Context, Curriculum and Pedagogy

15th October 2015

Author: Dr Margaret Kernan

Learning environments that work: softening the boundaries

Abstract

This paper draws on recent Irish and international research from a number of disciplines to identify contemporary concerns and possible future directions in relation to learning environments in the early years. It is framed around the following questions: Firstly, in 2015, what kinds of theoretical, pedagogical and societal concerns are influencing our thinking about learning environments for young children? Secondly, how do learning environments look and feel like to their users and thirdly, what kinds of research can deepen our understanding of the learning experiences of children aged 0 to 8 years growing up in Ireland? The existing research base in Ireland on this issue is limited. The questions raised at the close of the paper are designed to stimulate discussion about establishing an inter-disciplinary research agenda on learning environments in the early years.

Introduction

A belief in the influence of the physical environment and spatial arrangements on the behaviour and learning of children has had a long tradition in Early Childhood Education and Care (ECEC). It is evident in the emphasis reforming early childhood educationalists, such as Froebel, Montessori, Mc Millan, Hohmann and Weikart, and Malaguzzi placed on the design and layout of the environment and use of materials, in giving form to their beliefs about how young children should be nurtured and educated.

ECEC settings – spaces for the care and education of children - have been and continue to be designed, furnished and structured variously with health and welfare, regulatory and pedagogical intent. ECEC spaces are never neutral. They reflect explicit or implicit ideas about children, what activities they should engage in, how they relate to one another and how they should relate to adults. The same applies for primary schools.

Given its smaller scale, and frequent positioning outside formal education, there has been more scope for innovation and flexibility in ECEC learning environments, compared to other education levels[i]. Due to the scale of building programmes, the compulsory status of primary education and the State's requirement to meet substantial need for school places, building design in the primary sector is governed by pressures of cost and time of building schools, and schools are typically built, with some notable exceptions, based on a standard plan or template of uniform classrooms

(Blyth 2011; Sanoff and Walden 2012). International experience demonstrates that when new pedagogical concepts have been introduced in schools, which involve design innovations such as open plan, flexible spaces or shared areas, class teachers have rarely been involved in the design process nor trained to teach in these spaces and consequently, do not *"feel much incentive to live up to a concept that might have been promising in theory, but did not perform in everyday life*" (Kuhn, 2011: 21). Learning environments need to work for all end users – children, as well as their educators and parents. The importance of consultation at every stage in the process, from concept to design to end-use is therefore critically important.

Much of what is today taken for granted in the design and layout of centre-based ECEC settings in the West, can be traced to the writings of educationalists mentioned above and a number of apparent universal features of learning environments - at least in Europe, North America, Australia and New Zealand - are evident. These include: child-scaled fixtures and furniture; designated learning or interest areas with potential for choice (e.g. construction areas, book corners, pretend play areas, sand and water play); manipulative materials, which are plentiful and accessible to children and where there is a high level of child-material interaction; and time to be outdoors and indoors alone, in small and larger groups (Prochner et al. 2008; Reifel; 2014). These 'features' have the function of meeting the playing and learning needs of the active curious child, engaged with the physical and social world in a peer group context. A further element is the support of an attentive and responsive practitioner (Hayes and Kernan 2008; Sheridan and Pramling Samuelsson 2013), who also safeguards the safety, protection and healthy development of the children in her care.

A range of mediating factors has a bearing on design, layout and intention of ECEC environments including the particular nature of the practitioner's involvement. These include the desired visibility of young children *to* the wider community, or *in* public space outside of institutional settings interacting with other generations. It also includes institutional regimes, building regulations, beliefs of practitioners, parents and policy makers about what it is important for young children to learn and how learning is best supported, and children's agency in their engagement with the physical environment.

The absence of empirical research in Ireland during the past decade on the relationship between ECEC and school design and children's learning and wellbeing is noteworthy. This is surprising given the revisions in preschool regulations and the publication and implementation of the national ECEC practice frameworks: Aistear, the Early Childhood Curriculum Framework (NCCA, 2009) and Síolta, the National Quality Framework for Early Childhood Education (CECDE, 2006), both of which include attention to the environment. Darmody, Smyth and Doherty (2010) also remark on the scarcity of school design research and its implications for teaching and learning in Irish primary schools. Yet there is much to be gained from a spatial design analysis of learning environments. This paper aims to provide some pointers for further research.

