The SchemaPlay Co

Education for Sustainable Citizenship in Early Childhood

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Preface

In the following pages, we present sustainable citizenship as a life-long emergent achievement and a capability that we currently aspire towards. Our approach to the subject seeks to distance itself from those who promote pessimistic images of the future that may result from either toxic childhoods, or environmental and climatic catastrophes. A constructive and celebratory approach is provided that emphasises the importance of Sustainable Citizens accepting responsibility for, and taking pride in, their day to day sustainable actions. This model of early childhood education for sustainable citizenship has been developed to support the child in recognising the need for the limited resources of our planet to be distributed fairly, and in understanding our interdependence with nature and other cultures and communities. The perspective has been developed in a decade of collaboration with colleagues engaged in Early Childhood Education and Care (ECEC) around the world and in a UNESCO commissioned review of the progress that was made in the UN Decade of Education for Sustainable Development 2005-2014 (Siraj-Blatchford and Pramling-Samuelsson, 2015). It is also consistent with the 2030 UN Agenda for Sustainable Development, the UNESCO Global Action Programme on Education for Sustainable Development[1], and the Education for Sustainable Development Goals: Learning Objectives (UNESCO, 2017).[2]

Throughout this booklet, we provide illustrations of good practice drawn from work carried out by SchemaPlay in association with the UK's Kent County Council in 2016/17. The project involved six pre-schools in developing training materials for Education for Sustainable Citizenship (ESC). SchemaPlay provided the pre-schools with support in auditing the current ESC provisions, in setting targets for further development and provided bespoke training sessions for staff. In the process, SchemaPlay worked with a key person in each setting to support the educational progress of two target children across the EYFS curriculum using the SchemaPlay Zone of Proximal Development Flow model (Siraj-Blatchford & Brock, 2015, 2016b). This

[1] http://en.unesco.org/gap

[2] http://unesdoc.unesco.org/images/0024/002474/247444e.pdf

supported the staff in achieving learning outcomes and has provided us with strong evidence of the effectiveness of the interventions. Inequality and underachievement are widely recognised as significant barriers to sustainable development, and the work in Kent has therefore been focused as much on raising effectiveness and outcomes, as on the more commonly recognised concerns of developing the foundations of environmental, economic, and sociocultural education in early childhood. The SchemaPlay model has provided practitioners with support in identifying appropriate focused activities and on the effective 'seeding' of the children's learning in free-flow play.

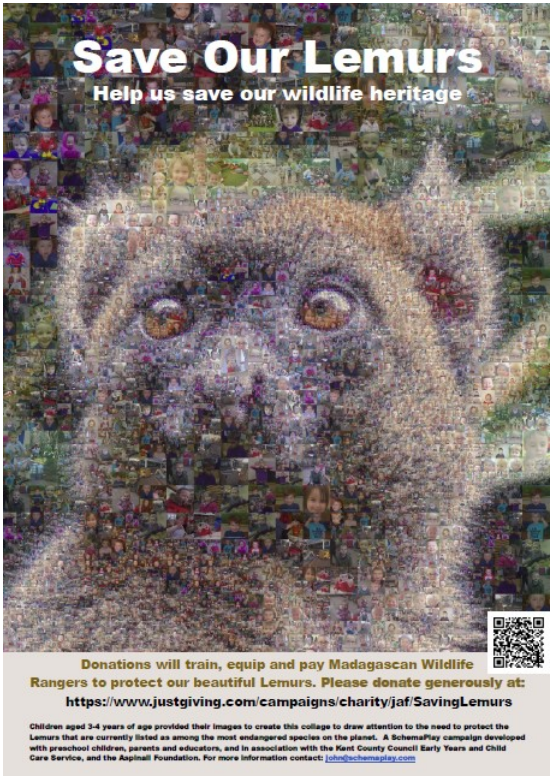
This booklet is intended to provide guidance in support of further training and development of ESC within and beyond the Kent context. We include summary guidance on the nature and the rationale behind ESC, an account of the key concepts and learning objectives illustrated by some of the individual children and adult learning journeys that were supported in the project. In our early planning, we identified the Aspinall Foundation as likely partners and their support deserves specific acknowledgement. The Foundation have two wildlife parks in Kent which provide support for their highly regarded wildlife conservation work around the world. The Howletts Wild Life Park near Canterbury provides the public with an opportunity to walk within a secure Lemur enclosure and their suggestion that we might involve the children in supporting Lemur protection has provided a focus for the overall project. It is worth noting here that whilst focusing the children's attention on a particularly endangered species, our aim has been to draw their attention well beyond the plight of the Lemurs themselves. While we may consider Lemurs particularly adorable primate cousins, their imminent extinction as a species has not been our foremost concern. The threat of extinction for Lemurs is shared by many other 'celebrity' species and, as in many other cases, the threat comes most significantly from human destruction of their natural habitats caused through deforestation. In the case of the Lemurs in their native Madagascar, a major threat stems from world-wide consumption of timber. When the Lemur habitats are lost many other plant and animal species that share their ecosystem will be lost as well. Shockingly, many of these species have not yet even been identified. The central issue here is not just about Lemurs, it is about a loss of biodiversity that we can ill afford. A recent report on the State of the World's Plants published by the UK Royal Botanical Gardens at Kew suggested that as many as 21% of the world's plants that we know about are

facing a serious risk of extinction. It has been estimated that as much as 86% of all plant species remain undiscovered and many will be lost before we ever come to know about them. This is crucially important as the diversity of the world's plant species provide our only insurance against the risks of future disease and famine. Research is constantly identifying plant species that are applied to save lives in medicine. Plants are known to have potential in limiting the rate and magnitude of climate change, and in supporting nutrient cycling and productivity in horticulture. Biodiversity is our children's heritage and we have encouraged the adults and children engaged in the project to save the Lemurs to see this as rallying point where they might 'take a stand' against the wider context of global extinction. High up in the food chains of the Madagascar forest, the Lemurs provide a crucial indicator of what is happening more widely. It may be considered significant here that one of the most striking Lemur species under threat (the 'Eulemur Flavifrons'), the only animal on earth that shares the feature of having 'blue eyes' with some humans, was only identified as a species in 2008 and may be extinct within the next decade.

In the early childhood context, we do not expect the children to learn or understand all of the issues and implications of biodiversity. Our aim has simply been for them to have learnt that they can contribute towards a worldwide, shared effort to protect wildlife. In adopting an 'emergent learning' perspective, which is explained more fully in the pages to come, we have tried to provide the children with a sufficiently memorable experience in their Save the Lemur Campaign for them to learn from it for many years to come. It is in the early childhood years that fundamental attitudes and values are formed and we expect the children's understanding to develop throughout their lives whenever they take an interest in hearing about the need to protect other wild animals and natural environments. Most significantly we want them to recall and feel pride in the fact that at the age of 3 or 4 years they already took action as individuals and as a group, to make a difference. In campaigning for this issue in early childhood, the children were exercising their right, as identified in the UN Convention on the Rights of the Child, to have a voice on all matters that materially affect them. They were learning to care about the natural world and they were learning that they could take action to protect it. In education for sustainable citizenship we believe that it is not enough for children to learn only about the natural world, it is important that they learn that they can take action to protect it!

The Aspinall Foundation provided a focus for the campaign in identifying the need to train wildlife rangers in Madagascar and to give them the radio-telemetry equipment that they required to keep track of the Lemur populations in order to protect them. The Foundation provided the pre-schools and families involved with discounted entry to their parks during the campaign and they also supported the work in providing printed and video resources as well as details of their work in Madagascan schools. One future development of the project may be to create learning partnerships between the educators and children in the UK and Madagascar.

A campaign poster was initially created as a photo collage featuring the 180 pre-school children of the six pre-school settings who were campaigning as sustainable citizens for the protection of their wildlife heritage and the Lemurs of Madagascar. This was posted widely in local shops and more widely publicised by the media. One of the key educational challenges was to show the children what the funds that they were collecting were to be used for. Following the observation of some children in one of the settings playing 'hide and seek', the solution was found in showing them how radio telemetry would allow the rangers to 'win' their game of 'hide and seek' with the Lemurs. A game of hide and seek with a difference was devised, with one child after another dressing up to play the role of the 'Lemur' carrying a radio transmitter, just like the 'collar' that would be put on the Lemurs, and hiding. The other children playing the role of 'Wildlife Rangers' find the 'Lemur' with the aid of the



radio telemetry receiver and directional antenna.

The game of 'hide and seek' may be considered particularly valuable in its contribution to ESC. When the children alternately take on the role of the 'hider' and the 'seeker', it may often be a significant learning opportunity as they begin to 'put themselves into another child's shoes'. The game is particularly valuable because it helps develop empathy and, in its extension to this wildlife protecting context, the ability to recognise our interdependence with the natural world. The campaign is continuing although it has already proved to be a great success. One recent report from one of the settings informed us:

"Something I thought you would love to hear; during today's session Toby and Billy were spontaneously hunting for lemurs with their "lemur finders". (They were using magnifying glasses.) We showed the group the video on your SchemaPlay website of our "lemur hide and seek." For most of the children it was a reminder of what they had done, and for a few children who don't attend on Wednesdays it was something new for them. We gave them your toy transmitter aerial but Albert wanted his own so we constructed several using tubes and straws. The children then set off into the garden to hunt for soft toy monkeys that Cara had hidden for them. It was so funny as they were trotting round the garden making beeping sounds hunting for these monkeys. They then took it in turns to hide the monkeys. There was lots of talk from the children about looking after the trees so the monkeys homes were saved."

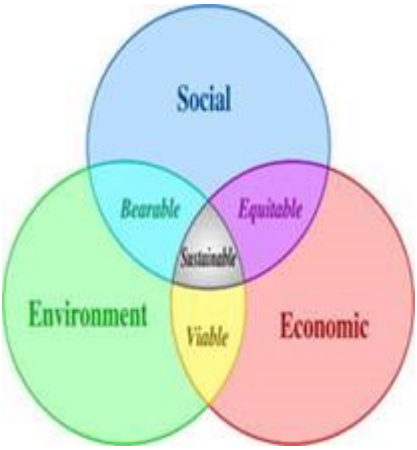
Acknowledgements

In addition to the Aspinal Foundation, we would like to thank the children, their families and the staff of the six pre-schools directly involved in the project: Beltinge Nursey, Brenchley Pre-school, Greenfield House Nursery, Little Learners Pre-school, Smarties Nursery, and Wiggles Playgroup. Special mentions should also be given to Carly Browne, and the children and families that she serves as a Childminder, Steve Rawling at Kent County Council, the Sufficiency & Sustainability Team, and all of those who have contributed towards the establishment and running of the Aldington Eco Centre. In the interest of privacy, fictitious names of settings and children are used in the text.

Chapter One

What is Sustainable Citizenship?

Since the 2005 United Nations World Summit, it has become commonplace to refer to the "interdependent and mutually reinforcing pillars" of sustainable development as concerns related to social and cultural sustainability, economic sustainability, and environmental sustainability.



The challenge for educators has been to develop educational systems, curriculum and pedagogic practices that are sustainable in terms of each of these pillars. But it is also important to understand that the metaphor of 'pillars' has been applied to emphasise the fact that they are mutually supportive and must act together. Any decision, practice or policy that is developed without taking each into account will be unstable and unsustainable. From the perspective of sustainable development, the most efficient or effective environmental, economic or social strategy may not be the best. Interdisciplinary decision making is crucial.

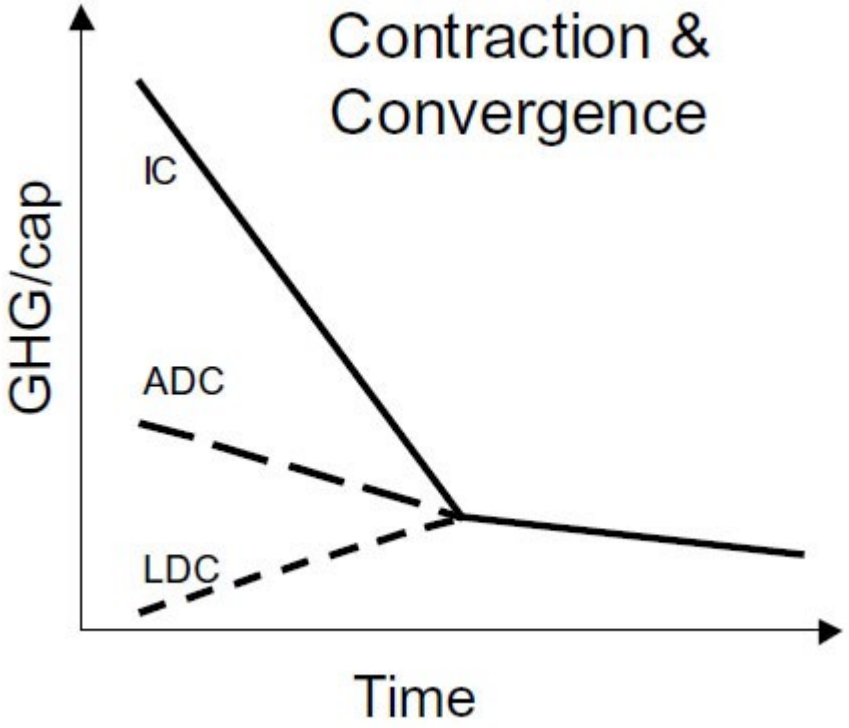
Many authorities see good governance as another vital component that might be considered an additional 'pillar' for sustainable development. From an early childhood education perspective, these concerns may be realised through the encouragement of more participation by the local community, families and especially the children themselves, in developing the curriculum and sustainable practices within and beyond the pre-school setting. It is especially for this reason, and in recognition of Article 12 of the *UN Convention on the Rights of the Child* to have a voice in all matters that affect their lives (*UNCRC,* 1989), that we refer throughout this guidance to Education for Sustainable *Citizenship.*

These three ‘pillars’, or dimensions of sustainable citizenship may be considered at various levels. At its most basic we can think of a particular purchasing decision to be made by a family: For a child the choice may be what it is that they request for a Christmas or birthday present, or whether to buy an apple or a chocolate bar. For the family, the question may be should we purchase a car or continue to use public transport? Such a decision should be made in consideration of the functional utility and pleasure to be gained from the independent means of transport, the family’s resources and the alternatives that are open to them (Economics). A great deal of energy is expended in the manufacture of each car and not all of the materials that it is constructed from are recycled at the end of its working life. The decision should also be made in consideration of the impact the purchase will have on the wider Society, the effects of additional cars upon congestion and pollution, for example. There are global social and economic implications as well, where do the materials come from? Are the suppliers paid a fair price for them? Are there alternative uses for the materials and energy resources? There are also Environmental issues to be considered, road building has immediate consequences for the environment that are both aesthetic and material; pollution also affects natural wildlife and the carbon emissions from the vehicles used and their manufacturing, contribute towards global warming.

