



The link between physical learning environments and learning in early childhood education - A benchmarking exercise

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in early childhood education - A benchmarking exercise**

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“The English School” is in the process of designing new premises for pre-school, elementary, middle and high school. As a pre-school teacher I was involved in mapping out specific challenges in the current spaces and brainstorming on solutions for the future spaces. This thesis aims to give answers to how the physical learning environment could support learning and wellbeing of children. Learning through play, flexible transition between small and big group activities and increased children’s active agency and sense of community were the main points of interest and form the base for this thesis. This thesis is written for “The English School” and in cooperation with Isku Interior Oy. The results will be used in the ideation process around the new premises.

Initially, I deepened my knowledge on learning theories and the current conception of learning in Finland. A benchmarking exercise of three different early childhood education locations was performed. The locations were all ISKU projects and were visited during spring 2019. Each location was introduced by the manager/principal and photographed with the specific focus areas in mind. Conversations were non-structural but recorded for later reference and pictures were analyzed using deductive content analysis.

The main findings from this thesis are that active agency, sense of community, play and flexibility can be supported through specific architectural solutions and furniture elements. Shared spaces, adjustable, lower, movable and space-dividing pieces of furniture, integrated electricity and technology, white/interactive boards are some of the solutions that came up as significant.

Understanding the link between physical learning environments and learning and wellbeing helps us in our work as early childhood education teachers and will help The English School in creating a better learning environment. More research is still needed to further explore the holistic impact of spaces on learning.

Key words: Early Childhood Education, Physical learning environment, learning

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Fyysisen oppimisympäristön ja oppimisen yhteys varhaiskasvatuksessa - Benchmarking-tutkielma

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Englantilainen koulu on suunnittelemassa uusia esikoulun, perusopetuksen sekä lukion toimitilojaan. Työskennellessäni esikoulun opettajana olin mukana kartoittamassa nykyisten tilojen haasteita ja suunnittelemassa ratkaisuja tulevaisuuden tiloihin. Tämä opinnäytetyö pyrkii vastaamaan kysymykseen, kuinka fyysinen oppimisympäristö voisi tukea varhaiskasvatusikäisten lasten oppimista ja hyvinvointia. Oppiminen leikin kautta, sujuvat siirtymät isompien ja pienryhmän välillä sekä lasten osallisuuden ja yhteisöllisyyden lisääminen olivat minun mielenkiinnon kohteitani ja tämän opinnäytetyön lähtökohtia. Työ on kirjoitettu Englantilaista koulua varten ja yhteistyössä huonekaluyritys Iskun kanssa. Tuloksia käytetään uusien tilojen ideointiprosessissa.

Olen syventänyt tietämystäni oppimisen teorioista sekä tämän hetken oppimiskäsityksestä Suomessa. Kolmen varhaiskasvatuksen yksikön benchmarking-tutkielma on tehty keväällä 2019. Jokainen yksikkö oli Iskun projekti, jonka esitteli yksikön johtaja tai rehtori. Erilaisista tila- ja kalusteratkaisuista toteutettiin valokuvaus. Keskustelut eivät olleet strukturoituja, mutta ne nauhoitettiin myöhempää käyttöä varten. Kuvat tulkittiin käyttäen teorialähtöistä sisältöanalyysiä.

Tämä opinnäytetyö osoittaa, että tilojen joustavuudella sekä eri tila- ja kalusteratkaisuilla voidaan tukea lasten leikkiä, heidän osallisuuttaan ja yhteisöllisyyttään. Jaetut tilat, matalammat, liikuteltavat, tilaa jakavat ratkaisut, integroitu sähkö ja tietotekniikka sekä erilaiset taulut ovat muutamia esimerkkejä näistä ratkaisuista.

Opinnäytetyö osoitti muutaman erittäin tärkeän ominaisuuden fyysisestä ympäristöstä ja siitä, miten se on yhteydessä oppimiseen. Tämän yhteyden oivaltaminen auttaa meitä ymmärtämään paremmin fyysisen tilan sekä tila- ja kalusteratkaisujen merkitystä ja miten niiden avulla voidaan tukea lasten oppimisprosessia. Opinnäytetyö auttaa myös Englantilaista koulua kehittämään parempaa oppimisympäristöä oppilailleen. Jatkossa tulisi tehdä enemmän tutkimusta oppimisympäristön kokonaisvaltaisista vaikutuksista varhaiskasvatuksen opetukseen.

Asiasanat: varhaiskasvatus, fyysinen oppimisympäristö, oppiminen

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1 Introduction

Organizing the physical learning environment is an important part of the daily work of each early childhood education teacher. Certain characteristics of this environment influence how one can work in the environment: closeness of toilets and sinks, possibility of changing different play areas, space for small group and big group activities, material that is labeled and well-accessible by all, enough storage for material and display surface for projects... Preferably the space is inviting and colorful and needs adjustment according to the age of the children. I could continue this list for a few pages, but these are the requirements that early childhood education teachers already listed tens of years ago. However, the way the learning process is seen and the way the child is seen in this process is not stable through time nor across cultures. From this can be decided that fulfilling a basic list of physical learning environment requirements is not going to support teaching nor learning in the most beneficial way. In the National Core Curriculum for Early Childhood Education and Care 2016 (Finnish National Agency for Education 2018, 34) it is mentioned that:

“learning environments shall be developed so that the objectives set for early education and care can be achieved and support the development of the children’s healthy self-esteem as well as social and learning skills.”

What are those specific characteristics and requirements of the physical learning environment that support the current conception of learning? This question will be the red line through this thesis.

2 Thesis background

When starting this thesis, I was teaching preschool children at The English School in Helsinki. The English School is a private, bilingual and international educational institute which consists of preschool, elementary school, middle school and high school.

As an educational institution, The English School has a very specific identity: children and staff from all over the world come together in an environment where the focus is on hands-on, phenomenon-based learning, language education and respect for diversity (The English School 2020). The English School Preschool is organized for children aged five and six and has specific characteristics, such as cultural diversity and focus on language immersion.

At the moment, The English School Preschool is organized in the same building as the elementary school, and they share common spaces such as lunchroom, gym and outdoor area. Middle school and high school are located in a different address.

The ideation process of a new building, in which the whole English School could be under the same roof, started shortly after the implementation of the new Finnish National Core Curriculum and the whole staff was actively involved. During various study days English School staff was mapping out specific challenges met in the current spaces and brainstorming on solutions for the future spaces. In my own daily job, I mainly felt the need to find solutions on how to support play, enable flexible transition between small and big group activities and increase children's active agency. I saw this thesis as an opportunity to study how these goals, which are also important themes in the Early Childhood Education and Care Plan(ECEC), could be supported by the new physical learning environment and as such support the work of the early childhood education teacher. When children from five to 18 years old would be under the same roof, it also raises the question how the physical learning environment can give both an opportunity to support the specific needs of each age group as well as create an atmosphere of unity and belongingness.

As part of the brainstorm process and as a starting point for a possible cooperation between ISKU and The English School in the project of the new building, a study day for all English School teachers was organized by Isku Learning department at the ISKU premises in Espoo. During this study day we were introduced to a few innovative ISKU projects and different furniture solutions were presented. We also discussed existing research on the impact of the physical learning environment on learning and wellbeing of children.

This study day inspired me to link my thesis to physical learning environments and increase my understanding of how spaces affect us. After discussing my thoughts with the Isku Learning Director and principals of The English School, I decided to visit different early childhood education locations and benchmark usability of different design solutions considered in the setting of The English School. Isku Learning department volunteered to be involved in this work as an external adviser with Tiina Malste, Isku Learning Design manager, as main contact person.

Isku Learning is an important player in the field of ECEC environments and is involved in different innovative early childhood education environment projects around Finland and the world. Isku Active Learning® model is a pedagogically versatile model consisting of four complimentary facility and furniture solutions: Focus, Share, Study & Join.



Picture 1: Isku Active Learning® Model

Focus solutions offer opportunity for concentrated, individual work and self-directed learning. These can be integrated into a classroom so that students can focus on individual tasks as well as be involved in group learning. These solutions tailor to the needs of individuals and small groups. Share solutions tailor to teamwork, promoting the social aspect of learning. Thanks to these solutions, students can investigate and solve problems together as well as share their findings and knowledge. Study solutions support spaces to be multifunctional. They are solutions that offer flexibility to the space and can easily be changed and moved, also by students themselves, so that the purpose of a space can be adjusted to the need of the moment, promoting interaction between the users (teachers, groups and individuals). Join solutions focus on communal spaces and inspire interactions and creativity, promoting inclusion, positive social interaction and communal culture. These innovative and even playful solutions encourage creative relaxation but also self-directed studying, alone or in groups. (Isku Active Learning®)

This research will be shared with The English School of Helsinki, Isku Learning and the locations involved in the study. The results will be presented to the staff of The English School during one of their training days and be a part of the brainstorming process around the new building. However, the results are not applicable for The English School alone. With increasing challenges in Finland in early childhood education such as bigger units and growing group sizes as well as increased focus on quality, it is crucial to increase our understanding of the impact of the physical environment.