An underlying principle in constructing the paper is a belief in the value of multi-theoretical and disciplinary scholarship in addressing critical societal concerns such as optimum environments for education and nurturance of our youngest citizens. Therefore, the paper draws on theoretical perspectives from a number of disciplines in order to illuminate possibilities for learning environments. A rather expansive understanding of learning environments is purposely pursued – the paper includes references to public and private spaces, indoor and outdoor environments, home, family day care, preschools, daycare centres, schools, health centres parks, neighbourhood cultural and arts centres.

Three questions underpin the discussion:

- *In 2015, what kinds of theoretical, pedagogical and societal concerns are influencing our thinking about learning environments for young children?*
- *How do learning environments look and feel like to their users?*
- *What kind of research can deepen our understanding of the learning experiences of children aged 0 to 8 years growing up in Ireland?*

New trends in learning environments research and design

A recent discussion with Slovenian architect, Jure Kotnik brought attention to what he referred to as a "renaissance in educational architecture internationally" over the past 10 years or so. This is particularly apparent in kindergarten architecture which heretofore, he proposed, had not been

prioritized by architects[ii]. This could be explained by a range of conflating factors such as: the global recognition of ECEC as first stage in education (UNESCO 2015) and the increase in demand for ECEC services worldwide and consequential boom in construction of ECEC buildings. Higher status being afforded to ECEC architecture is also reflected in the global attention given to prize-winning kindergarten architectural designs such as Fuji Kindergarten in Tokyo, Japan, (Tezuka Architects, 2004) and Fawood Children's Centre, London, (Alsop Architects 2005)[iii]. The emergence of a shared vocabulary between educators, architects, designers and users (Hayes and Kernan, 2008; Clarke 2010) can also be attributed to the international influence of the vision of collaborating pedagogues, architects and designers involved in the Reggio Emilia children's centres in northern Italy, who foreground environment as central in learning (Ceppi and Zini, 1998; Zini, 2005). It is important to acknowledge the accompanying focus on regulation and the large number of building, fire, child protection regulations, which architects and designers need to take into account in their educational building plans. The primary goal of Kotnik in his book, *"New Kindergarten Architecture"* a collection of 35 best practice kindergarten projects from around the world, was to provide a synthesis for architects of most salient regulations governing ECEC buildings and design concepts, whilst also illustrating the diversity in possibilities and imaginative solutions in spaces for young children (Kotnik 2010).

In 2015, studies of learning environments of young children encompasses a diversity of theoretical and applied perspectives with some cross-fertilisation of ideas from a variety of social science and humanities' disciplines evident. Exemplar books, book chapters and handbooks published in last 10 years or so include: from architecture (Ceppi and Zini, 1998; 2005; Dudek, 2001; Kotnik, 2010; OECD, 2011), architectural psychology (Walden 2015), ECEC (Greenman, 2005) environmental psychology (Rui Olds, 2000), sociology of childhood (Moss and Petrie, 2005), geographies of children, youth and families (Horton and Kraftl, 2011; Harrison and Sumsion, 2014; Brooker, 2014); cultural anthropology (Burke and Duncan, 2015). To the author's knowledge, there have only been a few Irish publications on these topic of learning environments design, e.g. the NCNA publication from 2002, "*We like this place … Guidelines for Best Practice in the Design of Childcare Facilities*", and more recently, "*Designing Primary*

Schools for the Future", a study commissioned by Department of Education and Science, and undertaken by ESRI (Darmody et al., 2010)[iv].

One of the outcomes of these broad perspectives on learning environments is the infusing of pedagogical discourse with concepts such as: spatiality; placeness; materiality; affordances of the environment; everyday life and design concepts such as aesthetics; orientation for solar gain and natural light; introverted spaces; indoor circulation; flexibility, transparency, indoor-outdoor connectedness; compatibility of building with natural terrain and the architecture of the surrounding neighbourhood and meeting places, which enhance our knowledge of children's wellbeing and experiences of learning. Global concerns regarding sustainability of the planet earth is also affecting the design of ECEC settings and schools, with more attention being paid to eco-efficiency and sustainable technologies (Buvik, 2005; Walden, 2015). Accordingly, the *"construction of the contemporary kindergarten is an act of environmental awareness with exemplary projects using sustainable materials such as wood, renewable energy resources and recycled containers."* (Kotnik, 2010: 7). A further trend in pedagogical thinking, with architects responding with design solutions is the reintegration of educational spaces with family and community.