For a local authority deciding on the development of a new form of public transport, the sums of money involved will be much greater, but all the same rules apply. In every decision, there will be winners and losers. Some members of the community will benefit more than others. There will be trade-offs between environmental, social and cultural, and economic concerns. When we come to tackle problems at a global level, the United Nations must also find ways to compromise. One of the most pressing challenges currently facing us is the global warming that is a result of the high concentrations of greenhouse gases in the atmosphere. The main contributor to this has been the Carbon Dioxide (CO_2) produced when we burn fossil fuels such as oil, gas or coal. The Paris Climate Agreement of 2016 established objectives to limit the increase in global average temperatures; to “well below 2°C above pre-industrial levels” and to “pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels”. It has been widely predicted that at 2°C above the pre-industrial baseline, global warming may become uncontrollable,

and that many poor and vulnerable nations will be devastated if it rises by 1.5°C.

In order to achieve an international agreement, many countries agreed that it was necessary at first to agree upon a 'fair share' of safe global carbon emissions (per capita) that all the nations would aim to achieve. This reflected the principle that every person in the world has an equal right in their use of the atmosphere that we share. A commonly cited strategy is referred to as carbon 'contraction and convergence' (Meyer, 2000, Hohne et al, 2007) where the rich, high carbon emitting, nations of the world, agree to reduce their emissions, as poor nations increase their emissions to a point of convergence (in 2050), at which stage all the Nations should aim to make parallel reductions (or contractions).



Proposed Greenhouse Gas (GHG) emissions per capita for three types of countries (an industrialized country (IC), an advanced developing country (ADC)

and a least developed country (LDC)) according to the 'contraction and convergence' principle. (Hohne et al, 2007)

The majority of the UK's carbon emissions arise from the production and consumption of energy and from transportation. There is therefore a need to progress towards energy systems, and methods of transportation that are more energy efficient and based on low or no carbon content. In addition to the effects upon global warming, fossil fuels also cause pollution that is harmful to the natural environment and to public health. Investments are therefore being made in developing alternative, renewable and clean energy sources and technologies. All of this will inevitably result in many social and cultural changes. Local councils have developed a variety of new systems of waste disposal. There are plans to encourage greater use of public transport, and car sharing, cycling and walking are already widely promoted. Climate change is a global problem and it will only be solved if nations agree upon common strategies and investment, requiring social and cultural adjustment of attitudes towards poorer nations, and a wider recognition that the poverty and conflicts that we see around the world have major implications for our own sustainability.

At a higher level of abstraction, we can recognise that these three areas of concern, the economy, environment and society are interrelated and mutually dependent in ecological terms. We can see that all of the species of the planet (including humans) who share our Environment rely upon each other's survival. Our own long-term survival requires that a natural balance be maintained. Balance and harmony are also critical in the case of Society and Culture: As the UNESCO Universal Declaration on Cultural Diversity suggested, we should recognise that; "...cultural diversity is as necessary for humankind as biodiversity is for nature" (UNESCO, 2002). The peace and security of all the nations, communities and cultures of the world depend upon each other. At this more abstract level of consideration it is also important to recognise that when we talk of Economy we are not simply concerned with how much money something costs. The most basic and fundamental fact of Economics is that human 'wants' and 'needs' are unlimited, and will never be satisfied by finite resources. Management of the economy is fundamentally concerned with the management of scarcity. This engages us all in questioning the purchasing and investment choices that we make, and the extent and means by which we share our resources.

Seven R's that might be applied to guide the development of early childhood education for sustainable development were first suggested in a 2007 international workshop on the Role of Early Childhood for Sustainable Society held in Goteborg, Sweden, and reported in Pramling-Samuelsson and Kanga (2008). The seven R's'were: **R**espect, **R**eflect, **R**efuse, **R**educe, **R**ecycle, **R**epair and **R**euse. The last four were all Economic concerns related to scarcity. Engdal's (2015) paper reporting on the Education for Sustainable Development (ESD) programme of activities followed by the Organisation Mondiale pour l'Éducation Préscholaire (OMEP), replaces Repair (which might in any case be subsumed under 'Reuse'), and introduced two new R's; **R**ethink, in recognition that "people today value other things" (Engdal, 2015) and **R**edistribute, to include the concept that resources should be used more equally (*op cit*). In the context of our interdependence with nature and with others it is clearly important to Respect all life and the need for harmony. ESD also requires us to Reflect upon our decisions and Rethink some of our traditional values, wants and desires.

In Siraj-Blatchford and Brock (2016a) we report on an extensive ESD literature review which identified the most prominent ESD curriculum objectives. We found that these were related to children gaining a knowledge and understanding of the interdependence that we have with the natural world and with each other, to the development of children's capability related to agency and action, and to their development of sustainable values. Over the past decade a growing consensus has emerged regarding the importance of governance and global citizenship to sustainability and this is reflected in the UNESCO (2017) Learning Objectives for the Education for Sustainable Development Goals. We provide more detail on these below under the heading of each of the 'pillars' of Education for Sustainable Citizenship (ESC); Economics, Environment, Society and Culture. We argue that Sustainable Citizenship requires both an attitude and a learning disposition, requires values, skills, knowledge and understandings that cannot all be achieved in early childhood. Education for Sustainable Citizenship is an emergent life-long learning accomplishment.

In this booklet, we therefore provide an *emergent* curriculum perspective in our guidance for educators. This means that we recognise that for young children to make sustainable balanced decisions there are attitudes, skills,

knowledge, and understandings that are prerequisite to the practice of developm. Most readers will already be familiar with the idea of emergent literacy where children are offered support to develop the pre-requisite attitudes, skills, knowledge and understanding of literacy before/or instead of providing formal instruction in reading and writing. An emergent literacy curriculum involves reading to the child, encouraging them to love and value books, drawing their attention to the text of action songs and the value of having a word symbol for their name, listening to rhymes etc. Many educators take this a step beyond this in playfully encouraging children to identify phonic sounds with letters and in supporting the use of one-handed tools; all skills necessary to be in place before a child will begin to read and write.

As educators in ESC we can also set good examples and show that we take pleasure and pride in our own sustainable actions and those we share with them, but we must also provide experiences and opportunities for children to learn about the basic principles of economic exchange, about the diversity and respect that must be shown to other peoples and cultures, the need to learn about the natural environment, and the importance of us all accepting responsibility in caring for it.

Chapter Two

Learning Sustainable Citizenship through Play

We all know that children learn best when they are playing in 'free flow'. It is not something that we encourage simply because we think young children should have lots of fun. In our Introduction to SchemaPlay (Siraj-Blatchford and Brock, 2016b), we explain the theory behind how play actually works. For now, it is enough to accept that generally speaking young children, and many young animals as well, learn quite naturally through play; and the more that they are absorbed and free to pursue their play the more that they learn from it. But that does beg the question of adult intervention, is it ever justified even when we know that the free-flow play is more efficient? In most pre-school settings we do choose to intervene at times, directing children's play to lead them to particular learning outcomes. We consider intervention is justified whenever we feel that the most appropriate environmental conditions, stimulus and/or resources are not available to them, when they are considered unsuitable or when the consequences of the child not learning something are very serious. In the case of environmental conditions and resources our interventions can be quite limited, we can provide the additional resources, take them to the environment (e.g. a forest or beach), and/or we can draw their attention to phenomenon that they would otherwise not notice. There are also some things that we commonly consider so important that we do not feel that we should just wait for the child to discover them for themselves and, in some cases, their lives may depend upon this learning. Children need to learn about hygiene; they need to learn about the dangers of electricity and its lethal combination with water; they need to avoid playing near deep water and to beware of strangers. While the risks and dangers may seem longer term the concerns of sustainable citizenship are arguably just as acute.

Provocations

Early childhood educators influenced by Reggio Emilia often refer to the importance of providing 'provocations' for children's learning. A successful provocation is taken up by the children themselves and requires little ongoing

adult encouragement, only resourcing that may be through the provision of material or cultural resources. In much the same way, drawing upon the insights of SchemaPlay (Siraj-Blatchford and Brock, 2016b), we can identify and build upon the schemes that we observe in children's free-flow play, providing focused activities or experiences in response. The operations or activities that we observe the child engaged in and enjoying during their free-flow play are often repeated because they are newly learnt and provide novelty and self-satisfaction to the child. In the case of two and three year olds, some of the most common schemes identified by Athey (1990) were, 'transporting', 'rotating', 'ordering', 'dabbing' etc. But these actions of the child do not happen in a vacuum, there are always specific figurative contexts, resources or environments involved that are recalled as cognitive 'schema'.

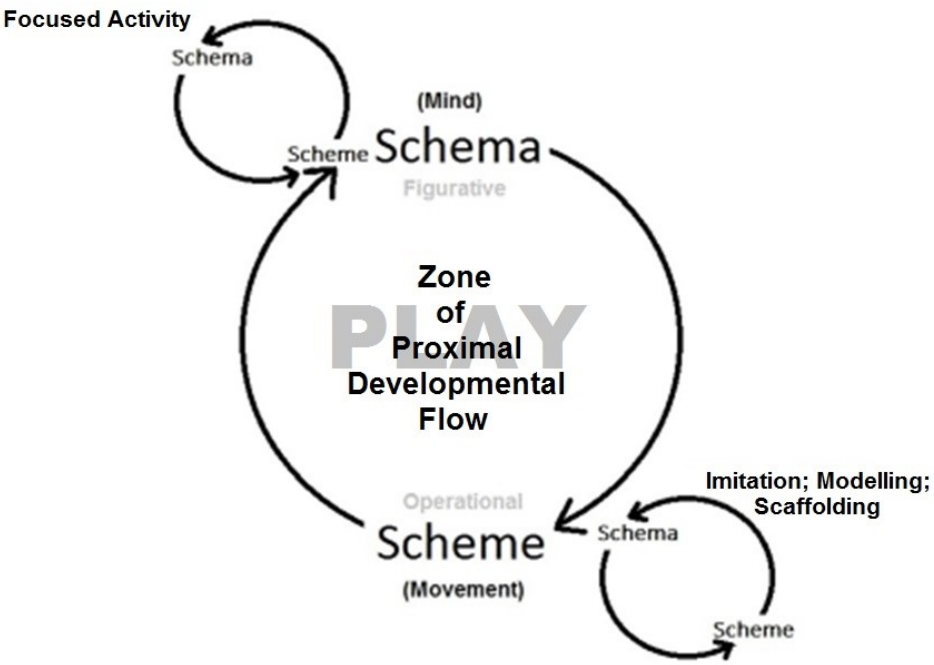
The adults' role in schema theory and practice is therefore generally understood to be to observe the particular schemes displayed by the child in their play and then to offer them new schematic resources or environments to consolidate and develop the scheme further. So, for example, a child observed repeatedly 'transporting' objects from one place to another in a basket may be provided with a wheelbarrow and blocks, and/or parcels to deliver using the basket on a tricycle. As children grow older the schemes that may be observed become more sophisticated and their relationship to future learning becomes clearer. For example, a child observed ordering different materials in terms of size or colour might be provided with selected objects of different weight and length. Many practitioners are aware that the child's practice at ordering in these terms will support their future learning in Mathematics.

As we shall see, the following diagram illustrates both the child's and the adult's cognitive process and interaction. Applying the above principles, we can see that these interactions should be limited, well prepared, highly focused and informed by observations of the individual child's play.

The child's free-flow play is represented in the central cycle, as an interaction between the child's cognitive schemes and schema. This is what van Oers (1999) described as a process that Vygotsky understood as 'progressive continuous re-contextualisation'. The activity space contained by the cycle is referred to as the Zone of Proximal Developmental Flow (ZPDF) because it is analogous to that provided through adult scaffolding in Vygotsky's (1962) *zone of proximal development* (ZPD), except that in this case it is the child's

own recall of previously observed (or formally introduced) cognitive schemes and schema that are being applied in scaffolding their play (there is no immediate adult involved in providing the scaffolding). 'Flow' was first identified as a quality of play associated with learning by Csikszentmihalyi's (1979). Bruce (1991) applied the phrase 'Free Flow Play', and Laevers' (1993) defined it in terms of the complete immersion, involvement and the sense of fulfilment that children gained from it.

