Wellbeing and Sustainable Development: The legacy of Maria Montessori

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Sustainable Development (SD) has often been defined as it was originally framed within the 1987 Brundtland Report as development which:

"…meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p.43).

In our ongoing efforts to achieve an Education for Sustainable Development it is clear that we must address the most pressing unsustainable challenges of our local contexts and simultaneously contribute towards global efforts to promote an education for sustainable citizenship. Recent years have seen an increasing emphasis upon the identification of children at risk of poor wellbeing and health and the development of interventions that may reduce their long-term harm. In global terms, young children are recognised as the first, and the worse affected victims of climate change, natural and environmental destruction.

Since 1987 there has been growing recognition of the importance of priority being given to the needs of the world's least advantaged, and also on current and future environmental limitations for development (Little and Green, 2009). In a commissioned review of the progress made in Early Childhood Care and Education (ECCE) during the UN Decade of Education for Sustainable Development (2005-14). Pramling-Samuelsson and Siraj-Blatchford (2013) adopted an alternative definition informed by Sen (2013). Sen's 'capability' centred approach to sustainable development aimed to *"integrate the idea of sustainability with the perspective of freedom, so that we see human beings not merely as creatures who have needs but primarily as people whose freedoms really matter"* (ibid, p.6). Pramling-Samuelsson and Siraj-Blatchford (2013) followed the principle of the UN Convention on the Rights of the Child, arguing that our definition of Sustainable Development must account for children's agency and the recognition that provisions had to be made to support their participation in the ongoing achievement of more sustainable futures. Sustainable Development was therefore defined in Sen's (2013, p5) terms as "development that promotes the capabilities of present people [including children] without compromising the capabilities of future generations" (Sen 2013, p. 5, with authors parenthesis).

Since the 1980s we have seen an ever greater recognition of both the interdependence and fragility of global ecosystems. These have culminated in the institution of the United Nation's Sustainable Development Goals (SDGs). The SDGs aim to eliminate extreme poverty and hunger, provide quality lifelong education for every child, and to promote peaceful, inclusive and sustainable societies. They build upon the prior UN commitments reflected in the Millennium Development Goals but go well beyond these, and have been framed to apply to all the nations of the world and not just those in most urgent need. In terms of early childhood, the SDGs include goals and targets related to child health and protection, early childhood education, and the reduction of inequality. As Britto (2015) has suggested:

"Investments in ECD [early childhood education] are fiscally smart, given the multiplier effect of ECD across several goals. But, they are also scientifically credible and morally correct. Let us affirm our commitment to the Global Goals by giving every child a fair chance in life from the start" (p1).

Pramling-Samuelsson and Siraj-Blatchford's (2013) review argued for more 'joined-up' integrated thinking in ECCE as it related to sustainable development, and it argued that integrated cross-generational initiatives, and other major early childhood initiatives on health, and on Water Sanitation and Hygiene (WASH) in preschools made a strong contribution to sustainable development but were often neglected from accounts of ECCE and sustainability. UNESCO should adopt a more integrated approach to match the significant efforts being made around the world to develop

more integrated early childhood services (CFBT, 2010). In England, and in many other minority world contexts this integration has the overall objective of improving children's wellbeing and Welfare. This has proven to be challenging, a research review on 'Improving Development Outcomes for Children Through Effective Practice in Integrating Early Years Services', carried out for the Centre for Excellence and Outcomes in Children and Young People's Services (C4EO) by Siraj-Blatchford and Siraj-Blatchford (2009) found that there was a consensus in the research and evaluation literature that early childhood health, care and education practitioners in the UK needed to be provided with a better understanding or vision of the overall rationale and purposes of integration (Dahl and Aubrey, 2004; Gasper, 2004; Anning, 2005; Rose, 2011).

For the 'wicked problems' (Rittle, 1973; Devaney and Spratt, 2009; Moore, 2011) that are addressed in the complex and challenging world of child support it isn't enough to simply bring together and encourage collaboration among professionals adopting different disciplinary approaches. Siraj-Blatchford and Siraj-Blatchford (2009) argued that ECCE required a 'trans-disciplinary' (Piaget, 1972) approach that would reach "not just across the specialisms within disciplines and across different disciplines, but beyond each individual discipline" (Siraj-Blatchford and Siraj-Blatchford, 2009, p38).

Sustainable development in early childhood care and education is just as fundamentally concerned with wellbeing in early childhood and in later life in the UK and other European countries as it is in any other part of the world. It is about being healthy, staying safe, enjoying and achieving, making a positive contribution and it is about achieving economic well-being as well. All of these are compromised by exposure to pollution, traffic, lack of green space and play areas, less active lifestyles, poor diets and poverty. As Valios (2008, p1) put it, in the UK context:

"We should not so much be considering what sustainable development could contribute to ECM [the Every Child Matters agenda] as what it must contribute in order that the outcomes of ECM are themselves achievable."

Sustainable development has the ultimate potential of offering an holistic, transdisciplinary and transformative perspective that can support agencies in the integration of early childhood and family services. A resonance between the concerns of the SDGs and children's wellbeing is immediately apparent as soon as they are brought together. This should not surprise us too much as this emphasis on the child, the natural environment, and the local and global concerns for humanity can be seen in many of the pioneers of early childhood services, and perhaps especially in the work and writings of Friedrich Frobel, Robert Owen, and Maria Montessori.