Where does learning take place? Softening the boundaries of learning environments

Continuity and alignment between learning environments offered by the home and ECEC has been an ongoing concern for educationalists for centuries. Both Froebel and McMillan conceived the ECEC environment as an extension of the home and an opportunity for parental education. The last quarter of the 20th century saw a rapid expansion of ECEC early intervention programmes for educationally disadvantaged children to compensate for poor material circumstances and a lack of at home educational stimulation. In recent decades, shifting positioning of the power of the home child-rearing environment and the ECEC and school setting in terms of impact on outcomes for children has generated a huge research investment. Much of this research has focused on the unraveling of the complex interactions between structural and process factors of ECEC environments and child outcomes (Sylva et al. 2004; Anders et al. 2012; Leseman & Slot, 2014). One of the conclusions has been that *"only high quality ECEC can protect children against the negative effects of low quality home environments whereas low*

quality can increase the negative outcomes from children from disadvantaged homes" (Watamura et al., 2011 cited in Leseman and Slot, 2014: 317).

On the basis of their research, the authors of the EPPE study concluded that the quality of the child's relationships and learning experiences in the family have more influence on future achievement than ability, material circumstances or the quality of preschool and school provision (Sylva et al., 2004). This put the spotlight on the notion the malleability of home learning environments arguing that a positive home environment can compensate for other forms of disadvantage in young children's lives (Brooks-Gunn, 2000; Saunders, Naidoo and Griffiths, 2007; Leseman and van Tuijl, 2006 cited in Leseman and Slot 2014). The spotlight too has been put on the years zero to three as the formative years for basic cognitive and emotional skills, which depend strongly on the quality of the child-rearing environment (Shonkoff, Gardner et al., 2012 cited in Leseman and Slot, 2014; Rodriquez & Tamus-LeMonda, 2011).

With these research findings in mind renewed impetus has been given to policy interventions seeking to support parents and prospective parents in an effort to redress childhood inequalities. Such a vision of working with families with young children has been given physical and conceptual form in integrated children's services and centres offering a continuum of services to parents and children (OECD, 2012) from pregnancy through to primary school years and beyond. Notable centres in Europe, which are specifically designed to provide spaces for integrated family support 'under one roof 'and which receive international attention for their innovative design and scope include: the Ina Kindergartens in Berlin, including the kindergarten on Dresdenerstrasse in Berlin (http://www.inakindergarten.de/kitas/dresdener_strasse_film.php) with a roof garden and experiments space, and St. Thomas Children's Centre and Nursery School in Birmingham, with spaces for ante-natal, postnatal and family services and the Centre for Research on Early Childhood (CREC) (http://www.crec.co.uk/stthomascc). Initiatives in Ireland such as Young Ballymun and the Tallaght West Childhood Development Initiative are similarly conceived as integrated, multi-purpose services, which offer support to children and their families. The question arise however, how do young children inhabit these spaces? What does it feel like to be there and how do these spaces contribute to children's sense of wellbeing, learning and development?

Neglected geographies of young children

Young children's geographies – how they inhabit a ECEC space or school – have often been erased in institutional and policy ECEC discourses and there is a silence in policy and research contexts about the everyday cares, critiques and practices of very young children (0-4 years) in particular i.e. the small-scale, multi-sensuous, haptic, everyday experiences (Horton and Kraftl 2011). An important contribution that the sub-discipline *geographies of children, youth and families* is making is to *"imbue new social studies of childhood with a sense of spatiality"* emphasizing the importance of place; exploring the nature of the everyday spaces in and through which children's lives are made, including spaces for playing, living and learning and making space for the embodied experiences of children (Holloway and Pimlott-Wilson, 2011).

Horton and Kraftl's (2011) account of a Sure Start Centre in Northamptonshire, England, part of an commissioned evaluation, demonstrated how the everyday particularities and details of life at the Centre – including its textures, smells, toys, tears and laughter (a locked cupboard, bad smell of nappies, sticky handles on scooters were highlighted as significant by the children interviewed in this study), were central to the experiencing, and hence the outcomes of the provision for young children.