The SchemaPlay Model



The adult's role in providing timely 'focused activities' is illustrated by the smaller cycle at the top left. The cycle is shown smaller to indicate how little time is spent in this activity compared to free-flow play. The cognitive schemes and schema here are initially those of the educator, in the case of their providing a child with a set of cars of different length (in response to seeing them ordering), the adult's schema would be of the mathematical

concept of 'length', and the focused activity that they introduce to the child will be ordering them using this schema (a curriculum learning objective). The intention and expectation in the example provided is that the child will then incorporate the (initially un-verbalised) scheme of 'ordering by length' to other objects and schema. Focused activities may then be used to extend schemes that are observed in the child's play by applying them in new schema contexts. They may also introduce the child to new schemes in a familiar schema context. Of course, not all of the child's learning is the result of deliberate adult interventions, so the small cycle in the bottom right of the diagram is included to show how new schemes and schema also result from the child's observation and imitation of others. The adult educator is also able to 'seed' the child's learning in play through the introduction, often simply by making physically available relevant new resources, apparatus, or environmental features. That is what 'Forest Schools' (and 'beach schools'), for example, facilitate.

Learning Sustainable Citizenship through project work

We have argued that there are good reasons to intervene with focused tasks at times in support of children's individual learning. At times there are also situations where we may wish to take advantage of a particularly powerful resource, stimulus or provocation to provide a focused task to a wider group. This might be considered a 'provocation', that will be continued if it usefully influences the children's free-flow play, and discarded if it does not. The opportunity to visit a forest or beach has already been mentioned. You may also wish to take advantage of some local resource that may be influential over a longer time-frame. In the Preface we referred to the example of a particularly well regarded and popular wild-life park being in close proximity to the group of pre-schools. Another example that proved successful in our project in Kent involved growing Hyacinths. We discuss this further in Chapter 6 when discussing Learning Economics for Sustainability.

Chapter Three

Learning Empathy and Interdependency

Maria Montessori's (1949) 'cosmic' education perspective has been influential in developing our understandings of the values and emotional investments that are relevant to ESC in early childhood. Perhaps most significantly, in the emphasis she gave to the importance in children recognising the interdependency between the peoples of the world, and between humanity and the natural world:

> "The trees that purify the air, the herbs that capture vitamins from sunlight, the coral that filters the sea, which teems with countless creatures that would die if there were no such forms of life to keep the water pure, the animals that populate the earth are unconscious of their cosmic mission, but without them the harmony of creation would not exist and life would cease." (Montessori, 1949, footnote p117)

Focused activities, including many sourced 'off the shelf' from Montessori 'cultural' education resources were applied in the Kent pre-schools to provide the children with appropriate schemes that they might apply in their free play enabling the assimilation of specific schema constructs relevant to emergent sustainable citizenship. These included games and activities focused on developing the child's 'cosmic' or holistic understanding of the world they inhabit. We specifically refer in this guidance to games focused on the Sun and food chains, land and water forms, the continents, animal families and the classification of the animal kingdom, life cycles and natural habitats. Research also strongly supports the Montessori emphasis on children developing their independence, and suggests that her emphasis on children learning 'grace and courtesy' dispositions, through focussed activities and modelled behaviour, may significantly support the development of empathy. We believe the development of empathy is critically important for achieving the aims of sustainable citizenship.

Many of the ideas that follow in this chapter may be unfamiliar to many readers, so it might be useful for us to begin by emphasising that we are presenting empathy as an emergent and emerging schematic cognitive construction. The term 'emergence' is used to describe the manner in which many complex systems and patterns are observed in nature to arise out of a multiplicity of relatively simple interactions. We will discuss the foundations upon which children's progressive empathetic schemes are developed and we identify four key pre-requisite schemes, actions and behaviours that should be supported through appropriate experiences during the pre-school years.

Humans do not suddenly develop empathy any more than they suddenly develop literacy, there is a gradual assimilation of different emotional contexts and progression in empathetic capability and schema which is acquired through experience, in their application in new contexts, and in coping with new challenges.

To be empathetic firstly requires the ability to recognise another child's, adult's, or another creature's emotional experience. However, in order for children to develop empathetic actions and responses, these capabilities have to develop from experiences and interactions with the world.

It is in the nature of academic writing to seek contradiction and controversy, and in the interest of encouraging critical reflection, teacher educational texts have also frequently presented the work of Piaget and Vygotsky as entirely alternative accounts of child development. While many issues are the subject of extended debate within developmental psychology, we take the view, shared by Lourenco and Machado, (1996), DeVries, (2006) and others, that most of the critical discussion stems from misinterpretations and/or limited reading of the relevant sources. The idea that for Piaget children were considered 'solitary scientists' constructing knowledge outside of any social context is entirely unsustainable (Hasslett and Samter, 1997, DeVries, 2006, Daniels, 2016). In any event, it is clear that both theorists developed their understanding and writings on child development throughout their academic careers, and that they saw much more in common with each other's perspective than is commonly assumed. For both theorists, development is considered to be the result of the child's individual creative and constructive interaction with a progressively challenging social and material environment.

Piaget (1977) found that most children under three were egocentric; that they could not place themselves in another's situation; a belief which many readers will recall from their training, as this related to his well-known 'Three Mountains' task. However, many readers who have experience of working with babies and children under three may also consider this limitation in children's thinking to be doubtful. One of the first behaviours or schemes commonly identified as empathetic in children under three, is an infant crying in response to another infant's crying. Early years' educators working in a baby room will be all too familiar with this scenario; one baby starts crying and there follows a chain reaction! This reaction, according to Martin and Clark, (1982) who observed this in children as young as 18 hours', is referred to as 'emotional contagion'. This does not mean that all children under three are able to place themselves in another's situation and respond to their distress, but we may consider it significant evidence of imitation involving both cognitive and affective structures of knowledge. Just as Gestalt theorises, Piaget considered both cognitive and affective perception and their physiological representations similarly structured (isomorphic) and in the following pages we will follow Brown (1996) in treating affectivity as a schematic form of knowledge.

Evidence of a physical, neurological, explanation for imitation has recently been identified that suggests that imitation might be innate in the young child. A category of motor neurons, 'Mirror' neurons, have been identified. These fire in the brain whenever we take action, and also whenever we witness the same action in others (Iacaboni, 2008, Gallese et al. 2009). This 'mirror' connection that has been identified between both visual and auditory (sensory) neurones and motor (movement) neurons provide a physical explanation for children's propensity to imitate. It also provides theoretical support for models of 'embodied cognition' and explanation of how empathy actually works. This 'mirroring' grounds all perception in action, and provides an explanation for cognitive development through imitation and simulation. Mirror neurons explain why we do not just observe other people's expressions of hurt, distress, joy etc., we feel them as well. It is also mirror neurons that allow us to see ourselves, and others, as separate intentional beings.

In the following account of children's development of empathy, we understand it as something initially achieved at a very early age, in simply; 'making a connection with another person's feeling state' (i.e. the firing of an

affectively connected motor neuron). The issue for ESC is not then so much a matter of developing empathy as such, it is about encouraging the child to apply it to a diversity of human and natural contexts and, crucially, it is also about encouraging children to ACT upon their empathy: Developing the confidence and capability to accept responsibilities and take agency.

The important role of early years' educators modelling possibilities, and supporting children in overcoming early childhood distress is widely recognised. Bowlby's (1958) secure-base theory explains how a child needs the support of another (usually an adult), who they can recognise as being there for them in a time of need. Overcoming moments of distress for very young children is best supported by short, focussed activities that meet the situation and their needs at the time and also by modelling supportive body language and facial expressions.

Children begin self-regulating their behaviour at an early age as they try to overcome moments of distress or challenge. As children begin to express their emotions, and identify the cause of distress and/or conflict that they find themselves in, an adult can provide a model and guidance in resolution. High Scope Foundation have popularised a valuable practical approach to dealing with conflict between children in pre-schools[3]. They recommend six steps:

- *Approach calmly, stopping any hurtful actions. Place yourself between the children, on their level.*
- *Acknowledge children's feelings. Say something simple such as "You look really upset." Let children know you need to hold any object in question.*
- *Gather information. Ask "What's the problem?" Do not ask "Why" questions.*
- *Restate the problem: "So the problem is…"*
- *Ask for ideas for solutions and choose one together: "What can we do to solve this problem?"*
- *Be prepared to give follow-up support. Acknowledge their accomplishments (e.g., "You solved the problem!"). Stay nearby in case anyone is not happy with the solution and the process needs repeating.*

[3] https://highscope.org/curriculum/preschool/details

It is important that the adult acts calmly and swiftly but does not jump to conclusions about the scenario. S/he should demonstrate respect by listening and responding to the child/or each of the children's version of how they came to be in the distressing situation, support problem solving and facilitate a mutual agreement that the children can move forward from. This modelling of caring and guidance becomes learnt behaviour in itself. Research has shown us that pro-social behaviour has many roots and foundations. The verbal labels and self- awareness come later. We know that:

- *Awareness of others as agents depends on a prior conception of ones' own agency and independence (Russell, 1998);*
- *Adult modelling and support includes the identification of 'feeling states';*
- *Emotional coaching works (Gottman 1996); and*
- *Empathy emerges in imitation and simulation.*

(Goldman, 1995)

Concern for Self to Concern for Others

Knafo et al (2008) explains that there is a transformation from 'concern for self' to 'concern for others' and that this is why it is important to highlight the need to support empathy development in the pre-school years and why, as adults working with young children, we have to be able to recognise how these emergent capabilities can be 'seeded' and supported.

For children from the age of six months opportunities to engage independently in play with resources such as a treasure basket, can help develop their self-esteem and developing self-control and regulation. Treasure basket play offers a young infant the chance to select objects and to discriminate between what s/he likes or does not like to touch or hold. This may well be the first opportunity of independent activity, facilitated by an adult, that the child has ever engaged in. Independence is critical for supporting the development of empathy as, when children engage independently, they find out about themselves and learn to overcome challenges within their capabilities. Adults will need to provide activities having regard to children's capabilities, their needs and to balance this with sufficient challenge. As children develop the ability to crawl and then to walk, independent access to resources on low-level shelves should be offered. In the process of engaging with the resources and in making choices, infants begin to acquire a sense of a self that is separate

from the world. They learn that they have agency and are empowered to act intentionally (Gibson, 1960).

One of the key practical experiences children need in the early years to support their freedom to make choices, express or evaluate their interests and needs, as well as to develop independence, self-esteem and self-identity, is to provide access to resources and to put them in touch with how to use them. This seems simple, yet there are few early years' settings that provide opportunities for children to independently choose what they would like to do on a daily basis, and for how long. Children also need to be able to return to the same activity over a period of a week or month, as this is important for supporting the development of skills, self-recognition and esteem.

Self-contained materials, which can easily be selected and returned to the shelf after use supports independent access, choice and supports a child to take responsibility for the materials/resources, returning them after use for their peers to find and use. A holding bay for activities that need to be developed over days/weeks can also support self-esteem and self-recognition of capabilities.

As George Herbert Mead (1962) recognised, individuals become self-conscious beings through language. In infancy, words provide symbols that allow the child to think about objects even when we cannot see, hear or touch them. Later the child learns to 'look' at themselves as if from the outside, seeing themselves as others see them. Progressively, in response to the perceived reactions of parents and peers ('significant others'), the child learns to control their instincts and desires (to self-regulate). Metacognition develops as the individual finds it necessary to describe, explain and justify their thinking about different aspects of the world to others (Perner *et al* , 1994; Pelligrini, Galda, and Flor, 1996; Lewis *et al* , 1996) and metacognitive competence brings with it the development of self-efficacy, self-esteem and both positive and negative dispositions.

From the age of two, self-regulation is further supported by enabling children to make many more choices, to be independent and to take on activities with responsibility; responsibility for themselves and, increasingly, for their environment and community. When children first begin to make choices, they are able to evaluate the consequence of that choice: "I am glad I chose that

activity as I was able to work out how to sort and group the animals by where they live." "I chose an apple and some grapes for my snack today because they are healthy." "I chose to ask a friend to play shops with me as it is better when two people play." "I chose an activity that I have seen others use, but I found it difficult." "I chose to plant my hyacinth today. It was fun and I will care for my plant every day." These evaluations may or may not be verbalised, but the experiences offer children scenarios to recall and build upon, and to consider what they like or are interested in as well as to become aware of the things that they do not like or find challenging.

The child's self-identity is formed as children become aware of their own personal preferences and when children make choices on a daily basis, their self-esteem and development of their self-identity is being supported. Their personal evaluations of what they enjoy, or do not enjoy, can help them later to relate to others and recognise their alternative interests, likes and dislikes.

Responsibility for self-regulation

Being able to self-regulate may be considered a necessary prerequisite in the development of emergent empathy. Development requires the scheme to be

assimilated to many different schema contexts and many group activities, from encouraging the hand actions that accompany nursery songs and more challenging games like hide and seek contribute.

Providing short focussed activities to introduce basic care and hygiene routines; such as washing hands, getting dressed, recognising when and how to get a drink of water, or to select healthy food when they are hungry are important foundation activities. The child learns to defer or deny the gratification of another (preferred) choice of activity and take responsibility for the satisfaction of their objective needs. As a child becomes increasingly aware of their own needs and capabilities, they will start to identify these characteristics in others and will start to relate to others from their own experiences and perspectives.

'Ground Rules' should not be seen by adults as what a child cannot do, but more of what a child can do. Montessori (2007) promoted freedom of movement, choice and expression with safe boundaries and limits and recognised the value of this framework in developing children's self-esteem. She also recognised that enabling choices is promoting a life skill, as even if choices are difficult to make, learning to make them is important – especially for sustainable citizenship. Discussing with children whether new ground rules are required, on a regular basis, helps children's developing ability to identify with another's experience and supports children's engagement in more effective helping strategies, as they develop skills to view situations more accurately.

This has a further benefit, as children developing the physical response scheme to another's needs and developing relevant vocabulary will 'read' situations more clearly and with the support of 'seeding' activities, such as the development of ground rules, they will also start to draw upon language to help comfort another. These two aspects – physical response and language response in terms of comforting or supporting another are important schemes for educators to support.