The impact of the physical space on the pedagogical activities has been rather neglected for a long time and has only recently received attention both on official level as in research (Raitila & Siippainen 2017, 282-292). Barrett, Davie, Zhang and Barrett (2015, 119) speak of a 'research challenge' in their groundbreaking study on the impact of classroom design on pupils' learning. The challenge is to better understand the holistic impact of spaces on users. To

understand how environments can support the learning of children in early childhood education, it is important to understand how learning happens.

3 Learning

In Finland early childhood education does not focus on reaching readiness in academic skills alone, but the foundation of pedagogical activity is found in the entity of education, instruction and care with emphasis on pedagogy (Finnish National Core Curriculum for Early Childhood Education and Care 2018, 76-77). This social pedagogical tradition is called the EDU-CARE-model. In this model early childhood education is seen as the base for life-long learning: learning to learn, joy of learning with placing major emphasis on play and close cooperation with families.

“The mission of ECEC is to promote holistic growth, development and learning in collaboration with the guardians.” (Finnish National Core Curriculum for Early Childhood Education and Care 2018, 16)

Pedagogical activities start from the interest of the children, which form the base of projects in which children learn through experience and in communication with each other and the environment (Kronqvist & Kumpulainen 2011, 29). Understanding and explaining mechanisms behind learning are not constant through time nor across cultures and differ according to the ruling theory and conception of learning (Koivula & Hännikäinen 2017).

3.1 Learning theories

How children learn, grow and develop and how we can support them in this process is under constant research. The theories of learning can be grouped into four: behaviorist, cognitive, constructivist and sociocultural theory (Kronqvist & Kumpulainen 2011, 20).

The behaviorist theory of learning focuses on behavior and sees learning as a change in the amount or the kind of behavior (Kronqvist 2017, 17). The consequences of behavior are considered the motivators for shaping the behavior and learning. Positive consequences will enforce a certain behavior whereas negative consequences will diminish the likeliness of the behavior to be repeated (Kronqvist & Kumpulainen 2011, 21).

Teaching happens through breaking down a certain subject or topic in small steps and offering the learner clues as in how to proceed and solve the challenges. Learners are seen as active participants. However, very little attention is given to learning through modelling nor gives this theory enough credit to the critical problem-solving abilities and independent skills of each learner (Kronqvist 2017, 17).

The cognitive theory focuses on the data processing ability of each individual. How is data processed, how is it stored in the brain and how is it brought back to memory (Kronqvist 2017, 17)? Learning is seen as changes that happen in individual cognitive processes (Kronqvist & Kumpulainen 2011, 21). In this theory there is very little attention to the importance of learning through 'doing' and 'playing' nor to the social environment, context and cultural influences (Kronqvist 2017, 17; Kronqvist & Kumpulainen 2011, 21). In the socio-cognitive theory influence of the environment gained in importance, but the learning remains seen as an individual process. In this theory, equally little attention is placed on the learner as an active creator of knowledge, but more as a receiver of input (Kronqvist & Kumpulainen 2011, 21).

With constructivist theory, the belief in the individual as an independent, skillful, reflecting and self-guiding entity becomes stronger (Kronqvist & Kumpulainen 2011, 21). Marx was an important name in constructivism and an influential Marxian constructivist thesis says that "man has no fixed human nature but continually makes himself and his consciousness through productive activity" (Moll 2013, 4-5). Constructivists believe learning is always tied to the context and see each child as an active agent in their own learning process. The process of learning is seen as starting from a realization of lack of skill or knowledge within the child and this triggers the child to look for answers. This is the motivation behind the idea that the learning environment should offer the child enough challenges because this triggers the inner need to resolve and look for answers (Kronqvist & Kumpulainen 2011, 21). Constructivist theory also points out that young children have a natural curiousness and enthusiasm and each child is capable of learning. Because the focus is so strongly on learning through 'doing' and 'experiencing', it is also important that the learning environment is supporting this and is as authentic and real as possible. An authentic environment offers children challenges that are close to 'real life' situations and 'tempts' children to solve them offering enough tools and scaffolding to do this. An authentic learning environment also helps children to transfer the learned matter to new circumstances with children in constant dialogue with their environment. To achieve the best results, the learning environment is built based on the age, developmental level and previous learning experiences of the children, respecting the fact that each child has an own way of dealing with new information and learning (Kronqvist & Kumpulainen 2011, 20-27).

The importance of the social and cultural environment on learning is even more pronounced in sociocultural theory about learning and development. Central in these theories is the child as active agent, building of identity, functioning as part of a community and creating collective knowledge and wellbeing. Learning is seen as dynamic and ubiquitous: happening everywhere (Kronqvist & Kumpulainen 2011, 20-27).

3.2 Current conception of learning

Children are the adults and citizens of the future. The Finnish conception of learning is based on the current understanding of what kind of early learning will prepare children best for facing the increasingly complicated demands of society in the future (Kronqvist 2017, 10). Technology is seen as one of the megatrends and an inevitable part of education, healthcare and professional life of the future. However, to give balance to technology, it is important to focus on skills such as communication, empathy, cultural awareness and creativity (Kronqvist 2017, 11).

The 2018 Finnish National Core Curriculum for Early Childhood Education and Care has been based on the conception that children learn as active agents in interaction with others and their environment. Children grow, develop and learn based on their natural curiousness through playing, observing, exploring, revising, expressing themselves and copying what they experience all around them (ECEC 2018, 21-22). Learning is a holistic process, happening everywhere, engaging all senses and connecting all skills. To achieve the most balanced and optimal learning, children should be offered different challenges, arts, lots of opportunity to play and all this in a safe, healthy environment with a strong atmosphere of togetherness, where the child knows that he or she is accepted and heard as he/she is (ECEC 2018, 21-22). When linking the current conception of learning in the Finnish National Core Curriculum for ECEC to theories of learning, I see influences of the different theories with the biggest influence coming from the sociocultural and constructivist theory: the belief that each child is an active agent in shaping its' own knowledge and future simultaneously placing focus on the learning environment and social interaction, as well as the belief that learning happens everywhere. Kronqvist (2017, 18) describes how children gradually adapt to their cultural environment through language, stories, games, knowledge and skills. The child's knowledge and identity are formed through interaction with his/her community and as such learning and development happen in the social and cultural context as a dynamic and holistic process (Koivula & Hännikäinen 2017). As a result, the surrounding culture and community are also formed through the participation and agency of its' members. Kronqvist (2017, 18) describes how, in the cultural historical approach, that this is the mechanism with which a culture evolves and develops.

In the following chapters, some of the main themes of the conception of learning are explored in more detail. The choice of these themes is based on my work and challenges met as preschool teacher at The English School and my interest in seeing how these themes can be supported in the physical learning environment.

3.3 Participation

‘Active agency’ and ‘participation’ are reoccurring terms when studying the current conception of learning in Finland. They point at a strong shift in our view on the role of children in their own learning process. From passive ‘receivers’ of knowledge to ‘active agents’ in the creation of their own knowledge. Each child is seen as active, curious and able to explore his/her world and learn through this exploration (Helin, Kola-Torvinen & Tarkka 2018, 13). Children plan, implement and evaluate their actions together with ECEC professionals and through this process they “learn interaction skills as well as the significance of shared rules, agreements and trust” (Core Curriculum of ECEC 2018, 27). Supporting a child’s active agency is more than listening to and seeing and appreciating a child. Only if a child has power in decision-making processes, can we speak of participation. An important aspect is that the child is aware of its’ own power and trusts in its’ possibility to make a difference (Core Curriculum for ECEC 2018, 27).

At the heart of active agency is experiencing the right to an own identity and the understanding that each child is unique and worthy just the way he/she is (Helin, Kola-Torvinen & Tarkka 2018, 12). The right of children to be heard and to have a say in all decisions concerning them is protected through the UN Convention of the Rights of the Child (Council of Europe), the Finnish Constitutional Law (731/1999, 6§) and the Finnish Act on Early Childhood Education and Care (36/1973, 2a §). The Council of Europe is placing child participation even at the core of their children’s rights agenda.

Children participation has different dimensions. Leena Turja (2018, 65-79) describes the first dimension as the degree of empowerment of each child. Children have power when they feel they can influence their environment and the actions, initiate activities, ideas and be truly involved in the decision making in matters that concern them. To reach this empowerment, children need information about their environment, about the goals and about the background of the activities. The child’s age influences how big the participation can be, but even very young children can be ‘truly’ heard. In the Finnish National Core Curriculum for Early Childhood Education and Care (2018, 24) is also mentioned that a child’s self-image develops, self-confidence increases and social skills needed in communities develop/shape through participation and involvement. Participation also has a societal dimension. Education aims to support children in becoming citizens who thrive in society.

In Finnish society, democratic decision-making, communication and social skills are important (Kangas, Vlasov, Fonsén & Heikka 2018, 153). Active and responsible participation and involvement are also seen as creating the foundation for a sustainable future (Core Curriculum for ECEC 2018, 26).

Fonsén and colleagues (Kangas et al 2018, 170) mention that active agency is not only a trait for individuals but also for groups. On individual level, participation means the recognition of own strengths and gaining the courage and ability to influence matters. On group level it means doing things together, belonging to a community and taking responsibility for this. Participation is believing and thoroughly and comprehensively understanding each human being's equality and parity.