Research conducted by Helen Lynch (2012), an occupational therapist, explored the ways in which young children in the first 2 years of life develop and learn to negotiate objects and spaces of everyday life in the home environment. The study, based on the home context in Ireland, drew on affordance theory (Gibson, 1979) and brought into focus the infant-environment relationship. Lynch proposes a transactional model by which the physical environment is shaped by the social and vice-versa and it is through this interplay that the child moves and learns. Two characteristics of rich play environments highlighted in Lynch's research were opportunities for floor play affording stretching and arching opportunities for young babies to explore space, and platforms for older infants on which to play or to climb up on. One of the findings was that families had fewer strategies around orchestrating outdoor play compared to indoor play, which was frequently orchestrated around family routines (Lynch and Hayes, 2015 in press). A recommendation arising from this research is the need to support parents of very young children

to *"orchestrate the environment for access to the available affordances in the home setting in a way that maximizes successful interactions or just-right-challenge"* (Lynch and Hayes, 2015).

The concept of affordance (whatever it is about the environment that contributes to the kind of interaction that occurs, Gibson, 1979; Greeno, 1994) has proved to be a powerful tool in gaining insight into young children's engagement with their environment, whether at home, in ECEC or school setting[v]. The benefits of affordance as a research approach are that affordances are objective, real and physical, and they address the complementarity of the perceiver and the environment. When parents and practitioners can put themselves in the shoes of young children and perceive affordances of environments from children's point of view, shared moments of discovery are possible. The same applies to interactions between children. Researching utilized affordances along with perceived affordances allows for a critical analysis of the kind of play and activity that are promoted and constrained by adults.

Spatiality, affordances and the everyday life was also a focus of Kernan's visual ethnographic study of the outdoor experiences of young children in urban Ireland aged between one and five years (Kernan 2006). Data on children were collected via a diary account recorded by their parents of one actual day from waking to sleep which provided the starting point for interviews with parents. The additional joint viewing of photographs taken by the researcher (and in the case of the two older children, by the children) facilitated an exploration of their meaning in the context of their whole day including time at the ECEC or school they attended. The 'Day in the Life' accounts illustrated how parents changed and adapted their working patterns in order to create what they viewed as a better balance in their children's lives including times and spaces to be outdoors. In many instances, daily habitual or seemingly insignificant outdoor times and spaces such as the journey to school or crèche, or the transitional outdoor spaces at the periphery of ECEC settings, became important daily rituals, significant for both parents and children.

This study, like the research conducted by Darmody et al. 2010 in primary schools, highlighted the central importance of outdoor space in children's accounts of their school life in Ireland, on the one hand, and on the other hand, the fact that the outdoor space was rarely used for teaching and learning. Thanks to professional development initiatives linked to implementation of Síolta

and Aistear, the status of the outdoors as a rich learning environment is increasing and more young children are benefiting from the learning and development opportunities the outdoors provide (Corbett and Kernan, 2010; Daly et al. 2014). However, there is much scope for further multi-disciplinary research with respect to children's learning and development experiences outdoors both in ECEC and primary school settings as well as in the alignment across the sectors. Furthermore the experience of the Aistear-in-Action professional development initiative demonstrated that a focus on environment provided a practical entry-point to the curriculum and "one that ultimately lead practitioners to ask some fundamental questions about their practice" (Daly et al. 2014).

The conundrum of play and learning in Irish primary school classrooms

One of the enduring contested areas of learning environments for young children (0 – 8 years), whether in preschool or in the early years of primary school, has been the positioning of play with respect to children's learning (Bennett 2005). A common analytical approach has been to trace present day reality via two historical strands of young children's learning. In summary, and at the risk of over simplification, the first strand can be traced to Froebel's kindergarten, which offered an alternative to school education and which prioritized play, including outdoor play as central to pedagogy. The second strand of thinking can be traced to the beginning of the industrial revolution, in the form of infant classes or infant schools which were viewed as the start of academic learning and where large numbers of young children were taught school subjects, letters, numbers, nature study, music, dance in short lessons. Here play was restricted to breaks between lessons (Pramling Samuelsson and Pramling, 2014). Both strands of thinking recognized early childhood as distinct and young children as different to older children, necessitating a different and a more activity based pedagogical approach.