Developing ground rules with children also supports their recognition of another's distress and needs and will support children to identify that they need to care for each other, ultimately promoting community care and solidarity.

The pictures opposite are of ground rules (pictorial and written) after a debate by children of what they do not think works well and what needs to be changed for the good of the group – supporting solidarity. The poster with the 'x' are behaviours which are not acceptable and the poster with a tick symbol are positive behaviours to support peers.

Helping children to further identify the need to take responsibility in their community can be achieved by allocating children a specific role to carry out each week. This might include preparing the snack, sharpening crayons, watering plants or feeding the classroom pet, for example. Nurturing plants and pets can help children to recognise the needs of others and their dependence on others. It is valuable to support children to not only cut fruit and vegetables for themselves, but also to leave extra on a courtesy plate for their friends, supporting those children who do not yet have the necessary skills.

The children below attend a childminding setting and are developing respectful intergenerational relationships as well as taking responsibility. The modelling afforded by the older children preparing the foods for snack, recycling cartons and packaging, as well as modelling hand washing and not

leaving taps turned on whilst cleaning their teeth after snack, supports valuable lifelong habits.

Empathy is being able to understand, feel or recognise what another person is experiencing from within the other person's frame of reference, i.e., the capacity to place oneself in another's position. Early experiences with the natural world, such as caring for plants and pets, helps children to identify the needs of other living beings .

A child at Wombles Playgroup checking a list of pictorial instructions for care of the classroom fish.

Learning to read minds

Children's initial 'mind reading' involves being able to recognise the independent thinking, perceptions and perspectives, of other children. The recognition of unhappiness and distress in others is especially significant and helps children to get on with others and to make friends. Mind reading, initially, is likely to be demonstrated through physical action, rather than verbally, such as with a hug or a child holding another's hand (physical response scheme). This physical reaction to another's need contributes strongly to emergent empathy. As Dunn et al (1991) showed, young children usually begin to develop an understanding that others have a mind of their own when they recognise and reflect upon the emotional states of significant others, especially members of their family. It is usually only after these 'theories of mind' have been developed, in familiar and emotionally significant contexts, that children come to apply these understandings in more unfamiliar (and abstract) contexts.

As previously suggested, Piaget's view of affective and personality development was entirely integrated with his theory of intellectual and moral development:

"…He spoke about affectivity in a broad sense as the energetic source on which the functioning of intelligence depends, drawing the analogy of affectivity as the fuel that makes the motor of intelligence go." (De Vries, 2000, p6)

According to Piaget, affectivity was both intrapersonal and interpersonal, he considered every scheme (psychologically organised action) had both cognitive and affective elements, and that they couldn't be separated. Both Vygotsky and Piaget, considered social development was considered to provide the means by which cognitive development is achieved. Piaget argued that the child's interactions with peers provided a context for perspective taking, which led directly to the development of their capability in decentering to consider more than one point of view.

When a young child fails to conserve mass or fluid volume, it is because they focus their attention on one dimension to the exclusion of others; they also fail to mentally reverse their actions. Research has shown that the order in which children demonstrate the different forms of conservation depends upon their

familiarity with the particular context. Kessenich and Morrison (2008), for example, refer to the capability of children from a Mexican village known for its pottery-making to learn the conservation of mass before they learn to conserve number (at school). When developing theory of mind, at first the child identifies their own mind then the minds of others and finally, after lots of practice and initial failures, they learn to collaborate and co-construct their play. The child's cognitive development is preceded by, and dependent upon, the social interactions involved in taking turns, perspective taking and decentring.

When young children engage in socio-dramatic play as a 'Father' or a 'Mother', a 'patient' or a 'doctor' they take on and 'play out' these particular roles that they have observed. They are learning to be both the 'subject' and the 'object' of the play and adding to their repertoire of appropriate and inappropriate actions. But, as Mead (1962) has noted, there is a significant difference between such play and the child's involvement in 'games'. When the chid plays a game where they are not taking on the role of any particular 'other', they must be aware of every other child's role in the game in addition to their own. It is in this process that they learn to take on alternative perspectives through 'position exchange'. It is in games such as 'hide and seek', that children begin to learn about the perspective of others. This was illustrated in the preface by our Lemur game example. There are many other 'games' that the child learns and can imitate in the early years. One that is particularly relevant to ESC will be referred to in Chapter 6 as the process of economic exchange involved in 'buying' and 'selling' where individuals must increasingly critically consider both roles. Adult support for these processes include encouraging children to take responsibility for themselves initially and then for others. Story-telling, songs, games and drama activities can be used to encourage children to consider emotional feeling states and to draw their attention to alternative and false beliefs.

Conclusions

For Piaget (1932), it is only when the child begins to interact with other children or adults willing to interact as equals with children that they begin to develop a morality based upon mutual respect and co-operation. Piaget argued that where adults demand a child's blind obedience to rules, they deny them the opportunity to develop moral judgements of their own. They are encouraging the child to rely on their regulation by others. The alternative,

that Piaget suggested, was to develop adult-child relationships characterised by mutual respect and cooperation:

"He argued that it is only by refraining from exercising unnecessary coercion that the adult opens the way for children to develop minds capable of thinking independently and creatively and to develop moral feelings and convictions that take into account the best interests of all parties" (De Vries, 2000, p###).

Both Piaget and Vygotsky argued that 'the higher mental faculties' are internalised forms of social interaction, particularly in language use (Piaget 1932, Vygotsky, 1962):

"[Moral] autonomy…appears only with reciprocity, when mutual respect is strong enough to make the individual feel free from within the desire to treat others as he himself would wish to be treated" (Piaget, 1932, p196)

Before a child can even begin to collaborate with another in their play they first need to have developed their own self-awareness or identity, and to have extended this self-realisation to apply it to others:

"It is only by knowing our individual nature with its limitations as well as its resources that we grow capable of coming out of ourselves and collaborating with other individual natures" (Piaget, 1932, p393)

In this chapter, we have identified four schemes that may be considered prerequisites to the development of empathic action. In each case, following the child's initial development of the scheme, it can be consolidated and extended beyond the context of its initial acquisition. The adult's role is to create the social interactive environmental conditions to support these developments. As individuals, we learn predominantly through processes of imitation and creative simulation, progressively developing a repertoire of recalled action possibilities that we may draw upon. From this perspective any understanding of a child's learning, and any attempt that we might make to support it must be focused firstly upon their current interactions and interpretations of their material, social and cultural environment. This is what it really means for education to be 'child centred'.

The following table provides a summary of the schemes identified, some of the notable schema contexts that they are assimilated into, and recommendations for activities that will support further development. SchemaPlay has also adapted the widely used UK Early Years Foundation Stage 'Development Matters' document, incorporating these recommendations, along with recommended activities supporting each of the Education for Sustainable Citizenship 'pillars'; Society and Culture, Economy and the Environment, and Emergent Literacy and Numeracy. Copies of this document are available from the website: **http://www.schemaplay.com**

Scheme	**Assimilated to Schema Contexts of:**	**Formative experiences:**
Concern for Self to concern for others Responding to distress	Other affective contexts, likes, dislikes, conflict	Modelling, group activities and challenges
Making choices in free play	Preference identification Self-identity	Providing opportunities for independent choice
Taking responsibility for self-regulation	Deferring/denying choice according to own current and future needs	Encouragement, modelling. Providing opportunities to accept responsibility
Learning to read Minds "Mind reading"	'Theory of Mind'	Identification of feeling states Playing hide and seek Co-operative play themes
Empathetic action	Deferring/deny choice according to the current and future needs of others	Stories and drama and games related to beliefs and false beliefs Opportunities to take agency

Chapter Four

Learning about Society and Culture for Sustainable Citizenship

"...cultural diversity is as necessary for humankind as biodiversity is for nature"
(The Universal Declaration on Cultural Diversity, UNESCO, 2001)

Learning to recognise and respect the essential commonality in human diversity is crucially important in the development of sustainable citizenship. Notions of cultural and gender superiority can sometimes stand in direct contradiction to these positive values. In the guidance that follows we therefore suggest activities that might be encouraged to help reduce the development of prejudices of this kind. They include opportunities to draw children's attention to examples of sophisticated science and technology being applied in alternative cultural contexts. The science and technology that is applied around the world, should always be understood as an expression of the specific socio-cultural and economic contexts of their development (Siraj-Blatchford, 2008). Pramling Samuelsson and Kaga's (2008) seven R's of sustainable development suggest the need to *Reflect* upon, and possibly *Rethink* some of our assumptions about the world that we live in.

Whilst some of us may have grown up to believe that the best science and technology is the most advanced and the most complicated, for the sake of sustainability there may be a need to unlearn this and develop a better appreciation of examples of sustainable practice and more appropriate science and technology. Positive role models are important and we provide suggestions of individuals who have made significant contributions towards sustainable development from other cultures and contexts in the guidance. It is important that children feel that they are a part of a global movement engaged in developing a more sustainable future. Engdal's (2005) identification of *Refusal* as one of the seven R's might well be applied in our refusal to include within our learning resources texts and images that promote negative or unhelpful stereotypes about other peoples, genders and sexual orientations. In multi-cultural England, as well as many other national

contexts around the world, early childhood curriculum guidance already recognises that as long as prejudices remain a feature of our culture they must be challenged directly. Siraj-Blatchford and Huggins (2015) refer to the need to extend this beyond the local context:

"Being a citizen means accepting the rights and responsibilities of being a member of a community. In some settings around the world more than others, teachers are aware of their responsibility to the diversity in the local community around them. In far fewer so far, this caring for the community extends to humanity as a whole, to global diversity, and the needs of the Earth as a whole. Yet our recognition of global interdependence is profoundly important in collectively dealing with the environmental and biological challenges that we face. Arguably, such a promotion of global citizenship presents the most significant ongoing challenge to early childhood education. We need to be thinking local and acting globally as well as thinking globally and acting locally".

While the UNESCO (2017) Learning Objectives Education for the Sustainable Development Goals (SDGs) provide only general guidance that are not tailored to any particular age group, prerequisite knowledge, skills attitudes and behaviours can be identified to support children in their emergent realisation of the objectives. We can identify five SDGs where there are clear pre-school learning opportunities related to social and cultural contexts: SDG 3 is concerned with 'Good Health and Well-being'; SDG 5, is for 'Gender Equality'; SDG 8 is related to Decent Work and Economic Growth'; SDG 10 is for 'Reducing Inequalities' and SDG 17 is for 'Partnerships'.

Children from one of the Kent pre-school settings involved in our project have started to visit a local care home for the elderly. This provides a very appropriate context for the children to learn more about health and wellbeing, and to develop empathy for their situation and feelings. It is hoped that these visits will develop to include collaboration in gardening and opportunities to learn about growing food.

Pre-school Case Study: Bell Vue

Common assumptions about gender roles were confronted at Bell Vue Pre-school following an observation of the children's stereotypical behaviour in

their ‘dressing up’ play. Girls were spending a great deal of time dressing and playing as princesses and rarely dressed to suit any role that involved employment. A white coat, pipettes and test tubes were improvised, and the girls were introduced to a focused activity that involved mixing different solutions of a blue food dye in water to grade the shade. The activity was at first introduced to Bella and developed to build upon a number of her current schemes in addition to the dressing up. Books about scientist were also placed in the book corner to support the activity. After the initial presentation of the activity and resources, Bella explained that she was going to show some of her friends how to be scientists. She demonstrated the activity to four of her peers. Bella was totally in *‘flow’* and said to her friend, “Be careful, you pour it like this when you are a scientist – you see – you need to see the colour!”

The resources were left available in the classroom for Bella and the other children to freely use and repeat in their play. In discussion with Bella’s key person, further activities to extend Bella’s grading scheme were also considered, such as grading other colours by shade, grading sandpaper strips from roughest to smoothest, or grading sounds from the loudest to the quietest. Bella’s knowledge of light and dark shades was also extended by getting her to make predictions: “What will happen if you add one more drop to this liquid/two more drops to this liquid?” or “How can we make this colour lighter?”

Preschool Partnerships

Some of the best ESC pre-school practice that has been developed in recent years, has involved pre-school partnerships located in the global North and South. The establishment of a genuinely equal learning relationship between the setting in these cases is crucial. Too often, assumptions regarding relative poverty and a perceived lack of development have led to the creation of one-way charitable partnerships that have encouraged children in relatively wealthy and privileged circumstances to feel falsely superior. In a genuinely equal learning relationship the participants in both partner countries learn that beyond the contexts of extreme poverty, economic development is a very poor predictor of happiness and well-being. As equal partners in the development of ESC they can provide each other with mutual support by:

- *Providing support in sustaining and developing the pre-school provision;*
- *Developing resources and curriculum;*
- *Reducing (where appropriate) carbon footprints;*
- *Sharing knowledge and ideas;*
- *Listening and learning from each other;*
- *Gaining strength from knowledge of shared concerns; and*
- *Fund raising (when appropriate) for JUSTICE rather than for CHARITY.*

(Siraj-Blatchford, and Huggins, 2015)

An OMEP UK-Kenya Pre-school Partnership Project

The project was focused on sustainable forestry, and also on gender equality at Cranborne Pre-school in the UK, and Ng'ondu Pre-school in Kenya. The children in the UK and Kenya learnt about Dr Wangari Matthi (1940-2011), a particularly brilliant and successful Kenyan environmental scientist. Wangari provided a positive role model for the girls, and also served to challenge gender stereotypes held by many boys. In addition to the Education for sustainable development and social Justice objectives of the project an opportunity was taken to introduce the Kenyan preschool to the use of socio-dramatic play that is used in most UK preschools.

This form of play was routine at Cranborne and their classroom already included a 'hospital corner' where the children shared their experiences and learn thorough their play all about how the caring roles of hospital staff and the use of science in medicine. Girls underachieve at every level in Kenya and

they make up only 38% of university enrolments. It was considered to be important to counter the common stereotype that men were better in maths and science.