3.4 Sense of community

'Sense of community' and 'belongingness' have become important concepts in our society and point at the quality of interaction between humans (Koivula & Eerola-Pennanen 2017). As any human, a child can not be seen separate from the environment in which he/she grows and learns skills, values and cultural heritage (Kronqvist 2017, 10). Sense of community amongst young children creates a safe and accepting learning environment in which children approach new tasks, play and learn in a brave and self-confident manner (Kronqvist 2017, 11).

The importance of belongingness shines through in the Finnish Act on Early Childhood Education and Care (540/2018) and the Finnish National Core Curriculum for Early Childhood Education and Care (Finnish National Agency for Education 2018). The National Board of Education (2018) states that "positive emotional experiences and interactive relationships promote learning. The peer group and belonging to a group are key to the child's learning and participation." The Finnish Act on Early Childhood Education and Care (540/2018) lays down provisions on the right of a child to early childhood education and care, organization and provision of early childhood education and care. Sense of community and belongingness comes up especially in the following aim:

"8) develop the child's interpersonal and interaction skills, promote the child's ability to act in a peer group, and guide the child towards ethically responsible and sustainable action, respect of other people and membership of society" (Finnish Act on Early Childhood Education and Care (540/2018)

Each social contact is important to the development of a child, but especially friendships. Children learn social skills in these relationships, such as the base of cooperation and emotional expression and control. Children also learn to discover and form their own identity and get the opportunity to take on different roles (Lyytinen, Korhonen & Lyytinen 2001, 122; Koivula 2010, 19). In a safe and trusted group, children also learn how to deal with conflicts and controversy (Koivula 2010, 20).

Merja Koivula (2010, 17) refers to Petrovski (1985) in her doctoral thesis and defines that a community differs from other groups because of the positive emotional bond between its' members. This positive, emotional bond is born out of joined activities and experiences.

Based on this, one could decide that, in order to increase the feeling of togetherness in early childhood education groups, it is crucial to organize the kind of activity which enables positive, emotional bonding. And no other activity is more appropriate than play.

3.5 Learning through play

Play is a very important part of childhood, which is protected through the rights of the child:

” States Parties recognize the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts.” (United Nations, Article 31)

In early childhood education and care, a major focus is placed on play. When learning happens through play, it supports joy and wellbeing of the child, as well as social relationships and interaction (Koivunen, Siippainen & Eerola-Pennanen 2017, 1). Viittala (2006, 10) stresses how play is a powerful, pedagogical tool, which functions as the starting ground for friendships, joined activities and discovery.

In the book 'Leikin Pikkujättiläinen' (Piironen 2004, 14), Helenius defines play as "action, which happens in an imaginary situation." Imagination is an important dimension of play because it liberates the person of the restrictions of time and place, guides the activity and helps the player to assess its' own actions and reality (Piironen 2004, 14). Brian Sutton-Smith (2008, 117) writes how play is a synthesis of emotional expression and regulation. Another duality, which children learn through play, is the difference between private and public. In play children create an 'own life' and learn that this is his/her own private 'world'. A playing child learns that there is a difference between these own thoughts (subjectivity) and the rules and tales of the environment (objectivity) and through this experience learns to understand the complexity of social life (Suton-Smith 2008, 118-119). Hakkarainen (2008, 100) writes about this same duality and explains how children collect knowledge and experiences from the society and reality and use these to create their own reality. Through this they try to understand and experience their social environment. Hakkarainen (2008, 99-100) points out that play is action created by children, with building stones found in the surrounding reality but creatively adjusted to the needs of the child. However, Hakkarainen (2008, 100) stresses the important role of adults in the development of play.

Even though play has sometimes been placed as the opposite to learning, the modern conception places play in the center of the development of thought, intellectual and social decision-making skills, language, communication and creativity (Ojala 2015, 141).

Participation, active agency, sense of community and play are important concepts in the current conception of learning in the Finnish Early Childhood Education and Care and they are all tightly linked to the learning environment.

4 Learning environments

4.1 Definition

As mentioned earlier, the current conception of learning links learning tightly to cultural and social context and this emphasizes the importance of the child's community and learning environment. With learning understood as a wide concept, it defines a 'learning environment' as any place where learning happens (Kronqvist & Kumpulainen 2011, 45-46). The National Core Curriculum for ECEC (2018, 32-33) emphasizes that the concept of a learning environment contains physical, social and psychological dimensions. The learning environment is not fixed, but is 'built' in everyday situations through interaction between the children and adults. The learning environment is built during daily activities and situations and this process is influenced by society and cultural aspects (Raittila & Siippainen 2017, 283).

In the National Core Curriculum for Early Childhood Education and Care 2016 (2018, 34) it is mentioned that:

“learning environments shall be developed so that the objectives set for early education and care can be achieved and support the development of the children's healthy self-esteem as well as social and learning skills.”

The Finnish National Agency for Education (2018, 34) describes that the learning environments of early childhood education and care should be healthy, safe and development-oriented and should promote learning. Learning environments refer to “the facilities, locations, communities, practices, and equipment which support children's growth, learning and interaction.”

If the learning environment is to support learning and children are seen as active agents in their learning process, then the learning environment should be 'learner centered' (Land, Hannafin & Oliver 2012, 3). Land et al (2012, 3) stress the importance of rich, authentic environments in which tools are available for children to solve problems, self-direct and create. They describe four core values of student-centered learning environments: centrality of the learner in defining meaning, scaffolded participation in authentic tasks and sociocultural practices, importance of prior and everyday experiences in meaning construction and access to multiple perspectives, resources, and representations (Land et al 2012, 4-5).

When the learner has a central role in defining meaning, the environment needs to support the learner to construct meaning actively. Helin, Kola-Torvinen and Tarkka (2018, 13) mention the importance of the learning environment to be appropriate for the age and development of the children, but to offer sufficient challenges so that learning can happen. When a topic or matter is new to the learner, the learner needs guidance and structure in making decisions, this process is called ‘scaffolding’ (Land, Hannafin & Oliver 2012, 5). Authentic tasks and sociocultural practices focus on learning in real-life situations, taking ‘problems’ from the child’s immediate ‘context’ and, in doing so, giving immediate practical results of the learning. Keeping the purpose of this thesis in mind, focus will be on the physical dimension of early childhood education environments for young children.

4.2 Physical early childhood education environments

The requirements mentioned in the previous chapter also apply for the physical aspect but during the design process of the physical ECEC spaces, special attention should be given to ergonomics, ecological qualities, comfort, accessibility, lighting, indoor air quality and tidiness. The Finnish Education Evaluation Centre FINEEC is responsible for developing the evaluation of Early Childhood Education and Care in Finland. In their report on foundations and recommendations for quality management in ECEC (Vlasov et al. 2018, 47-48) only limited attention is given to the quality of the physical ECEC environment with a focus on hygiene and functionality. However, they do stress that the physical environment and materials impact the pedagogical activity. The Finnish National Agency for Education (2018, 34) is more specific in its’ demands of the learning environment. Children should play an active role in the planning of the learning environment and their ideas, play and efforts should be visible in the environment. The environment should be flexibly changeable and adjustable so that it can support all the pedagogical objectives for early childhood education and care for children with different needs and of different ages as well as for changing group sizes. The learning environment should provide opportunities for children to be physically active, play, explore, rest, express themselves through art and experience art. Flexibility of the space is important as it allows children to act in different group sizes, which enables each child’s opportunity to participate and interact. Other important aspects of the learning environment are the promotion of equity, gender equality, linguistic development, language awareness and cultural diversity (Core Curriculum Guidelines for ECEC 2018, 32-33)

Equally important for holistic learning, growth and development of each child is the bigger learning environment, amongst which playgrounds, yards, natural spaces and museums. These spaces offer opportunities for physical activity, exploration, nature and multiple opportunities of learning (Core Guidelines of ECEC 2018, 33). To limit the focus this wider learning environment is not included in this thesis.

Organizing the physical early childhood education environment and, through this, influencing the goal-oriented pedagogical activity within the space is part of each ECE professional's daily work (Raitila & Siippainen 2017, 282-292). However, certain physical features of the space can influence children's well-being and learning without the requirement of the teacher's interventions, as a growing body of research suggests.

4.3 Characteristics of physical learning environments

Certain characteristics of the physical learning environment have been raised in past and current literature and are considered to be of importance when it comes to influencing wellbeing and learning. In this chapter, I want to give an overview of these characteristics.

The idea for this thesis started from hearing about a key study by Barrett, Davies, Zhang and Barrett (2015). In a holistic, multi-level, quantitative research they studied the impact of classroom design on pupils' learning outcomes in England, UK. They discovered in their HEAD research (2015) that the impact of the physical environment on learning outcomes can account for as much as 16 percent. This research focused mainly on lower elementary schools, but children aged six were already included in this research, which means preschool age children in Finland. This makes the results from the study appropriate for this thesis.

Barrett and colleagues (2015) group a large set of physical environment features into three dimensions: naturalness, individualization and stimulation.

4.3.1 Naturalness

'Naturalness' is based on human's response to healthy, natural aspects of the environment. Barrett and colleagues (2015, 129) conclude that the 'natural' factors of temperature, light and air quality have a significant influence on pupil's learning. Kati Vaajanen (Tampere University 2018) studied the early childhood education learning environment from the viewpoint of kindergarten managers, teachers and architects in her master thesis. She comes to the conclusion that using open spaces and glass surfaces will not only bring nature and daylight inside but adds to safety, as it facilitates supervision (Vaajanen 2018, 89).