If one examines the history of early childhood education in primary education in Ireland from early 1900s to the present day, the second approach prevails in practice. However, there is a persistent discourse in curricular documents around the importance for young children's learning of play and activity and engagement with the physical environment. The 1900 *Revised Programme for National Schools,* which incorporated much of the thinking of the child-centred movement had as an underlying principle the recognition of early childhood education in its own

right. However, there were significant problems in its implementation due to lack of teaching materials, poor school buildings and no in-service training for teachers. The 1971 *Primary School Curriculum*, also based on the ideology of child-centred education, advocated activity and discovery methods and individual and group teaching rather than class teaching methods, with *"each child progressing at his own natural rate, each at the different stages of his advancement being allowed full scope to express his own personality and experience the joy of discovery…"*(Primary School Curriculum, 1971:16). In 1989, research conducted by the author, which involved interviews and observations in four Junior Infant classes indicated that there was a strong focus on whole class teacher work in areas such as reading and mathematical skills. Play as learning, or learning through play and the development of creative abilities did not appear to be valued in their own right, but were considered optional extras if time and resources allowed. Furthermore, teachers exercised control over the time and space of the children's school lives. The class teacher determined the pace with which activities were tackled and directed where and with whom the child sat. Movement around the room was restricted for most of the day. Teachers cited environmental constraints (large class size and small classrooms) and lack of material resources accounting for the gap between the intended infant curriculum and actual classroom practice (Kernan, 1989).

Jump forward to 2010, and the relationship between school design and teaching and learning within the context of the 1999 *Revised Primary School Curriculum* which also endorsed activity and discovery methods adding learning principles such as *"the child is an active agent in his or her learning; the child's immediate environment provides the context for learning"* (p. 8). Once again, and as reported in Darmody et al's study (2010) environmental features constrain pedagogy as teachers report that classrooms were too small to facilitate the active and varied learning in the revised curriculum. Children on the other hand, found the more active learning methods, group work and pair work more engaging. Amongst the conclusions of this study is that more 'traditional' whole-class teaching still dominates in primary classrooms. One of the study's recommendations is to increase the use of outdoor spaces in day-to-day teaching and using play as tool for learning and for engaging pupils in the learning process through the use of school gardens and other habitats.

With the implementation of the so named 'Aistear hour' in infant classes, it would appear that play has been identified as useful tool of integrating the various subjects of the Revised Primary Curriculum. Keane (2014) provides a first-hand account of how the function of play has been transformed in her junior infant classroom in the course of in-service training in implementation of Aistear as part of the *Aistear Tutor Initiative*,: "*Play is no longer an activity I use to keep children busy while I listen to phonics, change shared readers or organize the classroom; play is now a methodology I use to teach a range of subjects*" (p. 221). Keane reconciles working simultaneously with two curricula – Primary School Curriculum and the Aistear Framework as follows: *"the Primary School Curriculum is what I teach with Aistear offering me new approaches and methodologies along with practical ideas for how I can help my students learn"* (Keane, 2014: 215).

Despite the enthusiasm for the Aistear approach indicated in the contribution of Aistear tutors who documented their experiences in *An Leanbh Og* (2014) the position of play and children's agency with respect to their learning, use of time and space remains constrained in primary schools. It is the contention of the author of the present paper that reasons may have much to do with the image of the school teacher and teachers' reluctance to relinquish power in the classroom. It has also to do with the broader public image of the school and the transition from 'playschool' to 'big school' in Ireland. One of the conclusions of research conducted by Fallon (2015) about play and the teacher's role in the Irish primary school was that play represents a risk to teachers' professional reputations because it renders teaching invisible, is inconsistent with the systems of accountability inherent in primary schools and is not supported by stakeholders, particularly parents.

Learning environments of the future

Looking to the future, what are the trends in learning environments for young children? Reflecting the needs of learners in a 21st century world characterised by globalization, unpredictable economic and social events and rapid transformation, architects are urged to offer options "to create micro-environments which are easily appropriated and controlled by their users, while at the same time give a feeling of connectedness to a greater whole". In other words open systems, which are well connected to existing networks of learning, both virtual and

physical. ” (Kühn 2011) and at the same time are friendly, livable in, cosy, stimulate the senses and support the wellbeing of their users (Walden 2015). Applying this vision to ECEC centres, Kotnik (2010) writes of a shift from distinct playrooms, where children are organized according to age, to learning hubs and spaces to which all children in an ECEC setting have access all of the time. Zini (2005) proposes that, *“early childhood centres and the childhood environment in general constitute an enormous workshop of the senses for a child’s construction of knowledge*” (22).

