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Schemes and Sustainability: An Ecological approach to Early Childhood Education and Care

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Ecology is deeply engrained in the day-to-day pedagogy, as well as the curriculum practice of Fullbrook Nursery School in Walsall. The school offers 220 places for children aged 2-4 in a locality that offers challenges in terms of social deprivation and unemployment, with 89% of children below their age related expectations in all areas of the EYFS on entry. But Fullbrook is a highly effective preschool, and was the first preschool to be accredited as a SchemaPlay™ setting in February 2020. In October this year they also gained their OMEP (UK) Early Childhood Education for Sustainable Citizenship (ESC) Bronze Award.

Debbie Bradley and Andrina Flinders attended SchemaPlay training for trainers, and then trained and supported the whole school team in gaining their individual SchemaPlay practitioner accreditations. Each practitioner provided evidence of the effectiveness of their practice in supporting a child's learning and development through SchemaPlay. This involved the submission of learning journey case studies and one of these journey's is briefly outlined here as an inset (Maggie's).

SchemaPlay also provided ongoing support and self-audit tools to facilitate the whole setting developments that were required to gain both the SchemaPlay accreditation and the OMEP UK Education for Sustainable Citizenship (ESC) Bronze Level Award. As a result of their auditing for the OMEP UK Award, Fullbrook's development plan focused on extending their engagement of parents in visits to the nursery, and in the identification of ESSC related schemes, the provision of locally produced independent snacks, the involvement of the children in material and resource conservation efforts, and the provision of greater diversity in their small world cultural figures. The introduction of an aquarium also provided a means by which they could promote the children's understanding and care of another species, and community engagement was also extended through visits to a local care home, hospice, a summer fete, and through engaging in local fund raising events for local causes. The "Spring Chickens' visits to a local residential care home were particularly successful, with the young and old co-constructing their learning together, sharing ideas and thoughts, which were all respected and appreciated, contributing to improved well-being for all those involved.

In addition, to achieve the OMEP UK ESC Bronze Award, the Nursery engaged families in support of children's learning beyond the setting and at home. This was supported by the use of the OMEP-UK ESC Award Passport and supported by the first five bronze level "I Care… ESC activity booklets". These provide simple no cost activities that broadly address the UN Sustainable Development Goals through the three pillars of Social-Cultural, Economic and Environmental Education, through Emergent Literacy and Numeracy Education for Sustainability. The passports also support parents in understanding of the UN Convention of the Rights of the Child and the Goals for Sustainable Development.

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An outline of Maggie's Learning Journey

In different areas of the nursery Maggie was often observed collecting items and putting them into different containers and boxes. This indicated that she had a 'containing' scheme. She was also frequently observed playing in the vegetable garden. She took a special interest and delight in the bugs and worms that she dug. I initially responded to this by seeding the water play with model minibeasts and some nets and jugs that she could contain them in. I invited Maggie: "Maggie I have seen that you really like little animals, and I have found you some containers that you might like to put them in." "Look spiders! There's a big one!" …"I found a ladybird" She then began counting how many: "1,2,3,4,5,6,7,8,9,10".

Her counting and the reference to the size of the spider opened up the possibility of Maggie being introduced to the scheme of 'grading' (spiders by size). I further seeded the environment by adding an investigation area with minibeasts and encouraged Maggie to come and look. Maggie eagerly pointed to the pictures, naming many of them and talking about her experiences: "My mummy, she throws the spiders away outside". This provided me with an opportunity to reinforce the message by saying that we should always care for the wild animals around us. As Maggie pointed to two butterflies, she said: "That's the same" which demonstrated her use of a 'matching' scheme. Her interest in butterflies led me to seeding her a book about their life cycles which might have encouraged further interest in rotation/sequencing, and it also led me to provide a series of wildlife card matching activities.

I suggested we could look for butterflies and other bugs in the garden. I seeded the outdoor environment with bug and minibeast challenge cards, provided her with a bag to put the cards into and modelled what to do on a 'minibeast hunt'. Maggie was eager to lead the minibeast hunt and continued with this independently with some of the other children joining in. As expected, she always carried the bag to put the pictures in when she had found them. Her motivation for 'containing' provided additional support for the activity. Several other children wanted to join in and Maggie was happy to take turns and named the minibeast pictures for them as each was found. From this hunt Maggie decided that she could draw one of the minibeasts. She wanted to draw a ladybird and asked for help. I modelled how to draw it and pointed out how many legs it had linking to the challenge cards. Maggie drew her ladybird, giving it 6 legs and spots.

Maggie had enjoyed looking at the butterfly life cycle books that had been seeded, and was starting to recall the life cycle as a story; explaining in order what happens first and then what comes next. I therefore provided her with butterfly life cycle sequencing cards. Maggie thoroughly enjoyed positioning the cards in order (supported by the life cycle books and puzzles) and telling

the story of the life cycle from the beginning to the end.

Maggie's learning journey integrated significant developments in her self-motivation and esteem, language, literacy, mathematics and understanding of the world, and in encouraging the other children to care and provide support for the animals the activity also supported her emergent sustainable citizenship.