4.3.2 Individualization

'Individualization' is based on human's desire to interact with spaces and add individual preferences. Barrett and colleagues (2015, 119) confirm that displaying children's artwork, photos and crafts promotes the sense of ownership and so do specific, unique architectural aspects, such as a unique shape (T or L-shape), intimate corners or embedded shelves for display.

Play-based learning needs to be reflected in the design of the room, with varied learning zones. According to Barret and colleagues (2015, 129) this is more important than the size of the space.

4.3.3 Stimulation

Equally important is to reach an appropriate level of stimulation, with a correct balance between order and stimulation for any given activity. ‘Stimulation’ points out “the various levels of stimulation appropriate to users engaged in different activities.” Clutter should be avoided. As an example, bright and intense colors are better for highlights and smaller accents rather than being the main color of the space (Barret et al. 2015, 129).

4.3.4 Flexibility & adjustability

Vaajanen (2018) places a specific interest in how physical solutions of the ECEC space can support pedagogical activities, which makes her case study research very interesting for this thesis. Her results show that flexibility and adjustability are the main supporting features for pedagogy. Flexibility in the physical ECEC environment means that spaces can be quickly altered in size, lighting and furniture solutions. This can be reached by allowing spaces to be interconnected as to create a larger space and closed again to create smaller spaces, for example through sliding doors, screens, big curtains, movable furniture pieces, collapsible furniture, dimmable lights and ICT equipment (Vaajanen 2018, 84-85). The pedagogical motivation behind the request of flexibility is that it supports the ECEC objective of increased participation of children and the focus on working in small groups and pairs. It also caters to the new custom within the Finnish ECEC of sharing spaces. One group does not necessarily have an ‘own’ space anymore, but the same space is shared by different groups (Raittila & Siippainen 2017, 282-292). However, sharing spaces adds challenges to timing.

According to Vaajanen (2018, 85), architects are already considering the lifespan of the ECEC building during the design process and the possibility of adjusting the space to altering needs. Building solutions play a role in this process, as well as choice of durable materials and ICT solutions. One possibility that is kept in mind during the design process is that the space may be also adjustable to a completely different audience or purpose, such as service home for elderly.

4.3.5 Purpose

The role of specific spaces within the ECEC unit came through as significant for pedagogical activities: gym, kitchen, dining room, media room, workshop spaces (Vaajanen 2018, 85-86). Teachers and daycare management pointed out how important these spaces are in relation to everyday pedagogical action and diversity, mainly in regard to physical and media education and pedagogy of play (Vaajanen 2018, 85-86).

The space for physical activity should not be used for different kinds of activities, according to Vaajanen (2018, 86) because it will limit the ease with which children can run and be physically active without restrictions. Simultaneously, teachers and daycare managers brought up the importance of using other spaces in the unit to tempt children to be physically active: for example, a climbing wall in the hallway and soft flooring in parts of the unit. Another specific space, which received attention in the research by Vaajanen (2018, 86-87) is the dining area. Having meals in an assigned space has, according to the teachers and daycare managers in the study, many advantages, such as creating more flexibility for the use of the activity spaces and more flexible time schedules. This solution adds flexibility and a day rhythm which is more on the conditions of the children and not on supportive actions such as cleaning schedules.

The use of play areas, which can be created by the children or the professionals, is a prominent feature in the current Finnish ECEC. It enables a freer use of different spaces throughout the larger ECEC unit and allows the professionals to be where they are most needed (Raitila & Siippainen 2017, 282-292). Hallways are also important spaces for pedagogics, keeping in mind that children learn to become more independent in dressing, hygiene and taking care of own belongings (Vaajanen 2018, 87).

4.3.6 Sense of community & belongingness

Sense of community is an aspect that can be supported through many solutions: joined dining area, big gathering space for joined events, a shared outdoor area, shared special areas (such as children's kitchens). Connectedness of teachers and families can also be supported through physical solutions: a joined teachers' room, a shared hallway where parents meet. However, the amount of entrances is a feature that splits opinions. Where one entrance increases a sense of community, it may cause difficulties with noise and crowdedness. In a similar manner, a joined outdoor area increases 'togetherness', but may also pose a threat to safety for the youngest users (Vaajanen 2018, 89). Opening school spaces to evening activities will increase the connectedness of the school to the surrounding community (Vaajanen 2018, 87-88).

Early Childhood education organized in schools receives separate attention in the research by Vaajanen (2018, 87-88). In this set-up it is important to pay extra attention to the smooth usage of the different spaces. The feeling of ‘belongingness’ is important as is teaching the children to be attentive to one another and to age differences. The strive towards a sense of community should show in the solutions of the spaces and their use.

4.3.7 Participation

To support children’s participation and need to explore, they should be able to reach all materials and surfaces. Placing of items and height of cupboards and pegs is an important feature in relation to pedagogical objectives (Vaajanen 2018, 88-89). Valkama (2018) studies the quality of early childhood education settings in her pro gradu research using observation based on the ECERS-R (The Early Childhood Environment Rating Scale-Revised) tool. Using the ECERS-R, Valkama (2018) gathered quantitative data concerning different aspects of early childhood education environments. She concludes that different play areas, where children can freely reach material and organize their play, were too poorly present. Material was in closed cupboards, sometimes even in locked storages and children always needed adults’ help to get these.

One dimension of participation is collaboration. Collaboration is also an important aspect in learning, as Kangas (2010, 41) points out. Marjaana Kangas (2010) has written her dissertation around the school of the future, considering innovative learning environments for pre-primary and primary education. The focus of her research is on “innovative indoor-outdoor technology-enriched play and learning environments where learning can take the form of content creation as well as physical games and play”, which she calls playful learning environments (PLE). This research is very interesting for the current study because of its’ focus on innovation and pedagogical groundwork of the environments. She writes how collaboration emphasizes knowledge co-creation and encourages motivation and cognitive engagement. Another feature is the importance of collaboration and socially-shared learning as a counter-balance for the more traditional individual activities. The learning environment should afford innovations and provide multiple learning activities and emotional experiences, providing to children’s well-being. As a main feature, the learning environment should contribute to the joy of learning (Kangas 2010, 135 - 143). Vaajanen (2018, 86) also points out the importance of collaboration between the designers and the future users of the space. It should be a process of ‘participation’ and ‘dialogue’, in which the wishes and needs of the users are clearly heard and taken into consideration.

4.3.8 Technology

Raittila and Siippainen (2017, 282-292) mention how new habits and customs within the Finnish ECEC create new demands on the spaces. One such challenge is the need to adjust to changing technological demands. How can educational institutes keep up and have such an environment that is capable to adjust to the rapid changes in technology? This same question was asked by Marjaana Kangas (2010, 22) and addressed by the architects in the study by Vaajanen (2018, 88). However, for ECEC teachers and management, this aspect was less stressed in the context of pedagogics. As an explanation, Vaajanen (2018) points out the relatively small role of ICT in ECEC on this moment, mainly limited to an interactive screen, laptop and camera. Teachers were mainly concerned with the placing of these items and the opportunity for children's participation.

Outi Schumilov (2017, 53-55) studied the pedagogical environments in Finland and the Netherlands and came to the conclusion that, for example, technology was relatively little used in Finnish settings even though technology is strongly mentioned in the goals and objectives of ECEC. A similar conclusion was made by Nummela (2016, 64). Miia Nummela observed and rated ECE Environments using the Early Childhood Education Rating Scale-Revised in her master thesis (Jyväskylä University 2016).

4.3.9 Creativity & Innovation

Kangas (2010, 22) explains the importance of focus on creativity and innovation, placing them in the core of learning societies. The concept of learning in Playful Learning Environments is defined through creative and playful learning. Creative learning is building and applying knowledge in a creative, mind-on and hands-on way and this across the curriculum, both on individual level as in social interaction (Kangas 2010, 36-38). Kangas (2010, 38) ties innovation and imagination to creativity. Playful learning refers to learning through the whole body and places the child as an active participant in the learning process. Following qualities are listed as important for creative and playful learning: creativity, playfulness, narration, collaboration, emotions, media richness, embodiment and physical activity. Each of these qualities should be enabled within the learning environment. (Kangas 2010, 41- 66)

4.3.10 Emotions

In one of her dissertation studies, Marjaana Kangas (2010, 104 - 110) asks pre-primary children what their ideal playful learning environment would be like. Results show that children design play environments, play 'worlds', which "facilitate physical activities with friends, are close to nature and are emotionally rich and vivid" (Kangas 2010, 105).

The importance of emotions is a reoccurring theme in the studies by Kangas (2010), linking emotions to imagination and creativity, narrative thinking and all human activities in general (Kangas 2010, 113-114).

5 Benchmarking exercise

5.1 Benchmarking

Benchmarking is widely used in technology, economy and manufacturing whenever companies strive for change, improvement and innovation (Gurumurthy & Kodali 2008). It is not a research method, but a management tool, which has become very significant for companies in attaining or exceeding their performance goals. Benchmarking allows learning from best practices and understanding the processes by which they are achieved and is as such an effective approach of change (Gurumurthy & Kodali 2008). It is a positive, proactive process to change operations and become the best of the best (Camp 1998).