The learning environment of the 21st century is envisioned as extending well beyond the school building to include all of the learning settings used by learners. The traditional design approach needs to include societal issues related to the dynamics of community, family and work and new schools and ECEC settings need to serve a broader group, from early childhood to adults. Early childhood services could have learning partners such as museums, zoos, musical groups and senior citizens (Jilk 2005). Anticipating societal challenges such as the aging of Europe and the separation of families and generations due to migration and institutionalization of care, the cross-national European project, Together Old and Young or TOY (2012-2014) explored the processes and outcomes when space and time are explicitly created for young children and older people to be together, to engage in joint activities and learn from each other in the contexts of both non-formal and formal education such as libraries, arts centres and integrated community centres providing care for both young children and older people (TOY Consortium 2013, 2014).

Concluding words

Jilk (2005) contends that the single most difficult task in the transformative process required to change our concept of what constitutes a stimulating and creative learning environment is altering the public’s image of the ‘school’. In other words what it should be, do, look like and feel like. Education and nurturing of young children is most effectively achieved through the collaboration between parents, the community, and public services. It is also effective when learning environments are designed and used as spaces for action-oriented activities, promote sensory experience, are places of encounter, and are central in the life of a community and where end users are active participants in the planning and design process. Learning environments of the future respond to lifelong and lifewide learning. Examples cited in this paper show that nurturing

and education of young children happens in diverse everyday environments outdoors as well as indoors, including non-traditional learning spaces such as community arts centres and public parks as well as the family home, in ECEC centres and at school. Given what we now know about the trajectories of learning from birth, it is also clear that to ensure equitable learning opportunities for all young children, especially for those growing up in poverty, access to nurturing ECEC settings needs to be accompanied by support to families, incorporating age-friendly and play-friendly neighbourhoods, adult education, family counseling and other family-friendly health services. There is no established tradition in researching learning environments either in the ECEC or primary sector in Ireland. The existing research base on this issue is limited. The questions which follow are designed to stimulate discussion around establishing a research agenda on this very important issue.

Questions for Discussion:

Expanding the research base on learning environments:

The paucity of research in Ireland on the design of learning environments and the relationship between environmental design and children's wellbeing, learning and development is noteworthy.

- What accounts for its neglect and what is necessary to stimulate further research in this area?

Adult-child power dynamics and children's agency in learning:

There has been some research on the structuring of children's time and space, control and power relationships between adults and children in both ECEC settings (Kernan & Devine, 2009) and in primary schools (Devine, 2003), which was conducted pre-Aistear and pre-Síolta.

- What contribution could further research on power dynamics in early years environments make to our knowledge about children's agency in the learning process in ECEC and school settings? How could this research contribute to enhancing continuity in young children's learning across ECEC and primary school settings?

Imagining learning environments of the future:

One of the messages of this paper is that 21st century learning environments extend beyond the school building to include all the learning settings used by learners. How might we envision such an expansive view of learning environments, beyond the traditional focus on the family home and the ECEC or school setting?

- What contribution could interdisciplinary research, involving fields such as geographies of children, youth and families, architecture, and pedagogy to name but a view, make in addressing the challenges and opportunities of such a vision of early learning environments?

References

Anders, Y. Rossbach, H-G., Weinert, S. Ebert, S. Kuger, S. Lehrl, S. von Maurice, J. (2012) Home and preschool learning environments and their relations to the development of early numeracy skills *Early Childhood Research Quarterly* 27: 231– 244.

Atkin, J. (2011) Transforming spaces for learning. In *Designing for education: Compendium of exemplary educational facilities*, ed. OECD, 24-31. OECD publishing.

Bennett, J. (2005) Curriculum issues in national policy-making. European Early Childhood Education Research Journal, 13 (2) 5-23.

Blyth, A. (2011) OECD looking back over 50 years of educational buildings. In *Designing for education: Compendium of exemplary educational facilities*, ed. OECD,13-18. OECD publishing.

Brooker, L. and Edwards, S. (2010) (eds) *Engaging play*. Maidenhead: Open University Press.

Burke, Rachael, and Judith Duncan. (2015) *Bodies as sites of cultural reflection in early childhood education.* New York: Routledge.

Buvik, K. (2005) Bringing the outside inside. *Children in Europe: Making space: architecture and design for young children,* 8:18-20.

Centre for Early Childhood Development and Education (CECDE) (2006) *Síolta: the National Quality Framework for Early Childhood Education*. Dublin: Government Publications.

Ceppi, G. and Zini, M. eds. (1998) *Children, spaces, relations: metaproject for an environment for young children.* Reggio Emilia: Reggio Children and Commune di Reggio Emilia.

Children in Europe (2005) *Making space: architecture and design for young children*, Issue 8, April.