Catherine Andrews (Key worker)

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SchemaPlay

SchemaPlay™ pedagogy is based upon Csikszentmilhayi's (1990) research on the importance of 'flow' and the 'optimal learning experience' of free-flow play; it is also grounded by what we consider is Ausobel's (1978) 'prime directive' for education; that all new learning must be anchored in some element of prior learning; and by Piaget's distinction between a child's operative 'Scheme' and a figurative 'Schema'. SchemaPlay training supports practitioners in recognising the 'flow' that occurs when a child is fully, and joyfully immersed in an activity: When the child is intensely engaged in the moment, drawing upon their operational schemes (what they can already do), and their figurative schemas (what they already know) in their self-chosen play. Following, and extending the typology of schemes that were first identified by Chris Athey and Tina Bruce, SchemaPlay also identifies the particular schemes that provide essential prerequisites for the achievement of the EYFS outcomes, and the guidance practitioners require if they are to 'seed' and/or intervene in the play environment to support children's ongoing learning through play.

Traditional developmental theories have assumed that cognition and behavioural control are internal executive functions. But, from the perspective of embodied and ecological cognitive science, the external physical, social and cultural environment provides an additional influence on control. This supports the notion of 'relational pedagogy', and the idea of a curriculum that is co-constructed.

The SchemaPlay ecological perspective recognises that it is the child's body that provides them with the interface with the world that they must at first learn to adapt to in sustaining and expressing themselves. This is a perspective that is more consistent with what we know about natural selection and biological adaptation. From an early age, the child begins to assert agency in its interactions with the physical, social and cultural environment that it find itself within. Elenore Gibson, in her classic 'virtual cliff' experiments in the 1960s showed us how the child's awareness of the positive and negative 'affordances' that are offered by different features of their physical environment develops as a result of their increased mobility and interaction with the world.

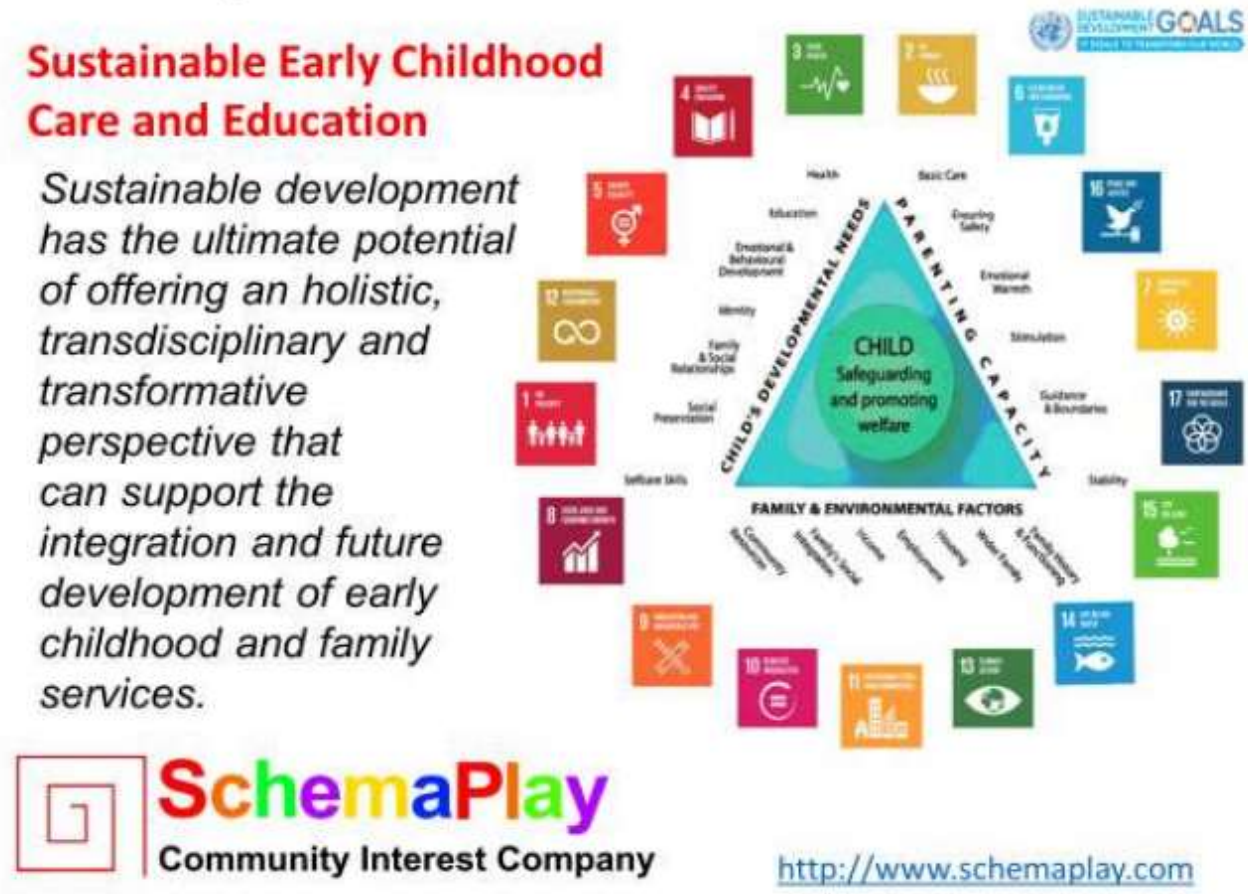
Children's early learning and development is therefore determined by the particular features of the physical, social, cultural and economic environment that they experience. Piaget (1969) described a developmental continuity between action and thought. He posited operational 'schemes' as the primary units of the child's mental organisation and argued that these goal-directed behavioural 'schemes' were continually applied in new situations to explore the child's environment. It is therefore important for us to remember that for the young child it is the action scheme that defines their interaction with the world. What, for an adult may be considered a ball, is for the infant a non-symbolic object capable of being contained, rotated or following a trajectory (Muller and Overton, 1998, Mandler, 2004).