Tuominen (2016, 9) describes benchmarking as

”the process of identifying, understanding and adapting outstanding practices from organizations anywhere in the world to help your organization improve its performance.”

Even though the concept of benchmarking originated in the business world, it has been applied in a number of ways and in different areas, such as education (Henderson- Smart & colleagues 2006). Because the aim of this thesis is to aid in the process of creating a ‘better’ space for The English School and to learn from existing, innovative projects, I decided to perform a benchmarking exercise.

According to Tuominen (2016, 10) benchmarking can be applied to any aspect of an organization but in order to achieve significant improvements, it is important that the benchmarking topic supports the overall purpose.

5.2 Benchmarking purpose

The purpose of this benchmarking exercise is to support the design of the physical learning environment for the Preschool of The English School. The focus is on understanding which features of the physical space support certain key elements in the current conception of learning, such as participation of children, sense of community and learning through play.

Another specific area of interest is on what kind of solutions support flexible adjustment from small group to big group activities. These elements were selected based on challenges faced as a preschool teacher in The English School.

Benchmarking, as defined above, is a good way to observe and compare different design solutions, link them to the elements of learning and check their usability for the specific needs of The English School.

5.3 Benchmarking process

Henderson-Smart and colleagues (2000) describe four important steps in the benchmarking exercise:

1. Determine what to benchmark
2. Identify key performance indicators
3. Identify benchmarking partners
4. Determine data collection

In the initial phase of the thesis I decided to benchmark different design solutions in relatively new early childhood education spaces in Finland. Tuominen (2016) states that a benchmarking exercise starts from understanding the own situation, weaknesses and strengths. Based on this understanding, it is possible to define key performance indicators.

5.4 Weaknesses, strengths, needs and demands of the English School Preschool

The English School offers full English immersion early childhood education to children from the age of five. Families from all over the capital region apply and children go through an aptitude test during the spring before enrolling. The test gives an idea about the 'readiness' to function in a bilingual school and children are selected into the program based on the results. Regardless of the aptitude test, a specific challenge of The English School Preschool is the diversity of the group when children start at the age of 5. Children have very diverse cultural backgrounds, have different home languages and families have different expectations and visions on ECEC. The group never has a 'shared' language at the start of preschool. This specific feature places great focus on creating a sense of community. The English School Preschool environment is a language rich environment with focus on working towards one common language, which is English during preschool years. However, Finnish language is equally supported so that children can function in the bilingual school. A weakness in the current premises are the limited facilities for preschool. In total there are 4 groups of preschool children with 25 children in each group. Two groups are in The English School in the morning and the two other groups are in the English School in the afternoon.

This means that two groups share the same classroom. The current solution limits flexibly moving from big group to small group activities. Equally difficult is the fact that all materials and projects always need to be cleaned away at the end of the morning/afternoon to make space for the next group. This often harms long-term project work. Another specific challenge is the group size of 25 children in one group, led by one ECEC teacher and helped by one assistant. A challenge faced in the current premises is optimal use of the space and sufficiency of space for organizing different learning and play areas.

Aside from creating a sense of community within the child's own preschool and preschool group, The English School Preschool is also part of the bigger English School community. This is both a strength and a challenge. A strength because it facilitates smooth cooperation between preschool and elementary school, both for children as for staff and facilitates the transition. A joined mission and vision bring all levels of The English School together. However, it also places preschool in a tight 'timetable-plan' because preschool shares common spaces with the rest of the school, such as dining area, outdoor area and gym.

5.5 Locations

When selecting benchmarking partners, a few criteria were followed. The locations should be relatively recent locations, built after 2010 and have a special focus on the physical learning environment. This would increase the possibility that solutions observed in the locations would be better than the solutions currently in use at The English School. Benchmark locations were found in communication with ISKU, after which I contacted the principal of the daycare/school, discussed the scope of the thesis and agreed on practical matters of the visits, such as date, length of the visit and people attending. I also obtained a research permit for each location. The units were visited during spring 2019 and Tiina Malste, Learning Design manager at ISKU joined on each visit. A colleague preschool teacher from The English School joined us on the visit to Kalliola School.

Because this research aims to support the creation of an ECEC environment for The English School, focus was on environments created for and in use by children aged five, six and seven. In the selection of the locations, it was also important to include preschools that are part of an elementary school. Three units joined in the research: Huhtasuo Kindergarten, Kindergarten 'P' and Kalliola School.

Huhtasuo Kindergarten in Jyväskylä opened its' doors in 2013 and is part of the new school campus including two special schools for handicapped children, comprehensive school and a sports arena. The complex was built as a Life Cycle project. Kindergarten 'P' in Jyväskylä is a nature-oriented daycare located in a log building.

It opened its' doors in autumn 2018 and offers early childhood education to 96 children. Kalliola School in Hollola includes preschool and lower elementary school for a total of 500 pupils and was designed with the new OPS 2016 in mind. The idea of typical classrooms was abandoned for open and adjustable spaces. Co-creation between architects and teaching staff happened through ideation beforehand. Once the plans were drawn, teachers could give feedback and wishes, which were taken into consideration. Teachers were involved in creating a few 'new' pieces of furniture, which were then taken into production by ISKU.

5.6 Data collection

The visits lasted one to two hours and consisted of a guided tour through the location by the manager/principal. I took pictures of different spaces and furniture solutions keeping the main subjects of interest in mind: participation, sense of community and play, as well as overall presence of learning. The choice of these concepts was based on own reflection of challenges faced in my daily work as preschool teacher at The English School. They are also important themes in the current conception of learning. Some findings from literature research were also added to the results, such as technology and flexibility in environment, because smooth transition between small group and larger group activities is also very significant in The English School Preschool setting.

Conversations were non-structured during these visits and we discussed practical reasons behind solutions, pedagogical reasons or use of certain solutions. To aid remembering the conversations and supporting interpretation of the pictures, conversations were recorded. Another reason of recording was that some of the visits were performed in Finnish, which is not my strongest language and this way, I could calmly relisten the conversations and transcribe. All recordings were destroyed after transcription.

5.7 Ethical considerations

Kari, Niva and Malmberg (2011, 105-108) list the most important ethical considerations when performing benchmarking. These considerations and their application to this thesis are listed below:

Legal compliance: Observations and conversations were focused on the pre-agreed subjects of participation, sense of community, play and overall presence of learning. Research permits were obtained before the meeting and information is processed as agreed with participants. Participants were informed that conversations would be recorded, transcribed and erased as well as pictures would be taken. Pictures were taken without any children or staff.

Exchange of information: The scope of the benchmarking exercise is defined and limited and all parties involved are aware and informed about the purpose and scope. Information is exchanged openly and an agreement was made with each partner that the final thesis will be shared with them.

Confidentiality: All information exchange is treated confidentially. Discussions between people have been recorded and transcribed after which recordings will be permanently deleted.

Use of information: Information acquired will only be used for the purpose of this thesis.

6 Preschool Project: My Dream School

Increasing participation of the children in my preschool group was a major objective to me during spring 2019 and this was the main driver behind a project around 'my dream school'. This project was performed originally separate from this thesis, out of interest to see how children would describe their ideal physical learning environment. However, based on the fact how important children's active role is in the planning of their learning environment and how important it is that their ideas, play and efforts would be visible in the physical learning environment (Finnish National Agency for Education 2018, 34) I decided to add the results from that project to this thesis.

The project existed of children brainstorming together, exploring different schools all over the world and then drawing their own creation, their own 'Dream School'. Admittedly, using the word 'dream' may have added to the use of imagination by the children. Two groups of 25 preschool children were involved. Children worked alone, in pairs or in small groups and drew their ideas on large pieces of paper. They expressed their thoughts, ideas, dreams and feelings behind their creations and teachers wrote down their exact words. Children also had the opportunity to share their ideas with the rest of the class.

7 Results

The pictures were analyzed using deductive content analysis (Tuomi & Sarajärvi 2018, 113-117). The predefined areas of learning created the frame and content of the pictures was reflected against this frame. Recorded conversations helped in classifying design and furniture solutions.

7.1 Active agency and participation

During the visits it became clear that one of the most basic solutions for reaching increased participation is organizing the environment in such a way that children can reach and organize the material independently.



Picture 2 and 3: Kindergarten 'P' children's room

In 'P' this was reached by low pieces of furniture, which could be moved and on which material could be adjusted according to the group, the theme or the focus of the moment. Children could reach all material and create own 'play areas' and display discoveries and projects, as shown in the picture below.



Picture 4: Kindergarten 'P' display wall

Low pieces of furniture were also in use in Huhtasuo Kindergarten and Huhtasuo Kindergarten manager mentioned that these pieces of furniture allowed constructions and creations to be preserved without having the floor covered. This allows cleaning to happen even in the middle of projects.

In all visited locations, 'child' sized buffet tables were present in the lunchrooms, enabling children to serve themselves. Children decide what and how much they eat, empowering them in this daily activity and offering them the opportunity to create healthy food habits for themselves. Kalliola School has children from preschool and lower elementary school using the same lunchroom. To ensure that each child can function independently, there is one higher and one lower buffet table, and the lunchroom has different kinds of tables and chairs, allowing everybody to find a comfortable spot to sit.