In the process, the children at Cranborne learnt about the importance of the world's forests, the threats to their existence and the heroic work of people like Wangari Matthi in protecting them. Cranborne donated dressing up clothes that would support the girls in their partner preschool to develop positive dispositions towards science, and alternative adult roles for women. At Ng'ondu, the children were shown photographs of the UK children playing in the clothes and three of the girls imediately dressed up and played out the same socio-drama for themselves. The teacher at Ng'ondu later took the clothes to a local college and OMEP Kenya paid the students there to produce 10 more sets of dressing up clothes to share with local preschools.

The children were shown a video of Wangari Matthi on a tablet PC supplied for the project by OMEP UK. They were told Wangari was the first woman to win a Nobel Peace Prize in Africa, and that her good deeds would live on to inspire many people. She mobilised and encouraged many poor women to plant 30 million trees.

Later the children were themselves involved in tree planting activities and many of the other activities that the children in Cranborne enjoyed were repeated in Ng'ondu.

The development of empathy is critically important in achieving the aims of sustainable citizenship. We need to develop empathy with people and the natural world.

However, in order for children to develop empathy, there are specific pre-requisite skills required. As we have argued, these pre-requisites include making choices, being independent, taking responsibility for themselves and their community, as well as being able to recognise feeling states.

One pre-school tradition that has developed a curriculum model that has a particular emphasis upon this, is the Modern Education Movement (MEM) being applied in many pre-schools in Portugal. MEM has traditionally aimed to provide an education prioritising democratic practice, co-operation and solidarity. The mixed age, vertical grouping of 3 to 6 year olds in MEM pre-schools, is a significant advantage in applying a range of daily practices that pre-schools in other national contexts might consider adapting or drawing upon. These include engaging the children in regular 'Council Meetings', and in the continuous evaluation and co-construction of the curriculum structuring the discussions around making collaborative entries, in a collective 'Activity Chart' and 'Diary'.

Folque (2017) provides illustrations of how the MEM model is increasingly being applied in Portugal to achieve aims that are widely consistent with ESC. The MEM projects involved the children in changing the school playground, fixing a classroom library, cultivating vegetables for self-sufficient consumption in a setting and campaigning for better pedestrian access and against traffic pollution and the over reliance on cars:

"All these projects emerged from the children's identification of a problem and they involved small groups, the classroom or the school with the adults and community members (including politicians) working together" (Folque, 2017).

Pre-school Case Study: Ladybird

Social and cultural provisions for sustainability was identified as an area for specific development in one Kent pre-school. The children regularly chose to look at their books in the book corner, which was quite well-resourced, except that they had relatively few story books in languages other than English, or story sequencing cards to help children to re-tell stories in their home language. The setting is largely a monolingual setting, although two children attending spoke English as an additional language. The staff recognised that the monolingual children would benefit from hearing other languages to help

their developing awareness of cultural and language diversity. The setting had a wonderful flat map of the World hung on the wall of their book corner, with a picture atlas and some information about animals from different countries, identified as a foundation resource, which could be helpful in supporting knowledge of different cultures and languages.

A grandmother of one of the Chinese children who attended the setting, was visiting to celebrate Christmas in England with her grandchildren. She was invited to visit for a morning and to talk to the children about life in China and to try to help them learn a well-known English song in Mandarin. At the time, the children were listening to and learning how to sing 'We wish you a merry Christmas.' The children were fascinated to listen to the song in another language. The grandmother explained that she had also really enjoyed her morning showing pictures from China and introducing her language to them, demonstrating the value of pre-schools encouraging families into the setting to share their knowledge and experiences with children.

In these early years, the aim was for the children to develop relevant schemes for the auditory discrimination of unfamiliar languages and for them to recognise the common context of the words spoken and sung. The children's visual awareness of other cultures was supported with images and artefacts, and the setting created song picture cards to include the newly translated Mandarin Christmas song. The children sang the song in Mandarin to an audience on several occasions in the following weeks and this supported parents and the community to appreciate their efforts in positively appreciating the diversity of cultural language. All of the children chose to engage in the activity and clapped their hands at their own achievement. Several parents and carers subsequently informed the setting of their children singing in Mandarin at home, and they clearly appreciated the value and pleasure that they children were getting from sharing their experience of learning vocabulary in a language that they had only just been introduced to.

The setting also introduced the children to online storybooks that they had identified on YouTube™. Each was a familiar story that they already had in their book corner, which they could listen to in another language.

Sustainable Citizenship requires an ethos of compassion, respect for difference, equality and fairness.

Social and cultural education for sustainable citizenship involves children learning about sustainable lifestyles and aspirations, it includes a range of multi-cultural provisions that will be familiar to many readers and it extends these further to encourage a more global appreciation of diversity. Multi-lingual awareness is a particularly valuable in early childhood. It is only when children learn about the languages and cultures of others that they begin to learn that they have a language and a culture of their own. Their appreciation of language diversity provides a means by which they also come to appreciate cultural diversity more generally. Multi-lingual awareness also has the added advantage that it encourages children from an early age to develop positive aspiration towards learning other languages.

Chapter Five

Environmental Education for Sustainability

"We do not inherit the earth from our ancestors; we borrow it from our children" (Chief Seattle, 1954)

The need for *Respect* in ESC is not only relevant to the social and cultural contexts of diversity. It is important to develop what is often referred to as children's 'deep engagement' with the natural world. It is also important to recognise that the environment includes more than the natural world, the human built environment is as relevant to the subject as any termite mound or beaver dam (Siraj-Blatchford, and Patel, 1995). Industrialisation has brought with it significant challenges to the wider environment. According to the 2014 report of *the International Panel on Climate Change* (IPCC) (2014), we can expect droughts, coastal storm surges and wildlife extinctions on land and in the seas to worsen as we struggle to bring down carbon emissions. There are also significant knock-on effects: *"Climate change is projected to undermine food security"* (IPCC, 2014), and*: "…can indirectly increase risks of violent conflicts by amplifying well-documented drivers of these conflicts such as poverty and economic shocks."* (op cit).

The UNESCO (2017) Learning Objectives for the United Nations Sustainable Development Goals (SDGs) addresses the need to protect the environmental resources of the Seas (SDG 14) and Air and Land (SDG 15). Other relevant learning objectives include SDG 2 'Zero Hunger', SDG 6 'Clean water and sanitation', SDG11 'Sustainable cities and communities', and SDG 13 'Climate Action'.

The wildlife conservation efforts that local communities engage in are often targeted at particular endangered species like the Lemurs referred to in the preface but as we emphasised at that point, all of the animal and plant life of

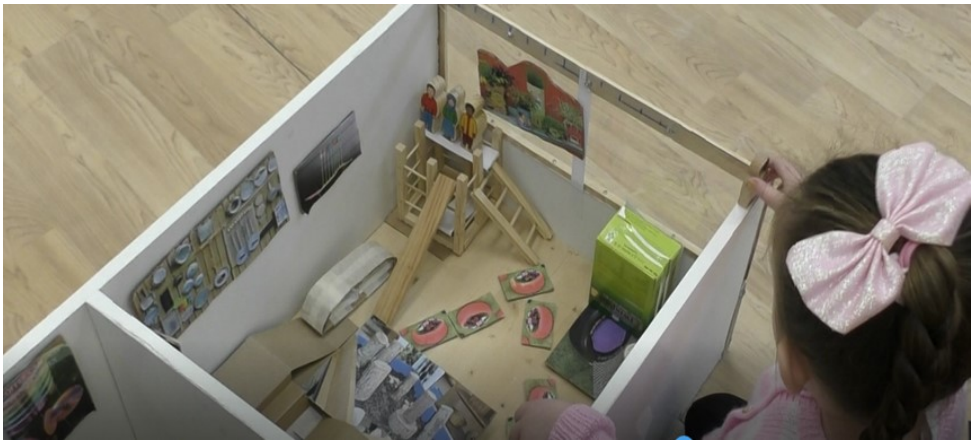
Earth should be considered ecologically interdependent. There are currently campaigns in the UK to protect many endangered species but at a time when many biologists are suggesting that we are witnessing a world-wide mass extinction of wild life, there is a danger that some individuals may underestimate the importance of losing any particular 'celebrity' animal. The loss of a species is often combined with a loss of habitat, and a link in a food chain that supports many other animals and plant species. The catastrophic loss of biodiversity that is currently being reported is something that should concern us all.

Experience in the natural environment may be a necessary component in any education for sustainability but it is not sufficient. It is important that children learn that they can take action to nurture and protect it. The primary resource for the pre-school setting must be the natural environment that surrounds it. Some pre-school providers will have a great deal more natural resources than others but the most important principle is to make the best use of what you have. It is worth getting to know the resources that you have at your disposal really well. While the business of mastering all the relevant animal and plant taxonomies may seem daunting, much less time and effort is needed to learn the names of those varieties in the immediate vicinity of the pre-school setting. Identification books and posters can be used to scaffold the conversations of adults with children related to wild birds and insects. Similarly, plants, trees and hedgerow can be labelled, the initial task of identification and maintaining these could be shared out among the setting staff. Even with this limited knowledge you will be able to provide the children with an extremely valuable introduction to the natural world, and you will also be modelling some important attitudes, you will be showing that you value the scientific knowledge that you have of the natural world, and that this is a body of knowledge that is available to them when they have a question.

SeaView Nursery Case Study

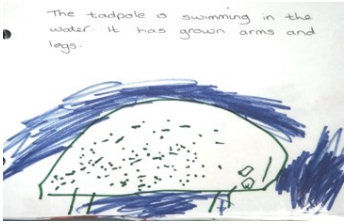
Seaview nursery is located in the lower ground floor of a large building. It had no outside play area for the children. It did, however, have a large well-lit and ventilated room that was not being used for any specific purpose, making it potentially an ideal space to create an indoor garden. The children were given a model of the room to play with and they discussed how they would like their garden room to look. They listened to each other's ideas, negotiating which resources they would include:

"It will be fun to grow flowers", "I would like a slide!", "Me too, and somewhere to stand and see the birds outside." The children wanted a climbing frame and lots of pots and troughs for planting. Milk bottles were recycled to make planters and a range of other plants were brought in. Nearly everything was created with recycled or donated resources and Astro-turf was laid to create the right atmosphere.



The Seaview garden is now really popular with the children and they have free access to it. They also continue to develop the room: One recent project involved studying the life cycle of a frog. The children created their own drawings of every stage of the metamorphosis and produced books for younger peers to enjoy, stored on low level shelves in the garden room book corner.

The garden room offers the children the chance to develop their gross and fine motor skills, which was previously restricted due to a lack of outdoor physical resources. The climbing frame and physical play area now supports spatial awareness, body strength and control, generally supporting physical fitness and well-being. The children have been learning about the benefits of exercise and have been sharing their knowledge about this at home.



One of the greatest contributions the resources on offer in terms of ESC support is the development of care, respect and responsibility. The child-size watering cans, brooms, dust pan and brushes stored at low level, with a new recycling area, empower the children to take responsibility for life, their environment and in some small, but important way, the planet.

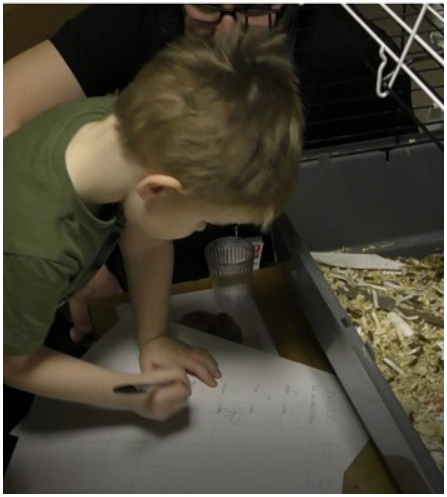
The opportunity to take care of plants and to look out of windows to observe wildlife, with information books about plants and animals stored at low level, has enabled the children to develop considerable knowledge about plants, animals, wildlife, ecology and bio-diversity. Resources supporting knowledge about habitats and food chains are particularly enjoyed.

Josef's (3:6-3:9) Learning Journey

Josef was observed at Jellybeans Nursery, when he was engaged in free-flow play with a selection of small-world African animals. He had created three groups of animals; positioning the two lions together in one group, three

elephants in another group, and two rhinos in another (2). He suddenly announced; “I am putting the elephants in a line – this is the biggest, this is the next biggest and this is smallest!” Josef was demonstrating his ordering scheme by positioning the animals according to size. He was also demonstrating his understanding of size and appropriate mathematical language.

Josef’s key person then built upon his grouping and ordering scheme by at first introducing him to the elephant animal family. She identified for him the names of the male (bull), female (cow) and infant (calf), and discuss where they lived, and their natural habitat. This was short focused provocative activity and his educator quickly stepped back to allow Josef’s free play to resume. Whenever she could she continued to observe Josef’s play to see if he continued to show an interest in animals and, if so, to observe the schemes he used in his play. Two days later Josef was sat at a table playing with clay. He spoke to his key person as she passed where he was sitting: “I have made an elephant – it lives in the jungle.” He was later heard asking a friend, “What do elephants eat?” More focused activities were introduced to extend his interest as well as developing the schemes that had been observed. Stories about other wild animals were read and they talked about their characteristics and habitats in more detail. Other less familiar wild animal families were introduced to him, fostering his schemes of sorting and grouping, as well as his schema knowledge of animals.



Josef's Nursery was planning to re-develop their garden and this seemed to be an ideal opportunity to encourage him and his friends to have a voice in what they would like to play with, and what to plant in their garden, in terms of supporting wild plants and animal habitats. His key person explained how particular plants might attract animals into the garden and how they might support the local wildlife. This provided an opportunity for Josef to have some agency in planning the garden, and it proved to have a significant impact in terms of his wider enjoyment the nursery as well as supporting his understanding of interdependence.