Large scale longitudinal, population-based research studies have found a significant relationship between the acquisition of major motor milestones (e.g, standing without support) and child's future performance and progress (Murray, Jones, Kuh, & Richards, 2007). The ecological psychology of James and Eleanor Gibson, and the new insights provided by an embodiment perspective in cognitive science and increasingly supported by the evidence of neuroscience, recognises the essential reciprocity between every living organism and their environment. Perception is implicit in action, we perceive by acting upon the world, and

our actions are equally dependent upon the affordances that are offered by it:

"An affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behaviour. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and the observer." (Gibson, 1979, p. 129)

The social economic and cultural environment determines many of the positive and negative environmental conditions that the child experiences. We are aware of the crucial importance of bonding and attachment, parental aspirations and the negative effects of child nutrition, injury, neglect and abuse. The EPPE, (Sylva et al, 2010) and many other research studies have shown that the quality of the early home learning environment, quite independently of any socio-economic family influences remain positively correlated to attainment and adjustment right through primary and secondary education, and into late adolescence. EPPE also showed that high quality preschool provisions served to narrow the gap between those more or less advantaged. All of these ecological features were identified in the Common Assessment Framework which provided a central component of the UK Every Child Matters Policy (200-2010) and remains implemented in the current; "Early Help Assessments". The relevance of the United Nations Sustainable Development Goals to the development of more joined up thinking and inter-agency collaboration can be seen clearly when they are presented in juxtaposition (below) with the Common Assessment Framework. In fact these Global Goals for Sustainability provide a comprehensive transdisciplinary framework with the potential of providing a common vision and stronger foundations for partnership working and collaboration in the interest of every child.



_____Box_____

The OMEP UK - OMEP Kenya ESC Partnership at Fullbrook In their development of Sustainable Citizenship, the children at Fullbrook shared books, songs and dance activities online with a preschool in Kenya. The shared theme was associated with the celebration and care of the wild birds in their contrasting local environments. They also learnt about some of the folk tales and myths associated with birds: About Owls being considered wise in the UK, and any sight of them being a bad omen in Kenya. In Kenya the children learnt about Magpie's, and the traditional English nursery rhyme and counting song 'One for Sorrow, Two for Joy'. In exchange they sent a video to teach the children at Fullbrook a short song in Swahili.

In both preschools the children observed and provided supporting food and water for their local wild birds. They also discovered more about the diverse world that they live in and they learnt that all around the world young children are contributing actively towards achieving a more sustainable future.

Mercy Macharia, OMEP and MARCES ACADEMY , Kenya

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In addition to co-authors Andrina and Debbie who have now gone on to provide SchemaPlay (and OMEP UK ESC Award) training for other settings, four key mentors were identified in the Fullbrook team and they continue to support their colleagues in planning and recording the schemes and schemas for key focus children.

SchemaPlay is now an integral part of the curriculum intent and implementation and fits exceptional well with the new inspection framework. Our Learning journeys show a journey of learning ,capturing both the adults intentions and children's voice. Pre-requisite schemes have become an integral part of the curriculum that is designed on a day-to-day in the moment basis; they offer the sequential steps that children need to take to progress. We have also used the pre-requisite skills to audit our resources and environment and we have purchased/provide new equipment that support the schemes of matching, grading and sorting etc.

Staff evaluations have shown that the children' play has become more purposeful and the staff observations more meaningful. It has also been noted that the children have clearly enjoyed the fact that their interests have been noted and their play extended:

"There has been rapid progress, the children are so focused upon learning. They really feel that you get them and you can see this in their engagement".

"The seeded activities have allowed child to feel special, they have developed self-confidence in ways they enjoy.. "

On a recent Local Authority inspection, the associate consultant was rendered speechless by the practice that he observed: He said that he had always been a 'schema sceptic', having previously not seen the purpose or impact. However, here, he could see it, and he could hardly believe that we had two year olds who were so focused and able to grade objects by size and weight independently as part of their play. He

thought that our Curriculum intent and implementation was systematic, sequential and aspirational, and that we had used Sustainable Citizenship to create the core of our curriculum alongside schemes and schemas.

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