Picture 5: Kalliola School - buffet tables.



Picture 6: Kalliola School - lunchroom

In the Huhtasuo School, a separate kitchen was created for children to cook and bake. This is not such a standard solution in many early childhood education units but offers children opportunities to bake and be active in different kitchen activities without being limited by the usual adult action in the kitchen.



Picture 7: Huhtasuo Kindergarten - children's kitchen

With focus on increased participation, the manager of Huhtasuo Kindergarten mentions the importance of white boards. White boards should be placed on the level of children and children should be able to use material such as markers and pictures in documenting planning, executing and assessing thoughts, ideas and activities.



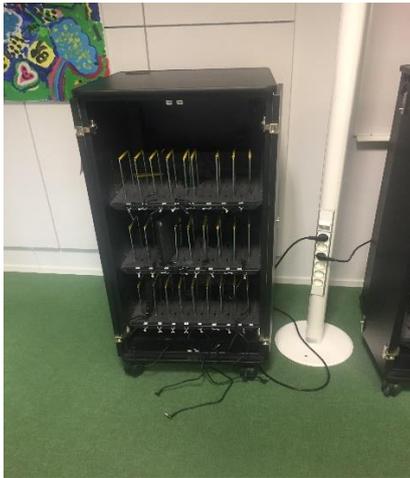
Picture 8: Huhtasuo Kindergarten - white board in the circle area.



Picture 9: Kalliola school - white boards as classroom dividers

During the visits, the possibility and the value of interactive boards were discussed. Huhtasuo Kindergarten was designed before the common use of interactive boards and that is the reason behind using 'simple' white boards. White boards led the conversation to technology and the possibility of interactive boards.

Technology was discussed as playing an important role in supporting children's active agency. However, the presence of technology was limited to tablets, computers and phones. In all visited locations, preschool and older children had free use of tablets for planning, researching and documenting own work and projects. Tablets were not as much in use by the younger children.



Picture 10: Kalliola School - tablet charging station

In the Kalliola School pupils were responsible for returning tablets to the charging station.

Certain design solutions were also mentioned to be hindering active agency of children. In Kalliola School the lockers in the hallway for preschool children were too high, so that children could not reach their own belongings, needing adult help to reach anything stored on top of the coat hangers.



Picture 11: Kalliola School - Preschool lockers

7.2 Sense of community

In the Kalliola school, preschool groups function in the same building as the lower elementary school. They have 'early years' groups ('alkuopetus'), in which preschool, first and second grade children learn together. This way of education enables a completely different kind of community, with preschool children strongly belonging to the rest of the school. The 'open plan' solution of Kalliola School enables also a different kind of community, which forces staff but also pupils to work closely together in planning and execution of education but also in communication and in being considerate to each other. 'Belongingness' was the main driver behind the design of the 'open school'.

Aside from shared teaching spaces, there is also one big dining area in Kalliola School, as was discussed earlier. The solution of one lunchroom for the whole unit was also used in the Huhtasuo Daycare and Kindergarten 'P'. These spaces are rarely used for other activities than breakfast, lunch or snack. Huhtasuo Kindergarten Manager mentions this has the additional bonus of creating flexibility in the schedule, when projects don't need to be cleaned up and tables freed for lunch.



Picture 12: Huhtasuo Kindergarten - lunchroom



Picture 13: Kindergarten 'P' - lunchroom

On both pictures can be observed how the tables are normal sized tables, but the chairs are adjusted so that children can climb up by themselves. This allows children to act independently, even at young age.

Kalliola School is built on the principal of togetherness and openness and doesn't have traditional classrooms at all. This principle of openness is followed through on all levels within the school, having the principal, vice-principals, secretary and youth workers sharing one open office.



Picture 14: Kalliola School - office

When visiting Kalliola school there were also a few less obvious elements, which pointed at 'community' and could be increasing the sense of togetherness. One element was a piece of art, which children had created together in a workshop and which was on the wall in the hallway. Another element was the use of identical bags in the hallways. Children had a bag in which they could store their personal belongings.



Picture 15: Kalliola School - hallway art



Pictures 16: Kalliola School - hallway bags

7.3 Play & overall presence of learning

The ruling concept of learning stresses the importance of play and the 'overall' presence of learning situations. Play was mentioned as central to learning in all visited locations, with even lower elementary school children in Kalliola School having daily opportunity to play. Specific solutions were play areas, which could be created by children or by adults.

Low pieces of furniture on which creations could be left without disturbing cleaning of the space were mentioned as important design solutions. Pieces of furniture which can be moved are equally important as well as pieces with which children can create an own play area, such as magnetic acoustic elements.

Hallways offer ample opportunities for playing and learning. Staff make dressing up, undressing and transition moments into pedagogical learning situations, but the use of number carpets, pictures and mirrors add to the learning opportunities in these spaces. Hallways are made inviting to play by placing play furniture on child level. Again, these pieces of furniture were often equipped with wheels to add flexibility. Another very usual solution was the use of stickers on hallway floors or carpets, which invite children to be physically active.



Picture 17 & 18: Huhtasuo Kindergarten - hallway



Picture 19 & 20: Kindergarten 'P' - hallway

In Kalliola school there was not such a clear division between classrooms and hallways, using each area and space to the maximum. In each space areas were created which allowed bigger or smaller groups of students and children to work together, but also corners for individual work or simply spending time together in between classes.



Picture 21: Kalliola School - lockers



Picture 22: Kalliola School - Room within a room

Kalliola school had many open spaces and within these spaces, smaller areas were built using 'acoustic houses'. These created a room within a room. Light fixtures were placed inside these 'houses' to offer sufficient lighting and children found a calmer, more quiet place to work inside these acoustic houses, alone or in small groups.

7.4 Flexibility of environment

One of the main design solutions to support flexibility of the physical learning space is the use of furniture that can be moved. Some items were already mentioned earlier such as the cupboard and low table for blocks in Kindergarten 'P' (picture 2 & 3). Another piece of furniture are movable trolleys, good for storing and displaying as well as dividing spaces.



Picture 23: Kalliola school - trolley

Another important solution is furniture that can be used as ‘space divider’



Picture 24: Kindergarten ‘P’ - cupboard on wheels

Picture 25: Kindergarten ‘P’ - Bench

The cupboard on wheels as seen in Kindergarten ‘P’ serves as cupboard, space divider, display and white board and can be easily moved thanks to the wheels underneath. The bench on the other hand is both a clever sitting arrangement for many children as well as a movable room divider.



Picture 26: Kalliola School - Seating options.

Different kinds of seating arrangements and table solutions with adjustable height create flexible spaces, where children can make own decisions as where and how they sit or stand. The picture above is taken in Kalliola School and shows lots of different seating options: low and high pillows, bean bags, chairs as well as tables of different heights.

In the Kindergarten 'P' unit, there were certain pieces of furniture with which children were able to create their own space. On the picture below can be seen how children build a little tent out of magnetic acoustic boards.



Picture 27: Kindergarten 'P' - Magnetic tiles

Another important solution is creating the opportunity to open up spaces. In the picture below, the stage of Kalliola School can be opened up to the gym and to the dining area through use of sliding doors. This gives the possibility to create one very big space for joint events.



Picture 28: Kalliola School - Stage

7.5 Technology

There were not many 'new' solutions observed in which technology was incorporated in the design solutions. In Kalliola School, electricity plugs were embedded in the pupils' lockers so they could charge their phones. This was a piece of furniture specifically designed for Kalliola School and taken into production by ISKU.



Picture 29: Kalliola School - Locker with integrated electricity

Tablets were in use in all units. In Kalliola school, the charging station was available for pupils.



Picture 30: Kalliola School - Tablet charging station

7.6 Children's ideas - My Dream School

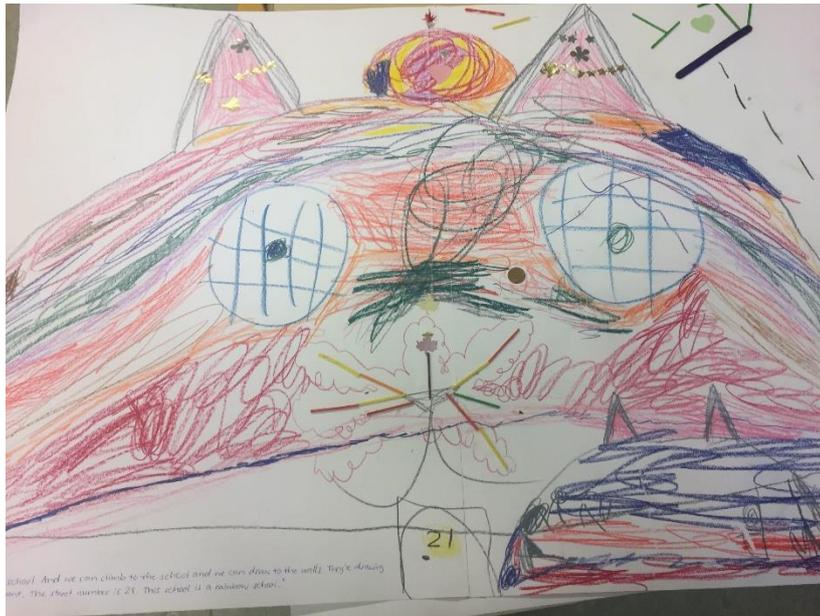


Picture 31: My Dream School - School with different floors

In the picture above, a group of three children incorporated all their wishes in different floors: a Hop Lop floor, a Toy Shop, a Halloween room, a food store and an 'Upside Down room'. This picture gives a very good idea on what is important to the preschool children of

The English School and many of these topics reoccur in many of their creations: opportunity to be physically active (Hop Lop), imagination (Halloween, upside down space) and play (Toy shop floor). Food is also a topic that returns in many drawings.