It was notable from the key person's recent observations that Josef did not engage in mark making activities, so it was suggested that books about plants and wildlife could be strategically positioned near to the mark making area. In a planned focussed activity, Josef's key person showed him a diorama of the plans for the new nursery garden. Josef was encouraged to express his ideas and draw them in a 'Garden Planning Book': He told his key worker: "I would like to grow flowers to attract bees and butterflies. And grow Strawberries to eat!" A significant new 'food chain' scheme was emerging and Josef was showing increased confidence in his verbal communication and use of vocabulary about wild life.

Over the following weeks Josef produced a range of pictures to express his suggestions for the garden and one of these was to have some fish to look after. His key person was amazed by the amount of mark making that Josef was now engaging in. Given his interest in fish and animals generally it was decided that he might enjoy being introduced to a new activity – taking care of the classroom pets, which were guinea pigs. Josef and his key person looked at books about guinea pigs and developed a rota together so that he would know when to feed the guinea pigs, what they ate, and when to clean out the cage. Josef really enjoyed the idea of being responsible for these animals,

even though he showed some hesitation in whether he would like to hold them. His key person discussed personal hygiene and demonstrated how to effectively wash his hands after touching the guinea pigs. Josef copied and when his key person double-checked that he was happy to take responsibility for looking after the guinea pigs, he smiled and responded: "Yes please."

Later, in free-flow play, Josef was observed drawing pictures of guinea pigs and telling a friend, "The water bottle mouth bit needs to point inside the cage otherwise the guinea pigs cannot reach it!". Josef's key person suggested to Josef that he might like to draw some pictures to show how to look after the guinea pigs in case some of his friends might like to help him. Josef nodded and during the day he created pictures to show the different stages of care of how to fill up the bowl with food, replenish the water in the water bottle and clean the cage. By now he was showing a lot of confidence and capability in his drawings and asked for the particular words to be added.

Learning about food production and agriculture are clear prerequisites for children's later learning about hunger in the world. Many readers may be concerned about taking this issue any further than this in early childhood, but caring for animals and classroom pets provides a valuable context for learning about nutrition. Engaging children in the decision making related to snack preparations can also be valuable. Many preschools celebrate harvest festival with young children where it is traditional to donate food to charities and in celebration of the Islamic festival of Eide Zakat alms are given to those in need.

Water conservation is a popular topic pursued in many pre-schools. We can talk to children about where it is that the pipes that are under their water taps at home lead to, about the water mains, and water metering. There may even be opportunities to talk to them about the reservoirs that are ultimately connected to their water pipes and taps. We can talk to them about the money we pay for water, and what other things that amount of money could be spent upon so that they understand the cost. We can talk to them about how important it is that we avoid wasting water (and save money). One activity used in the Kent project settings was to have all the children clean their teeth over a series of buckets that collected all the waste water. They were the

shown the effects of remembering to turn off the tap while they were brushing and the number of buckets provided a direct indication of the waste.

When we think of sustainable cities, housing is a significant issue and most young children in urban areas at least will have seen homeless people living on the streets for themselves. The charity *Shelter* have created resources to support the topic in schools and much of it can be adapted for use in the pre-schools[4]. Attitudes and assumptions can be usefully explored and possible solutions and local policies discussed. In a Chinese pre-school ESC project carried out in association with the *Organisation Mondiale Pour L'Education Prescholaire* (OMEP) (Siraj-Blatchford et al, 2016), the children reviewed the accessibility of local public buildings and facilities from the perspective of disabled members of their community. Parents were involved and took their children to investigate the topic so that they could bring back photographs to discuss in the pre-school. The children were able to identify many valuable fittings and facilities that had been installed in their community to support the disabled. They also found some problems for wheelchair access. The children took pride in the provisions that had already been made and came up with some ideas for future developments. Their drawings and video provided a report for the local authority.

Translation: *"Smart Earphones for the Blind". It can help the blind recognise*

[4] http://www.shelterclassroomkit.org.uk/

the shapes of obstacles and distinguish colours. It can also help the blind read texts and navigate on the road…By Wen-Xi Yu

There are numerous conceptual pre-requisites for understanding the science of climate that are relevant in early childhood. In adopting an emergent science perspective, we will most obviously wish to engage children in monitoring and discussing the weather, and the influence that it has on the natural environment. It would be extremely difficult to learn anything meaningful about the atmosphere before gaining some confidence in understanding air as a physical substance. This is not something we can take for granted that children will learn on their own. They learn it only when their attention is specifically drawn to it when they engage in 'air play' in the pre-school which can be treated just like water play and sand play as a regular free choice activity and resource. A group investigation can also be fun: 'Air – is it really there?' Children can be encouraged to pour it from one container to another upside down in water, they can play with balloons and inner tubes, capture the wind in windmills, sails and kites. Air pollution can be demonstrated to children on a field trip simply by giving the children damp cloths to wipe on different surfaces, in the playground, on windows, road signs etc. If a candle is burnt under a pyrex dish they will see the soot and begin to understand how smoke makes things dirty. Picture books will show many air pollution sources: cars, factories, smoke from chimneys, and following talk about air, some of the invisible gasses from aerosols etc., can also be mentioned.

Riley's (3:8-3:11) Learning Journey

A group of children were playing in the garden at Happy Days Pre-school. Riley announced, "Shall we water the plants? They look very dry!" His friend crouched down to touch the soil and confirmed, "It is dry." Riley then put his hand on his friend's arm and said, "Come on! Let's go and get some water." The boys selected a watering can each and walked over to a water butt. They turned the tap on and filled their watering cans with water. Riley's friend said; "Plants need water when it doesn't rain. These are so dry!" They took turns filling up their watering cans with water, and

transporting the water back and forth from the water butt over to the plants until they have all been watered. Riley smiled and suggested; “We will look at them again tomorrow. It might rain tomorrow!”

It was agreed that a variety of both indoor and outdoor resources should be provided to both encourage his interest in plants, and to extend the observed transporting scheme. Pictures of plants and flowers were placed around the setting. Books about plants were placed in the book corner and a focussed activity was prepared to support his knowledge and understanding of the value of the sun, and how plants grow (an activity which also required him to transport picture cards from one place to another).

In playing the ‘Sun Game’, children learn that all life is dependent on the sun, and about food chains, and interdependence and ecology. His conversation with his key person during the focussed presentation demonstrated his keen interest:

Adult - “What do you think these animals eat?
Riley - “The bees suck honey from the flowers to make honey. The monkeys eat bananas.”
Adult - “Shall we look at some other plants to see who might eat them?”
Riley - “Lettuce – rabbits eat it.”
Riley - “Elephants eat straw.”
Riley - “Squirrels like nuts.”
Riley - “Cows eat lots of grass and cows make milk. The grass grows because of the sun and water.”

In his free-flow play with the Sun Game, Riley was using his transporting scheme when walking from a sun made of felt, which was laid out on a floor mat, over to a table to look for pictures of plants amongst other pictures of herbivores and carnivores, he was also demonstrating his ability to apply other schemes including sorting, ordering and positioning). Riley managed to find

all the plant pictures and placed these around the edge of the felt sun. He had been introduced to herbivores and carnivores when his key person initially presented this focussed activity and, in his free-flow play, he remembered which of the animals were herbivores, and started a new outer layer of picture cards behind the plants. This provided a concrete illustration that herbivores require plants to survive, and plants need the sun. The activity required a great deal of concentration and lasted for thirty minutes. Despite this, Riley continued to be engaged and went in search of pictures of carnivores to create a third outer layer, which visually displayed the reliance on the sun for life and represent food chains.

At one stage, Riley announced; "Sharks eat fish and fish eat flies!"

The activity fitted in very well with the Hyacinth topic that was introduced into the other settings and will be reported on more fully in Chapter 6. Riley and his friends were enthusiastic about planting bulbs to grow hyacinths for Christmas.

Riley went on to plant and nurture his own hyacinth plant. He put his bulb plant in a bright position in the classroom and regularly checked the soil to see when his plant needed watering. Riley's key person also advised us that Riley had being keeping a record (tally chart) every time that he waters the plant.

Riley's practitioner introduced him to the game 'Guess Who?' She modelled how to ask questions such as, "Does your animals have a tail?" "Does your animal live in water?" "Does your animal swing in trees?" Riley struggled initially to think of questions but, as the game developed, he became more confident in expressing his questions and also in thinking about what he needed to know about the animal he was trying to identify. He enquired for example, "Is your animal brown?" "Can your animal run?" He listened carefully to the

practitioner as she asked him questions and answered each time appropriately, “No mine doesn’t have four legs.”

Riley Playing ‘Guess Who?’ adapted to animal features

Chapter Six

Economics Education for Sustainability

> **"It took Britain half the resources of the planet to achieve its prosperity; how many planets will a country like India require?"** (Mahatma Gandhi, 1947)

The above statement was Gandhi's answer to a journalist's question whether India would come to enjoy British standards of living after gaining its independence. Consumption is an unavoidable fact of life and as Jucker has suggested, whenever we consume something it has an impact on the wider social, economic and ecological environment. The most relevant economic UNESCO (2017) Learning Objectives for the *Sustainable Development Goals* (SDGs) are arguably SDG 1 on Poverty, SDG 4 on Education, SDG 7 on Energy, and SDG 12 on responsible consumption and production. The *Partnership for Education and Research about Responsible Living* initiative (PERL, 2011) have identified what they consider the core life skills needed for all ages which include the ability to:

- **reflect** on the purpose of life and on our personal and collective needs and actions
- **take responsibility** for one's own betterment and for the advancement of society as a whole
- **consult** in the public and private discourse on the nature, purpose and choices involved in human development
- **be creative** in envisioning and constructing alternative solutions to challenges
- **collaborate** with others through continual questioning, learning and taking action
- commit **to both short and long-term goals.**

(PERL, 2011)

It is often argued that an education that promotes thrift (or frugality) simultaneously supports the development of positive environmental values and pro-environmental behaviour. Economics is commonly considered the

science of scarcity and, as Pramling Samuelsson and Kaga (2008) suggested, a curriculum for sustainable citizenship must address the R's of *Reductions* in consumption, the *Recycling* of resources, and the *Reuse* and *Repair* of artefacts and materials. Perhaps the most obvious resources for children to be involved in these four R's is that it will have a direct effect upon the settings consumables budget.

One innovation, adopted in several of the project settings, was to help children avoid waste by providing a 'snippings drawer'. This encouraged them to place left-over paper aside from any work that they had been doing. They would then check the snippings drawer whenever they needed just a small amount of paper.

Issues such as transport and recycling may be seen as both environmental and economic concerns. For example, from an economic perspective, children may learn about (and promote) car sharing. The potential savings for all of the families can then be calculated. Similarly, an activity for example focused upon the collection of aluminium cans for recycling can also provide the stimulus for children to learn how funds may be generated to support the purchase of desirable school resources.

One of the biggest questions to be answered in the contexts of economics and sustainability is how you measure economic progress. Calculations of the national Gross Domestic Product (GDP) currently has a major influence on government policy and GDP per capita is often used as an indicator of living standards. But as a simple sum of all the goods and services produced, GDP does not include many factors that have a major impact on our living standards. In particular it does not account for:

- *Unwanted side effects of growth (e.g. pollution, traffic congestion)*
- *Non-monetary transactions (voluntary work, barter, housework)*
- *Changes in the quality as opposed to the monetary value of products*
- *Sustainability (it may include consumption of a limited resource e.g. fossil fuels)*

- *Equality in the distribution of income or wealth*

It is widely recognised that for the 21st Century we need more adequate indicators to address the challenges that we face in terms of climate change, poverty, resource depletion, health and the quality of life. Amartya Sen's 'capabilities' approach has defined human development in terms of increasing agency and the capability of individuals and groups to take action in pursuit of their own wishes, needs and desires (Sen, 2000).

To this end, a World Happiness Report has been published annually since 2013. In the 2017 edition Norway ranks as the happiest country and Denmark, Iceland, Switzerland, Finland are also in the top five. Despite being the fifth largest economy in the world, the UK ranked only 19th in Happiness and it was found that there were huge variations in the life satisfaction expressed by individuals. Apparently, the six variables that have greatest impact on the Happiness Index scores are real GDP per capita, healthy life expectancy, having someone to count on, perceived freedom to make life choices, freedom from corruption, and generosity. While, at least in theory, the English and many other early childhood education provisions focus upon children's general wellbeing rather than narrowly on their contribution to economic growth, policy makers are often considered to have forgotten this.

Learning about Poverty

An international project encouraging preschools to create develop activities addressing the subject of equality was introduced in 2013-14 by OMEP. One notable entry was from an Australian project that directly addressed children's views on wealth and poverty (Lee Hammond et al, 2015).

The project begun with teachers showing the children two refrigerators. Children made drawings of their own refrigerator, talked about what food they liked, what was healthy and un-healthy food etc.