Clarke, A. (2010) *Transforming children's spaces: Children and adults' participation in designing learning environments*. Routledge.

Corbett, M. and Kernan, M. (2010) Revisiting and rethinking provision for outdoor play in early years services in Ireland. *Child Links*, 3:29-34.

Daly, M., Grogan Ryan, P., Corbett, M. and Connolly, L. (2014) The Aistear in Action Initiative 2011-2013 *An Leanbh Óg*, 8: 169-200.

Darmody, M, Smyth, E. and Doherty, C. (2010) *Designing primary schools for the future*. Research Series No. 16 Dublin: ESRI.

Darmody, M. and Smyth, E. 2012. Exploring school and classroom environments in Irish primary schools. *Children, Youth and Environments*, 22 (1) 178-197.

Department of Education (1971) *Curaclam na Bunscoile: Primary School Curriculum*. Dublin: Stationery Office.

Devine, D. (2003) *Children, power and schooling. How childhood is structured in the primary school.* Stoke on Trent, UK: Trentham Books.

Fallon, J. (2015) Teachers' Beliefs about Play in Infant Classes in Primary Schools in the Republic of Ireland. PhD thesis University of Dublin, Trinity College.

Gibson, J. J. (1979) *The Ecological Approach to Visual Perception*. Boston, MA: Houghton Mifflin.

Greenman, J. (2005) Places for Childhood in the 21st Century: A Conceptual Framework *Young Children* (May)

Greeno, J. (1994) Gibson's affordances, *Psychological Review*, 101 (2) 336-42.

Harrison, L.J. and Sumsion, J. [Eds.] (2014) *Lived spaces of infant-toddler education and care* Dordrecht, Springer Science+Business Media.

Hayes, N. and Kernan, M. (2008) *Engaging young children: a nurturing pedagogy*. Dublin, Gill & Millan.

Holloway, S. L. and Pimlott-Wilson, H. (2011) Geographies of children, youth and families: defining achievements, debating the agenda. In L. Holt, [Ed.] *Geographies of children, youth and families*, Abingdon: Routledge: 9-24.

Horton, J. and Kraftl, P. (2011) Tears and laughter at a Sure Start centre: preschool geographies, policy contexts. In L. Holt, [Ed.] *Geographies of children, youth and families*, Abingdon, Routledge: 235-249.

Jilk, B.A. (2005) Design down: collaboration for long-term investment. *Children in Europe: Making space: architecture and design for young children,* 8:26-27.

Keane, S. (2014) Aistear in a Junior Infant Classroom – Putting theory into practice. *An Leanbh Óg*, 8:215-226.

Kernan, M. (1989) *An exploratory study of the beliefs and behaviours of a sample of reception class teachers: London and Dublin compared*. MA Psychology of Education Dissertation, Institute of Education, University of London

Kernan, M. (2006) *The place of the outdoors in constructions of a 'good' childhood: An interdisciplinary study of outdoor provision in early childhood education in urban setting*s. PhD thesis, College of Human Sciences, University College, Dublin

Kernan, Margaret (2014) Opportunities and affordances in outdoor play. In *The Sage handbook of play and learning in early childhood*, ed. Liz Brooker, Blaise, Mindy and Edwards, Susan, 391-402. London: Sage Publications.

Kernan, M. and Devine, D. (2009) Being confined within? Constructions of the good childhood and outdoor play in early childhood education and care settings in Ireland. *Children and Society*, 24 (5) 371-85.

Kotnik, J. 2010. *New kindergarten architecture: Guidelines + 37 case studies.* Barcelona, Linksbooks.

Lynch, H. 2012. *Infant places, spaces and objects: Exploring the physical in learning environments for infants under two*. PhD thesis, Dublin Institute of Technology, Dublin.

Lynch, H. and Hayes, N. (2015, in press) An affordance perspective on infant play in home settings: a 'just-right environment'. *Childlinks*.

Leseman, P.M. and Slot, P.L. 2014. Breaking the cycle of poverty: challenges for European early childhood education and care. *European Early Childhood Education Research Journal* 22, (3) 314-326.

Kühn, C. (2011) Learning environments for the 21st century. In *Designing for education: Compendium of exemplary educational facilities*, ed. OECD, 19-23. OECD publishing.