Children often broke away from traditional structures, drawing buildings in different shapes, for example in the shape of a cat, as in the picture below.



Picture 32: My Dream School - School shaped like a cat

“This is a cat school. And we can climb to the school and we can draw to the walls. The street number is 21. It is a rainbow school.”

This was one of the only creations that included animals, but here as well physical activity was present, as well as creativity: being able to draw on walls and making the space personal.



Picture 33: My Dream School - Natural elements

“Strawberry rain and a rainbow school. There’s a play house. There’s a mommy in my dream school.... I like that strawberry rain, sometimes blueberry rain, sometimes raspberry rain.... And there is the board, it is a green board. There’s a storm.”

In many pictures ‘natural’ elements were present: rain, snow, sun, storm, rainbows and big windows. The importance of these natural elements to preschool children was not something I had expected to find so strongly present in the creations of preschool children. Children also seemed to enjoy stepping away from traditional rules and elements at school: not a white board, but a green board, drawing on walls, a room in which everything is upside down...



Picture 34: My Dream School - School with candles

“My dream school is very colorful and there is snow. On the house there are candles and there is sun and there is two swimming pools and a tiny baby flying.”

Also in this picture, physical activity is present as well as the importance of color and natural elements.



Picture 35: My Dream School - Rainbow

“There is a rainbow in the sky and there is snow. There is children doing matematiikka”

Another observation made from the creations of children is how strongly children represent their dreams for the future: police or making it to the moon, as portrayed in the following pictures.



Picture 36: My Dream School - Police Station

“a police station because I want to become a police”



Picture 37: My Dream School - School in space

“I would love a dream school what is in the moon because I want to go to the moon. Flags on the moon and ice cream.”

This points out how young children already link school to their future and how it can be the key to fulfilling their dreams. Another observation made from the children’s creations is the importance of food. The presence of a food store, different berries in the form of rain, ice cream.... Social aspects and what kind of community they want to have is also part of the creations: a slide for two people, friends, a school only for girls, mommy present at school...



Picture 38: My Dream School - Slide for two

“This is a swimming school. This is the dressing place and this is the door and a waterslide for two....and these come to swim. They fight because no boys can come.”

In the following picture occur certain aspects that seemed important to many children: the use of color and the idea of ‘beauty’.



Picture 39: My Dream School - Ice cream

“Outside there is an ice cream store. The sun is shining and the school is really beautiful and we get to wear beautiful dresses”.



Picture 40: My Dream School - Color and imagination

“ Here is a uima-allas and here is a lot of windows and the stairs are going up and up and here is a kummitus and an antenna and a pool... and music and the kaappi sings”

As in many pictures, this ideal school is a combination of physical activity, imagination and light.



Picture 41: My Dream School - Sports

“I have a urheilus school and we do whatever we want. Here is a tv and a slide.” “My dream school is my home and I look at television.”

“it is a castle, it has a pool. The rain is caught into the house and into the machine and then into the pool”.

Children don't think within conventional boundaries when designing and creating but they do think about solutions to certain practical problems. The child placing the swimming pool in his castle school created a drain system through which rain could fill up the swimming pool.

8 Discussion

The selected locations offered different solutions in how the selected objectives of the current ECEC curriculum could be supported through the physical learning environment. It would have been optimal to visit more than three locations, but different kinds of preschools were represented in this selection. Kindergarten 'P' is a more traditional kindergarten, where preschool is part of the daycare. Preschool children visit the local lower elementary school but are not a part of the school community.

Huhtasuo Kindergarten and Preschool are part of a larger school community, but function in their own premises without sharing common spaces. Kalliola School is an example of how preschool is integrated into the lower elementary school community. Even though preschool will be organized in the same premises as the rest of The English School, the current plan is not to create 'joined' early years as in Kalliola School. Another difference between The English School and Kalliola School is that English School Preschool will function in the same premises with lower elementary school, but also middle school and high school. Regardless of organizational differences between The English School and the visited locations, many solutions were observed in supporting learning.

'Active agency' and 'participation' are key concepts in the current conception of learning in Finland. Creating opportunities in the physical learning environment for children to be actively involved in planning, implementing and evaluating their actions is important to reach the goal of children learning in interaction with their environment (Core Curriculum of ECEC, 2018, 32-33). The solutions observed in the visited locations were furniture pieces, which allow material to be stored on child level. A big part of the pieces was equipped with wheels and could be moved, giving flexibility to the space and allowing children and adults to adjust the organization of the space to specific needs. Low pieces of furniture also allow creations and projects to be continued and on display without disturbing practical matters such as cleaning of the space. Most of the furniture pieces could also function as a space divider, adding to the adjustability of the space.

Flexibility and adjustability are characteristics of learning environments found to support pedagogical activity and learning objectives. When linking this thesis to the Isku Active Learning® model which was shortly described in the introduction to this thesis, I see the strength of the model in how it stresses flexibility and adjustability of the furniture solutions of each space. A space may be built with a specific focus in mind (Share, Study, Focus or Join), but surprisingly simple solutions may increase the usability of the space as well as allow the users to adjust the space to the need of the moment and as such support the active agency of the users.

Another important design item both supporting flexibility and active agency were white boards. Children had free use of these boards, with markers and pictures. Children could plan, draw, observe, share and adjust when needed and white boards were placed on child level. When reflecting upon the use of white boards, it has traditionally been a very 'teacher'-used piece of furniture in a classroom. Giving children more space and time to show their ideas seems indeed a strong tool to show children how valuable their input is. Children learn to visualize their thoughts and ideas and share them with their peers. This approach enhances the child's self-confidence and self-image (Helin, Kola-Torvinen & Tarkka, 2018, 12).

A more up-to-date solution for white boards would be interactive boards. Own thoughts and 'needs' for learning, need to be scaffolded so that children can research and find answers to their questions. The ample availability of material to do this is important. It was rather surprising how little ICT solutions were observed during the visits. This observation is supported through literature (Schumilov 2017, 53-55 ; Nummela 2016,64). Tablets were observed in use in two of the locations visited, with children also responsible for the care of the devices. Tablets were used for planning, implementing and documenting projects. However, tablets were not used for sharing creations with the guardians. Tools for sharing creations, ideas and findings are important when keeping in mind that each child feels how valuable their input is, increasing a child's agency in the process. Kindergarten 'P' has a communication platform between ECEC staff and families. However, this platform does not allow children to share their work or findings. To take a step further from individual tablets, and to support the societal dimension of participation (Kangas, Vlasov, Fonsén & Heikka 2018, 153), could be the use of 'big tablets' or shared use of tablets, where children are 'forced' to communicate, share and make joined decisions. Kindergarten 'P' was waiting for such a large 'tablet' incorporated in a low table.

In Kalliola School there were pieces of furniture, which had integrated electricity. One of the pieces created for Kalliola School and manufactured by ISKU is the locker, which has an electric plug in the back. Otherwise technology was mainly in use by adults. In Huhtasuo Kindergarten groups had own laptops and computers were available in teacher rooms.

The Huhtasuo Kindergarten manager pointed out that active agency is also supported by allowing children to put their own work on display, even if it does not look the way adults would prefer. 'Individualization' and displaying children's artwork, photos and crafts promotes the sense of ownership (Barret and colleagues 2015, 129). This importance of sense of ownership seems in contradiction to the tendency to move away from 'own' classrooms or spaces, as came up in Kalliola School. Literature shows that sharing the same space by different groups is a general new custom within the Finnish ECEC (Raitila & Siippainen 2017, 282-292).

During the visits, both Kindergarten 'P' as Huhtasuo Kindergarten still used 'own' rooms ('kotypesät' was used in Huhtasuo), though many shared spaces such as hallways and gym areas were used more flexibly. This is an interesting question: what is more influential on a child's wellbeing and learning? Having the opportunity to individualize the space they learn in or to have the space flexibly adjusted to the needs of different groups? This is an interesting question also for The English School, because two different preschool groups have been sharing the same space. Vaajanen (2018) points out in her research that flexibility and adjustability would be the most important features for supporting pedagogical activity. However, this

brings us back to the necessity to offer specific design solution which allow children to adjust the environment to their own needs.

A solution that came to mind while working on this thesis are digital displays of work. Digital displays can offer the flexibility but also be a great tool for sharing and involving families, for example displays in hallways. In a bigger location such as The English School it can also be a source of togetherness and community to see own work at display in shared spaces. Digital displays on walls, without using screens could offer even more flexibility.