This project provided a valuable insight into how early childhood

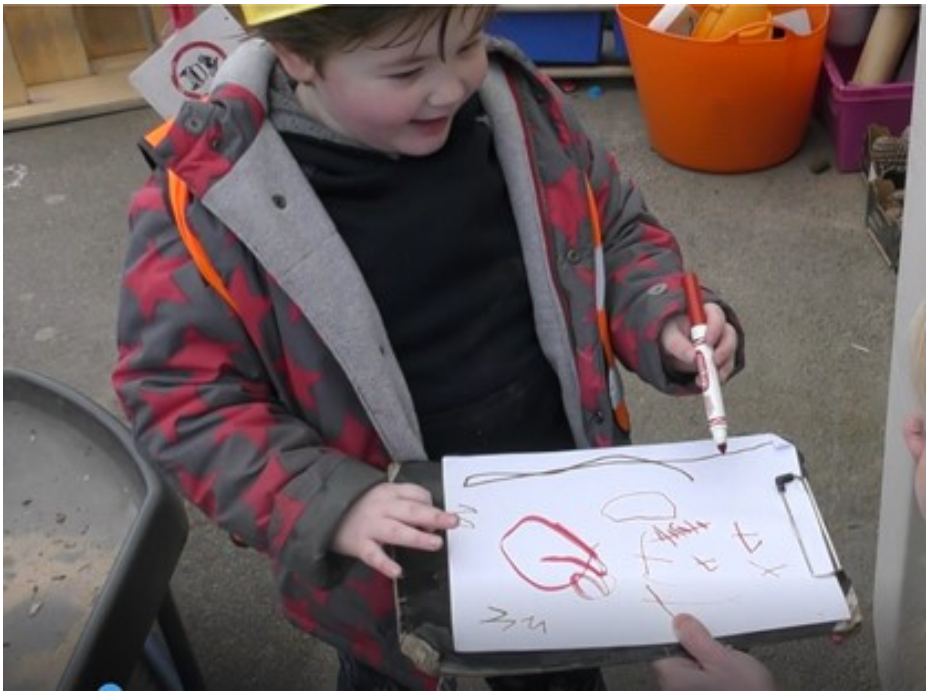
educators could promote new ways of thinking about sustainable practices for children to consider.

The pre-school educators avoided the use of terms such as poor, risk, poverty or wealth. More neutral terms were used. But what was clearly evident was that the children were entirely capable of applying their understandings of 'fairness' and that they had an optimistic outlook on how to remove inequality. They were all quite clear that: *'Share is fair'.*

Toby's (4:0-4:1) learning journey

At Ladybird Pre-school, Toby's key person had observed him pushing a shopping trolley around the playground. Every now and again he stopped to pick up an object and placed it inside the trolley. As Toby approached her, she enquired; "What are you doing Toby? He responded saying, "I am recycling." The practitioner said that she had something special to show him. She went inside the classroom and returned carrying a recycling lorry. She crouched down to Toby's eye level and explained how recycling works. Toby appeared very interested, asking questions such as, "Does the plastic go in here?" "Where does the paper go?" He smiled at his key person appearing to appreciate her sharing her knowledge and then announced, "I am going to make a recycling centre." Toby walked over to where some containers are stored. He selected one at a time and positioned each one in a small area of the garden. He was then observed transporting objects and, as he did so, he announced out loud, "This is card and it goes in here." "This is paper and it goes in here." His play lasted for over one hour and he transported and sorted over thirty objects!

Toby's key person arranged for him and his friends to walk around the local community and carry out a survey of litter. One of the roads that they visited had a large amount of litter on the pavement. Toby asked his key person, "Why do people not take their rubbish to the recycling centre like mummy does?" He added, "I like visiting the recycling centre as I watch everyone unloading their cars from the back window." When the children returned to the setting, the key person read them a story about recycling, explained the importance of not being wasteful and to think about the impact of litter being left on the roads, affirming, "If everyone drops their litter and doesn't recycle we would have dirty streets. We would also waste materials which could be put to good use, thus saving money and resources." She explained how the paper they use for drawing has been recycled from waste paper.



Toby was later observed playing in the 'recycling centre' that he has set-up. His play is becoming more sophisticated. Now, children visiting the 'centre' have to sign in and give their name. There are rules which he provides

verbally and visually, showing his friends drawings that he has created and has clipped onto a clipboard that he is carrying. Toby looks inside each child's bag or trolley as they arrive at the recycling centre and gives clear instructions, along with gestures as to where each item should be placed. He also reminds them of the road that they visited with a lot of litter and draws a map of roads to remind them. Toby is in complete flow – fully immersed in his role as head of the recycling centre. Toby encourages a younger child to put on a yellow coat and work with him. He offers instructions to his new apprentice and together they operate the recycling centre for 55 minutes.

At different times, many of the other children engaged with Toby in his play and it was notable that he often explicitly took on the role of the ESC educator. This should not surprise us at all; ever since he first attended the pre-school, the adults provided this role model.

Electricity: Conservation and Safety

The influence of electricity and electronics on the world today is enormous and it is important for it to be included in the early childhood curriculum for safety reasons alone. It is also a form of energy that we need to conserve. Last year, a report released by the Energy Saving Trust, Department for Environment, Food and Rural Affairs (DEFRA) and the Department of Energy and Climate Change (DECC) found that the average household was wasting between £50 – £80 of their annual £530 electricity bill by leaving appliances on standby instead of switching them off at the socket. The UK government predicts the wholesale price of electricity will rise from £48 per megawatt hour (MWhr) this year to £67 in 2025 (at 2015 prices). The National Grid has also suggested that electricity could double in price over the 20 years. Future trends are difficult to predict accurately, but it may be significant that the government has also guaranteed EDF a fixed (35 year) price of £95.50 per MWhr for the electricity it produces from the new Hinkley Point Atomic Power Station. The current average wholesale price for electricity is reported to be about £38 per MWhr. There can be little doubt that electricity conservation is going to continue to be an issue for the foreseeable future.

Three facts every child should know about Electricity and Safety

1. There is no such thing as a perfect Insulator

Every material can conduct electricity under some conditions. While pure water is a poor conductor, dirty water can be a very good one. Even air conducts electricity at times as can be seen in lightening, and the insulation qualities of rubber and plastics around electrical cables may be reduced through age and damp conditions.

2. The Human Body Conducts Electricity

According to the *Royal Society for the Prevention of* Accidents (ROSPA) there are as many as 2,788 accidents involving electricity in the home every year. When a strong electric current flows through your body it blocks the electrical signals between the brain and your muscles. In some conditions 50 Volts is enough to cause this 'electric shock':

- It may stop your heart beating
- It may stop you breathing
- It may cause a muscle spasm that leads to serious injury.

3. Electricity + Water = Danger

The seriousness of an electric shock depends on the size of the voltage, which parts of your body are involved, how damp you are and the length of time the current is flowing through you. From an electrical safety point of view, the bathroom is probably the most dangerous room in the home. There are special regulations limiting the fitting of electric sockets in bathrooms and electrical devices such as hairdryers, heaters or radios should never be used. Another major site of accidents is in the garden where electrical equipment should never be used in wet or damp conditions. While it is beyond the scope of this publication to provide detailed guidance on early childhood electricity education, SchemaPlay have developed resources that were trialled successfully in two of the Kent Preschools.

Making circuits with a SchemaPlay Buzz Box

Elizabeth's (3:4-3:6) Learning Journey: the 'Hyacinth Project'

Elizabeth was observed playing freely in the role-play corner at Ladybird Pre-school. There were other children in the area, but Elizabeth appeared

to be unaware of their activity, she usually played alone and she had not previously engaged other children or adults in her play themes. She was sitting at a table with a cash till in front of her and had two toy dogs. Philip, another child in the nursery, approached her and she said; "What can I do?" Philip was just two years and three months of age. Elizabeth was generous and passed him a toy phone to play with, but she did not engage him in her play activity. Philip watched Elizabeth's play, but Elizabeth was in full flow taking pretend money out of the till, passing it to a dog, then putting the money back into the till saying, "Now you can go to your new home." Elizabeth placed the notes into specific slots, differentiating between where the ten pounds and the five pound notes should be placed.

An adult walked past and she said: "Do you want to buy this?" The adult said that he would, and asked how much the object would cost. Elizabeth waved a ten pound note at him. The adult took the money and asked; "is £10 enough?" Elizabeth nodded, took the money and gave the adult the item. He then returned the £10. At first, she placed the note inside the till, but then decided to remove it and placed it inside a box. Two seconds later she asked for the sold item back.

Elizabeth was demonstrating an enclosing scheme, she was putting the pretend money inside the till and inside a 'cash box'. Elizabeth had visited a pet shop

during the previous weekend and in discussions with Elizabeth's key person, it was decided that Elizabeth could be asked if she would like to run a shop to sell hyacinths. The setting embarked upon a project, whereby every child would purchase a plant pot and hyacinth, plant and nurture it, then sell them to parent's/carers to give to someone as a Christmas present. The plan was that the children would learn a little about economics, cultural practices, and care of the environment as well. With the money raised the children would select a resource for their nursery to buy.

The picture above shows Elizabeth a few days later in the garden, she was at this stage running the shop and fully in charge of taking the children's 50 pence pieces for their bulb and their pot. Each child handed her their name card, and she ticked against their name on a register so that the shop had a record of who had purchased a pot and bulb. The practitioner at first modelled the activity as a provocation, so that Elizabeth could understand the role of shopkeeper, and make a final choice whether she would like to run the 'hyacinth shop' or not. She nodded readily when asked and took her position at the till. She carefully took a name card from each child, and using a pencil she made a mark against their names. The children then passed her their money. She took the money, placed it carefully inside the till, passed the child a pot and a bulb and then pointed to where they needed to go next. She sat

waiting patiently for her next customer and when she saw some children approaching, she shouted out, “Next!”.

Elizabeth was immediately totally in ‘flow’, she was in the ‘zone’ of shopkeeper. Several weeks later Elizabeth was asked if she would like to run the hyacinth shop at the Christmas fair. Elizabeth readily took up the role and happily took the visitors’ money, recorded their payments, and provided a receipt before she handed over their hyacinth. At the end of the day, the children, with the support of their teachers, counted the money raised and they were invited to vote upon which resource they would like to buy for their pre-school with the funds. At the end of that week, the children visited a local toy store to purchase the resource that they had all agreed upon.

After Christmas, Elizabeth was observed running her own shop in the outdoor environment. She had created it spontaneously in her free play. She was asking her peers to buy something and called out, “Who wants to buy something at my shop?” She had set up a store of goods and found some additional bags (‘seeded’ by her key person, along with a shopping trolley and baskets). A child of two years of age who had not yet spoken in the setting, repeated Elizabeth’s phrase, “Want to buy in my shop?” Elizabeth moved over to let the child join her behind the till. Seven children visited Elizabeth’s shop during her play and she told us; “That was a lot of money I have taken today.” Her practitioner suggests they could look at the numbers on the coins, and Elizabeth confidently showed her the numbers one, two and three, but couldn’t recognise four and five. Earlier play in the ‘hyacinth shop’ seemed to

have drawn her attention to playing with other children, and during this observation she was constantly leading the play theme and encouraging others to join in.

Elizabeth's key person subsequently identified that she could not recognise numbers 4 and 5 and decided to introduce these to her as a planned activity. Elizabeth was introduced to the number symbols 4 and 5, tracing sandpaper numbers. The practitioner played a game with her asking, "Can you point to 5? Where is 4? Please can you hold up 4 in the air? Please can you trace the number symbol 5?, Please can your trace 4?" After playfully repeating the questions a few times, it was clear that Elizabeth could recognise the number symbols 4 and 5 during this activity.
Elizabeth's enclosing scheme was identifiable again at the end of the activity as she said:

"I am going to put these numbers in a special box with my letters. I have some letters from my name!"

It was decided that prices could be added to the objects that Elizabeth wished to sell, so that she could consolidate her recognition of numbers 1 -5. It was also decided that coins could be used in the play, so that children counted out the amounts.

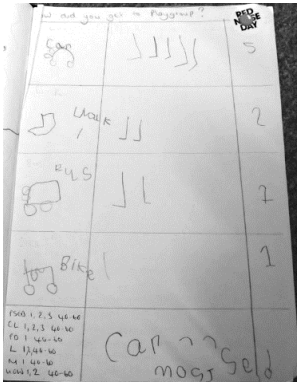
Chapter Seven

Literacy and Numeracy for Sustainability

"Literacy is a bridge from misery to hope". (Kofi Annan)

Literacy and Numeracy were not referred to in the Pramling Samuelsson and Kaga's (2008) Seven R's curriculum guidance, but their inclusion was argued strongly for in Pramling-Samuelsson and Siraj-Blatchford's (2015) UNESCO commissioned review of the Decade of Education for Sustainable Development, and in Siraj-Blatchford *et als* (2016) international review of research. Sadly, these areas of the curriculum have often been presented as in some way in opposition to the achievement of learning objectives in environmental and sustainable development education. Yet in the modern societies of the global north and south, competency in terms of literacy and numeracy must be considered fundamental to civic engagement, individual empowerment and democracy. A substantial body of research evidence is also now available that shows that high quality pre-school education has been successful in supporting children who have been disadvantaged. Governments have often seen this as an economic issue, where educational underachievement has implications for the prosperity of the nation as a whole. It is also widely recognised that society should intervene where children have experienced poverty, lack of stimulation, neglect or worse, because children have individual rights of their own. The United Nations have agreed upon these principles in the Convention on the Rights of the Child.

Education for Sustainable Citizenship shouldn't be seen as a subject simply 'added on' to the early years curriculum. As this 'Travel to Work' carbon footprint tally sheet produced by Flora (aged 48 months) shows, ESC can be totally integrated, and it has the potential to transform and re-vitalise early childhood education.
High quality early childhood education has been shown to be effective in breaking the vicious cycles of family deprivation, providing individual



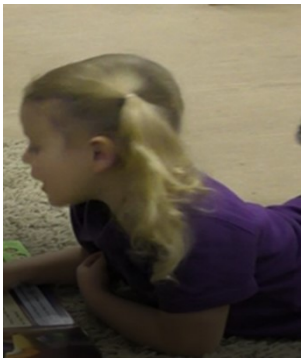
children with the skills to achieve social and economic mobility. Goal 1 of the United Nations SDGs to be achieved by 2030 is to 'end poverty in all its forms everywhere'. It is now widely recognised that poverty is more than simply a lack of income or resources, it includes lack of basic services, such as education, hunger, social discrimination and exclusion, and lack of participation in decision making. There is also an SDG for Education (Goal 4) that includes the importance of making provisions for early childhood education. Most important of all we should recognise that in the modern world active citizenship *requires* literacy and numeracy, and an emergent literacy and numeracy curriculum can be seamlessly integrated in education for sustainable citizenship.