National Council for Curriculum and Assessment (NCCA) (2009) *Aistear: the Early Childhood Curriculum Framework.* Dublin, NCCA. Accessed at http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Early_Childhood_Education/Framework_for_early_learning/

National Children's Nursery Association (NCNA) (2002) *We like this place …Guidelines for best practice in the design of childcare facilities.* Dublin, NCNA

OECD (2012) *Parental and community engagement matters, Encouraging Quality in Early Childhood Education and Care (ECEC)* Research brief: OECD Publishing.

OECD (2011) *Designing for education: Compendium of exemplary educational facilities* OECD publishing.

Pramling Samuelsson, I. and Pramling, N. (2014) Children's play and learning and developmental pedagogy. In L Brooker, M. Blaise and S. Edwards, [Eds], *The Sage handbook of play and learning in early childhood*, 169-179. London: Sage Publications.

Prochner, L., Cleghorn, A. and Green, N. (2008) Space considerations: materials in the learning environment in three majority world preschool settings. *International Journal of Early Years Education* 16 (3) 189-201.

Reifel, S. (2014) In *The Sage handbook of play and learning in early childhood*, In L Brooker, M. Blaise and S. Edwards, [Eds], *The Sage handbook of play and learning in early childhood*, 169-179. London: Sage Publications: 157-168

Rodriguez, E.T. and Tamis-LeMonda, C.S. (2011) Trajectories of the home learning environment across the first 5 years. Associations with children's vocabulary and literacy skills at prekindergarten *Child Development*, 82 (4) 1058-1075

Rui Olds, A. (2000) *Child Care Design Guide*. Mc Graw-Hill Education.

Sanoff, H. and Rotraut W. (2012) School environments In S. D. Clayton, [Ed] *The Oxford Handbook of Environmental and Conservation Psychology*, Oxford Handbooks online DOI: 10.1093/oxfordhb/9780199733026.013.0015

Sheridan, S. and Pramling-Samuelsson, I. (2013) Preschool a source for young children's learning and wellbeing. *International Journal of Early Years Education*, 21 (2-3) 207-222.

Sumsion, J. and Harrison. L. (2014) Introduction: Exploring lived spaces of infant-toddler education and care. In L .J. Harrison and J. Sumsion [Eds.] *Lived spaces of infant-toddler education and care*, Dordrecht, Springer Science+Business Media: 1-16

Suzuki, N. [ed] (2013) *The anthropology of aging and well-being: Searching for the space and time to cultivate life together.* Ozaka: National Museum of Ethnology.

Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2010) *Early childhood matters: Evidence from the Effective Pre-school and Primary Education project.* Abingdon: Routledge.

The TOY Consortium (2013) *Reweaving the tapestry of the generations: A guide to community-based intergenerational initiatives in Europe,* Leiden: The TOY Project. Accessed http://www.toyproject.net/#!publications/c1ghi

The TOY Consortium (2014) *TOY in action*, Leiden: The TOY Project. Accessed http://www.toyproject.net/#!publications/c1ghi

UNESCO, (2015) *Incheon Declaration, Education 2030, Towards inclusive and equitable quality education and lifelong learning for all*. https://en.unesco.org/world-education-forum-2015/incheon-declaration

Vanderbeck, R. M. and Worth, N. (2015) *Intergenerational spaces*. Abington: Routledge.

Walden, R. [ed] (2015) *Schools for the future: Design proposals from architectural psychology*. Wiesbaden: Springer.

Zini, M. (2005) See, hear, touch, taste, smell and love. *Children in Europe: Making space: architecture and design for young children,* 8:22-25.

[i] This began to change in primary and secondary schools end 1970s and 1980s when the principle of flexibility and adaptability of school buildings - rearranging spaces and furniture to suit different needs – reflecting new developments in pedagogy and technology came more to the fore. However, the ongoing pressure of costs to the state associated with maintaining large stock of school buildings limited scope of what was possible (Blyth, 2011).

[ii] The formal school building has been the public building of choice in architecture training courses up to now (Jure Kotnik, personal communication, August 2015)

[iii] Both Fawood Children's Centre and the Fuji Kindergarten have also featured in editions the OECD's *Compendium of Exemplary Educational Facilities* (OECD, 2006, 3rd edition; OECD, 2011, 4th edition).

[iv] The Aistear Toolkit includes an Indoor and Outdoor Environmental Audit, http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Early_Childhood_Education/Aistear_Toolkit/The-learning-environment.html

[v] See Kernan (2014) for a review of the application of affordance theory in research on young children's environments.