'Sense of community' and 'belongingness' amongst young children creates a safe and accepting learning environment in which children approach new tasks, play and learn in a brave and self-confident manner (Kronqvist 2017, 11). This aspect of learning is supported through shared spaces, such as dining areas. In all observed units dining areas were created so that children could act independently: serving themselves, getting on chairs themselves. Where dining areas were shared by children of different ages, different kinds of tables and chairs were available, as well as buffet tables of different heights. Another solution could be to use tables and chairs that can be altered in height, so they can be adjusted to the user.

Findings from literature concerning specific spaces and their role in supporting pedagogical activity was confirmed during the observations. Gym area and lunchrooms were only used for this purpose while simultaneously using other spaces to invite children to be physically active and play such as hallways.

Sense of community and belongingness were the main drivers behind the design of the open plan architecture of the Kalliola School, as well as 'joy of learning'. Kalliola school has no fixed classrooms for each group nor many actual walls. Design solutions are used to create spaces for each group and affect acoustics, such as acoustic pieces of furniture, movable walls, sliding doors, glass, full floor carpeting. While visiting the school, the culture in the building and the possible connection to the architecture was discussed. The physical environment 'forces' professionals working in the school to communicate, to work more closely together in planning and implementation and moving towards 'shared teaching'. This creates a deeper level of professional community. The principal of Kalliola School points out that there were equally signs that concentration amongst children is better in this kind of space as well as a reduced amount of problematic behavior. Interesting to mention is also that the concept of openness was used throughout the school and even office spaces were open offices.

During the visits it became clear that creating a sense of community and togetherness is not only a matter of big design solutions or architecture of the building. Small design solutions could add to the feeling of community, such as artwork created by the whole school community and on display in a central place or giving children a similar bag for their belongings. This made the hallway look very 'unified' and gives an image of community.

Community is defined by the positive emotional bond between its' members (Koivula 2010, 17). This positive, emotional bond is born out of joined activities and experiences and as such the environment should allow these activities. In Kalliola School this was made possible by a multipurpose stage/gym, which could be opened towards the dining area as well as the gym. This allowed the whole school to be together for events or performances. Kindergarten 'P' also had a sliding door between the dining area and the gym area, allowing a bigger space to be created for joined activities and parties. Another example of joined activity and a good solution in creating both sense of community and participation, is the children's kitchen in Huhtasuo Kindergarten.

In all observed locations there was a teachers' space, which increases sense of community amongst staff. Shared hallways were pointed out in literature as increasing sense of community amongst parents. In all visited locations, it was opted to create different entrances and hallways. From this can be decided that reducing crowdedness and noise in favor of smoothness of movement and flexibility in timetables is preferred over creating a space where people meet. It also allows that hallways can be used as play areas and areas to be physically active, which happened both in Huhtasuo Kindergarten as in Kindergarten 'P'. These are good examples of creating learning and play areas everywhere in the units. Vaajanen (2018, 87-88) mentioned in her research how opening school spaces to evening activities will increase the connectedness of the school to the surrounding community. This kind of community sense was mainly discussed in the Kalliola School, which holds a public library and a youth cafe organized every afternoon.

'Play' is a major focus of the Finnish ECEC. Opportunities of play were present in all locations, even higher grades of the lower elementary school of Kalliola had opportunity to play. The main observation in Kindergarten 'P' and Huhtasuo Kindergarten was the overall presence of play areas, so not only restricted to the 'own rooms'. These different play areas allow different objectives of the ECEC curriculum to be reached. Play and learning was possible in all areas of the units and children had opportunity to organize and alter their play areas.

The role of furniture was observed to be of major importance in inviting children to play and move, but also to calm down and concentrate. During the visit to Kindergarten 'P', the importance of color was discussed. Kindergarten 'P' was using mainly neutral colors but toys and individual items were often in stronger colors. One reason is the creation of 'calmth', which is beneficial to all children but definitely to children who are hypersensitive.

Kronqvist and Kumpulainen (2011, 46) stress the importance of involving children in the design process of the physical environment: the best learning spaces and environments (a wider

concept) are created when children and adults cooperate. Children are the final users in the space and are experts on their own learning process.

Through drawing, telling and building they can offer ideas on how a child-centered environment can support the learning. When visiting the locations, it seemed like they were mainly adult-created but elements were added to give children the opportunity to alter the space to their own needs, such as magnetic acoustic elements to build small spaces, movable furniture and more.

The preschool project around 'My Dream School' gave a very interesting view on what matters to children in their learning environment. Imagination was strongly present, often combined with hobbies, interests, wishes and dreams for the future. Children created outside of conventional boundaries and wanted to purposely break some conventions as well: green boards instead of white boards, drawing on walls or climbing on the walls. Beauty and color were matters many children thought about and added to their creations, as well as social settings: the presence of friends, parents, slides for two, a school only for girls.... There were emotions portrayed as well, both happy and angry. The two most present features, however, were the opportunity to be physically active (sports, swimming pools, climbing, flying...) and the presence of light (window and sun) and other natural elements. Almost each creation hinted to nature in some way (trees, weather conditions, flowers, rainbow) and this was somehow a surprising find to me. When reflecting the results of The English School Preschool children's creations to the study done with preschool children by Marjaana Kangas (2010, 104 - 110), there seems to be lots of overlap. She concluded in her study that preschool children create learning environment which "facilitate physical activities with friends, are close to nature and are emotionally rich and vivid." (Kangas, 2010, 105).

The overall conclusion from children's creations is that they don't think within conventional frames. The impossible becomes possible and by doing so they open the eyes of adults to think outside of the box. And this is maybe one of the main reasons why children should be involved in the ideation process.

9 Conclusion

Early Childhood Education and Care (ECEC) in Finland aims to support holistic growth and development in close cooperation with guardians. Pedagogical activity starts from the interest of the children and builds on hands-on learning in close communication with each other and the environment. Some of the main concepts in the process of learning are active agency and participation of each child, sense of community and the holistic character of learning. These

concepts were the starting point of this thesis, because they link to challenges I experienced as a preschool teacher at The English School.

When a new learning environment is developed, as it is the case for The English School, “ it shall be developed so that the objectives set for early education and care can be achieved and support the development of the children’s healthy self-esteem as well as social and learning skills.” (National Core Curriculum for Early Childhood Education and Care 2016 (2018, 34)

The English School strives towards being an institution where children learn phenomenon-based, where language plays an important role as well as respect for diversity. How can the physical learning environment support some very important pedagogical objectives as well as the specific character of The English school?

During the benchmarking exercise solutions have been observed which can help to achieve the objectives for preschool children as well as for integrating preschool groups into the bigger unit of The English School creating as such a true community. First of all, children should be actively involved in the planning of their learning environment. This is an important part of increasing children’s active agency and participation. Aside from including children in the ideation process, solutions and furniture elements should be added which allow children to change and adjust the learning environment in cooperation with staff. Lower, movable and space-dividing pieces of furniture, integrated electricity and technology, material within children’s reach and easy access to technology and other sources of information should be present. Having the ideas, play and efforts of the children visible in the learning environment adds to the feeling of ownership. Preferably children are responsible for the displays and technology can offer solutions when different groups use the same spaces, as will possibly be the case in The English School.

Increasing sense of community and togetherness are of crucial importance when combining different levels of education. It is also a crucial condition to respect for diversity, which is a solid part of The English School identity. This can be achieved by architectural solutions such as creating more ‘shared’ spaces, the use of sliding doors and interconnecting spaces but also furniture solutions such as bigger pieces of furniture which create a room within a room, movable pieces of furniture and ICT pieces, which all allow the space to be adjusted to both big and small group activities. Sense of community can also be achieved through smaller, more subtle signs of unity, such as artwork. Sense of community amongst staff is achieved by having a teachers’ room and connecting the school to the community at large by opening up the school doors to evening activities, and people of all ages from outside the school community.

Opportunities to be physically active, play, rest, explore and be creative must be present all over the unit, not limited to classrooms. However, there seems a unanimous agreement on having specific spaces for specific activities, such as lunchrooms and gym areas. This allows for more flexible use of the other areas. It is important to keep in mind that areas in use of adults and children of different ages should be adjusted so that everybody can function comfortably and independently.

While visiting different locations, discussing with professionals working in the locations and with professionals responsible for designing them, it inevitably happens that the connection is made between the physical space and the actions, behavior and feelings of the people in the space. Even though this thesis focused on the physical learning environment, it seems impossible to disconnect this with the cultural, psychological and social learning environment. This is a good moment to link back to Isku Learning. ISKU sees the Active Learning Model ® as a guide in the design process to guarantee that the physical learning environment forms a goal-oriented unity with the virtual, digital and social learning environment (ISKU 2020).

When a space is different and innovative, does it influence the way we act in it? Do people become more creative and do they think more outside of the box? Can the architecture of a building and the design solutions influence our professionalism as teachers and the wellbeing and learning of children? Do open space solutions cause children to focus better and be more respectful? More research still is needed to gain an answer to these questions.

Practical circumstances have limited the amount of locations visited. More locations would have enriched the findings even further, but the selected locations were a good representation of different early childhood education settings in Finland. Regardless of the limited results, this benchmarking exercise has pointed at a few very important features of the physical environment and linked them to the different aspects of learning. Understanding this connection helps us in our work as early childhood education teachers and will help The English School in creating a better learning environment. It can also help any early childhood education professional in understanding the importance of the physical space, the furniture solutions, how we use them and how they can support the learning process.

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