The following case study shows how emergent literacy activities supported Flora's learning and development, empowering her to record the names of small world animals, to make structured observations of wildlife, and to begin the learning journey towards communicating her observations. Flora's case study shows is followed by Liam's which shows how a few well timed, short focused activities were used in a similar way to support Liam's emergent numeracy. The measuring activities that he applied freely in his play would later empower him to carry out a wide range of activities in his investigations of the environment.

Flora's (3:9-3.11) learning journey at Wombles Playgroup

Flora was observed sitting next to her friend and announced; *"I am writing a letter, a letter to my Mummy – look!"* Flora held up her mark making and smiled. In discussion with her key person, it was agreed that a variety of both indoor and outdoor resources should be provided to support mark-making and to demonstrate that text carries meaning.

Several days later, Flora was observed walking over to the book corner and selecting a book which she took over to a rug. She opened it and placed two fingers under the text moving them horizontally from left to right, just as though she was reading! She did not say anything, but as she reached the last word on the page she looked up and called out to her key person; *"Rachael, can you come and look at this?"* She enquired; *"Are any of these letters in my name?"*



After discussing which letters were in Flora's name, she took the book back to the book corner and announced, *"I am going to write a letter now"*. Flora's key person responded to Flora's interest in letters with a focussed activity that involved her making some sandpaper letters – f/l/o/r/a, and later learning the individual phonic sounds of each letter.

Later we heard her saying: *"Mummy, I made letters in my name today. Rachael showed me and I made them! Come and see them!"*
Flora showed her mother the letters drying on a rack.

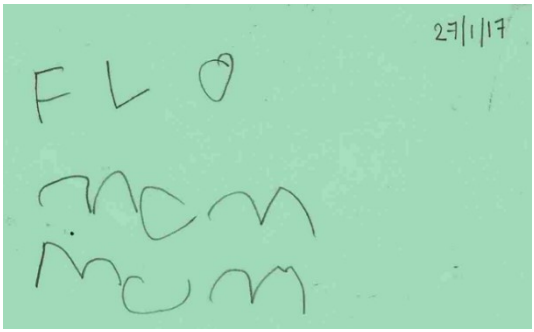
Flora's key person introduced three letters and their sounds to Flora, and then she played a game of '*find the letter'*. Where is the letter 'f' and; *"Can you find the letter 'o"; "Can you trace over the letter 'o"*, and then; *"Can you trace the letter 'l"*. Flora followed all the instructions and laughed throughout the activity, smiling every time she identified a letter correctly. When the game had finished, Flora said, *"Again, let's, can we, play again?"*

Later, in her free play, Flora was sitting on a mat with two small world objects (a dog/cat) and pictures of (a fog/a bag).

Flora said (to herself), *"What sound can I hear first? d/d/d/ d-o-g/d"*. She traced her fingers over the letter,'d', smiled and put the letter 'd' alongside the dog. She then said, *"d/o, d/o, d/o. 'O' is in my name"*. She traced 'o' and then sat back to look at the letters she had selected so far. Then she said, *"'g', 'D', 'o', 'g', I made dog*". She traced over all three letters using her left index and middle fingers and then selected the picture of

fog. Flora carried out the same process of saying the letter sound and finding the appropriate letters to write 'fog'.

Spontaneously, in her free-flow play, Flora had started to make words out of the letters that she had made, identifying the first, middle and end sounds in each word. Objects were then provided to help her consider the sounds in the nouns. She traced over the letters she had made and placed them into position. The activity of saying the letter sound, and finding the appropriate letter had been introduced to Flora two days previously and this is the first time the key person had seen Flora choosing to play with the letters in free-flow play. It was decided that Flora should have access to the letters on the shelf at all times, so that she could re-visit this activity independently, and, once it appeared that Flora had finished making the words initially chosen, some new small world animals were added to the basket next to where the letters were stored.



Mark making materials, books and letters were also placed in different areas of the classroom, such as in the role-play area. Flora had recently developed an interest in birds, so she was provided with a sheet on which she could tick/make a mark every time she spotted one of the birds pictured on the paper.

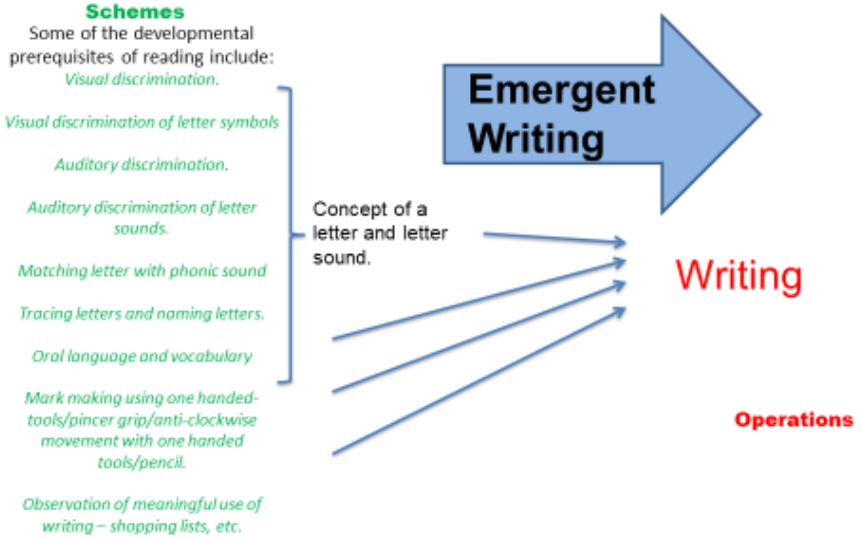
The next day, Flora's key person reported: *"I have to share an exciting observation I recorded today, Flora built six words in her free flow play using the sandpaper letters."*

Then, a day later, we had another note from Flora's key person: *"Flora asked me if we could sound out the letters in Mummy. She was holding a pencil and paper and gestured to me to sit at a table next to her. As we sounded out the letters m/u/m, Flora wrote the word 'mum'. She did this twice and then put*

her own name on the top of her paper! I cannot believe that she has drawn together the schemes, just as we discussed in the training and is writing words!

The focused activities that Flora was introduced to were offered as 'provocations', where it was merely suggested that they might take her freely chosen play further. While they encouraged her play in a particular direction they didn't interrupt or disturb it. They empowered her to take it further. A more detailed explanation and account of the pedagogy applied is presented in: Siraj-Blatchford and Brock (2016b) *Putting the Schema back into Schema Theory and Practice: An Introduction to SchemaPlay*, SchemaPlay Publications.

In terms of curriculum, the intervention was informed by an account of Emergent Literacy' that is also presented in the above booklet and summarised in the figure below. It shows how the complex operation of writing is finally accomplished by a child only when a number of pre-requisite (or developmental precursor) schemes are in place. It is important to recognise in this context that while these precursor schemes may be considered necessary conditions for learning to write, they should not be considered sufficient in themselves. The child will write when they have the prerequisite skills and there is a meaningful and motivating reason to do so. In early childhood these meanings and motivations arise in freely chosen Play.



An Emergent Curriculum *recognises that the sophisticated cognitive operations that emerge in children are irreducible to their component parts, which nevertheless act as developmental precursors that must be drawn together in the child's mind as a unique and individual creative act.*

Liam's (3:4 – 3.7) Learning Journey at Happy Days

Liam was sitting on a floor mat playing freely with wooden blocks. He put one wooden square based prism block on top of another, and then picked up a car and tried to make the car roll over the top of the two blocks, by giving it a gentle push. He appeared to realise that the car would not roll over the top easily, so he turned his car over and used his fingers to make the wheels turn, as though checking that the wheels were working. He placed another building block next to the two already constructed and tried to roll the car across the three blocks. Liam looks puzzled and he frowned. He then selected a triangular based prism. He placed the car at the top of one of the sides of the triangle and it rolled down. He announced, *"Yes - it is working!"* Provocatively, an adult, observing, positioned himself nearby and slowly constructed a ramp using some of the blocks. The adult selected a car and rolled it down the ramp. Liam was watching the whole time. He shuffled

over to where the ramp had been constructed, holding his own car. He placed his car on top of the ramp and watched it roll down. He then squealed with delight. He got up and walked over to where more cars were stored and returned holding a handful of different vehicles. One by one, Liam pushed each car down the ramp. The last vehicle he pushed down the ramp travelled further than any of the others and he announces; *"That one went far!"*

Liam's key person agreed that she would continue to observe Liam constructing his own ramps and playing with cars. It was agreed that Liam might be introduced to a new scheme – measuring; measuring the distance that each vehicle travels The measurements could be recorded, supporting Liam's understanding that text carries meaning, and encouraging his use of number symbols for a purpose. The following day Liam's key person *provocatively*, suggested that Liam should build his own ramp and she then introduced a metre rule and pointed out the numbers along the side. Liam was encouraged to look at the numbers and she explained that they were going to roll each car down the ramp to measure how far it travelled and, when they have checked how far each car has gone, they would record the distance to check which one had travelled the furthest. Once each had been tested, Liam placed three vehicles in a row and pushed the one at the back, so that all the vehicles travelled down the ramp together. He looked at the ruler to check the distance and said, "*It is longer this time!"*

Liam's key person had introduced a new measuring scheme and she had shown Liam how to record his findings; supporting an understanding that number symbols can be used in different ways and for different reasons.

Liam continued the activity for some days and was frequently observed in free-flow measuring the distance that vehicles travelled after rolling down a ramp.

Liam's knowledge and visual discrimination of length and measurement were being extended in his free-flow play. His key person ensured that the resources previously introduced to Liam were available for him to return to whenever he wanted, independently.

Liam's key person then placed a ruler up against a long mirror in the classroom to encourage Liam to measure himself and his friends. This became a popular activity.

Two weeks later Liam was observed in free-flow play. He had constructed a ramp with a friend and they were taking turns to roll small world animals down the ramp. After five minutes, they decided to turn the blocks up on one end to construct a vertical rectangular based prism. A piece of bark, as can be seen in the picture above, was being used as a slide. Another two children joined Liam and his friend and together they try to fill the container to the top.

After ten minutes, Liam was observed making a ramp out of books in the book corner and rolling small world animals down it. The animals were rolling on to a shelf and then onto the floor. An adult noticed and seeded the play by providing a basket for the animals to fall into. She also provided a piece of paper and a pen, and suggested that every time an animal landed in the basket that Liam could make a line (record it in a tally chart format). Liam nodded and smiled and engaged in this activity until the afternoon session finished (engaging for just over 15 minutes).

Before tidying the toys away, Liam and the adult counted how many lines he had made. He counted fifteen, then emptied the container and counted the animals. He smiled and said, *"Fifteen!"*

Liam's key person, later extended the play and provided a variety of containers to fill with objects and to work out which container holds the most.

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Index

SchemaPlay and the *Kent Early Childhood Sustainable Citizenship Award*

This book shows how early childhood education can contribute towards the achievement of the United Nations Sustainable Development Goals (SDGs) for 2030. It has been written to support SchemaPlay training, and to support early childhood settings in working towards the *Kent Early Childhood Sustainable Citizenship Award*.

Each of the (Bronze, Silver and Gold) Kent ESC Awards take about nine months to a year to achieve. Settings registering for the award are at first provided with a self-audit tool that supports them in identifying specific improvement targets related to the three pillars of sustainability education. The audit will inform the development of bespoke training that includes the introduction of curriculum support documentation, and resources to encourage parental participation in the initiative. Nine *i-Can booklets* suggest activities parents may pursue with their child at home, and on completion of each of these booklets, the child is awarded a sticker to affix in their *Kent Early Childhood Sustainable Citizenship Award Passport*. The passport provides discounted access for its holder and an accompanying adult to Wildlife conservation parks and other relevant family resources.

Other resources that are supplied upon registration in the Award scheme include focused activity sheets for daily sustainable citizenship activities, and project suggestions for some of the United Nations activity days, such as *World Wildlife Day, World Earth Day*, etc. For more information see:

http://www.kentesc.org

SchemaPlay offer bespoke ESC training and regular workshops. For more information, visit:

http://www.schemaplay.com

For further information, please email:

admin@schemaplay.com

Education for Sustainable Citizenship in Early Childhood

By John Siraj-Blatchford and Lynnette Brock

This practical and accessible text presents sustainable citizenship as a life-long emergent capability, and distances itself from those who choose to promote negative images of the future that may result from either toxic childhoods, or environmental and/or climate catastrophes. Texts often warn us of the terrible consequences of modern childhood, and often look back (with rose tinted glasses) on a supposed golden age where children enjoyed a closer engagement with nature. If this were sufficient then as children of the past ourselves we might have been expected to look after the environment better. Other approaches emphasise the need for children to take action to 'save the planet'. We have taken what we consider to be a more balanced and rational approach, founded upon the widely-accepted axiom that we should 'start where the learner is', engaging them critically and creatively in the social, economic and environmental realities of today. We therefore provide an optimistic and celebratory approach that emphasises the importance of providing positive role models, and promoting a model of 'Sustainable Citizenship' where individuals accept responsibility and take pride in their day to day sustainable actions as part of a global movement towards sustainability.

Our model of early childhood education for sustainable citizenship has also been developed to support the child in recognising the need for resources to be distributed fairly, and to develop an understanding of our interdependence with nature, and with other cultures and communities.

In providing an Education for Sustainable citizenship we may learn to become more sustainable citizens ourselves.

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