The UNESCO Decade for Education for Sustainable Development (ESD) has provided a context for the rationalisation of a number of separate initiatives that have developed in early childhood education. A series of international meetings held in Gothenburg in 2008 resulted in the development of a set of specific recommendations (SWEDESD, 2008) for Education for Sustainable Development in Early Childhood Education (SWEDESD, 2008). The recommendations were grounded on notions that children are competent, active agents in their own lives and recognised that children are affected by, and both capable (often required by circumstance), to engage with complex environmental and social issues. The recommendations steered away from romanticised notions of childhood as an arena of innocent play that positions all children as leading exclusively sheltered, safe and happy lives that remain untouched by the events around them.

In our research and development work we have sought to identify the underlying principles that have informed the early childhood work considered most exemplary by the wider international sustainable development community (including Wals, 2009; UNESCO, 2012). We have also conducted literature reviews and content analysis of documents including the Earth Charter; work by Micheletti and Stolle, 2012; Rose et al, 2014; Huckle and Wals (2015). Building upon a useful framework developed by Peterson and Warwick (2015)[1] we found that the most prominent ESD curriculum objectives related to children gaining a knowledge and understanding of interdependency, to the

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[1] Warwick, A., and Warwick, P. (2015) Towards a pedagogy of love: Sustainability Education in the Early Years, Early Education Journal, Vol 76

development of children's capability related to agency and action, and to their emerging development of sustainable values.

Three dimensions of interdependency:

- Biosphere dimension that involves learning about biodiversity and protection, about global warming and C02, learning about human interdependence, peace, poverty and its causes;
- Temporal dimension – that involves learning about the history of sustainability and evolution, envisaging positive futures;
- Spatial dimension – recognising our own needs, values and ethnicity – learning about commonalities in diversity – respect for diversity.

Three dimensions of agency and action:

- Critical literacy dimension – learning about stakeholders, rights, responsibilities, fair trade; diversity, contradiction; local government, voluntary groups, civil society;
- Creative thinking dimension – involving problem solving, foresight, systems/network thinking; and the concept of emergence;
- Active learning dimension – that includes agency awareness; participation; uncertainty; risk and resilience; learning about action possibilities; chain reactions; multiple causes and effects; trade-offs and compromise.

The sustainable values that were identified as most often prioritised included: Developing children's 'attachment' to nature, their recognition of stewardship; 'awe and wonder'; reverence; empathy, hope; justice; dignity; freedom; solidarity; sustainability; trust; forgiveness; peace; understandings of wellbeing and quality of life.

Clearly there are some concepts identified here that are unlikely to feature explicitly in any early childhood curriculum but, like all other complex operations or concepts that we prioritise in education there will be early learning and developmental precursors. Sustainable citizenship is best seen as an emergent and life-long accomplishment.

There is a long tradition of environmental education, and socio-cultural education in early childhood education, even if the third major 'pillar' of ESD that is related to conservation and thrift has been relatively neglected in recent years (Siraj-Blatchford and Pramling-Samuelsson, 2016). A central concern in ESD is for children to learn to recognise the ecological interdependency of the natural world; to learn about the interdependency that humanity has with the rest of the natural world that we live in, and about the interdependency that we have with each other. In terms of child development and learning, our understanding of interdependency begins with our learning about ourselves and about others. There are preconditions for this, the child's learning will be limited if they are neglected, unsafe, hungry, sick or malnourished. So sustainable development in early childhood is not just about education. In many places around the world these are not preconditions that can be taken for granted. But when permitted by circumstances, research shows that babies, in some cases less than an hour old, begin to imitate the facial gestures of others (Meltzoff & Moore, 1994). From birth, the child has the ability to sense the movement and position of their bodies and to visually recognise equivalent expressions in others. Learning about interdependence starts at an early age. From the age of about two children begin to learn how to interpret the thoughts, feelings, desires and perceptions of others through a process of 'simulation' that apparently operates in three stages:

"The initial step... is to imagine being 'in the shoes' of the agent.... This means pretending to have the same initial desires, beliefs, or other mental states that the attributer's background information suggests the agent has. The next step is to feed these pretend states into some inferential mechanism, or other cognitive mechanism, and allow that mechanism to generate further mental states as outputs by its normal operating procedure....More precisely, the output should be viewed as a pretend or surrogate state, since presumably the simulator doesn't feel the very same affect or emotion as a real agent would. Finally, upon noting this output, one ascribes to the agent an occurrence of this output state. Predictions of behavior would proceed similarly. . . . In short, you let your own psychological mechanism serve as a 'model' of his" (Goldman, 1995a, p. 189).

Social perceptions draw upon multiple sources of relevant sensory and affective of information and neuroscientists have identified 'mirror neurons' which hold a 'simulation' (or internal repetition) of observed actions. Apparently this 'embodied simulation' is the same as that which would be activated if the observer themselves acted in the way observed. This discovery has provided insights into the way that the brain pulls together multiple sources of immediate sensory and recalled information, words, and pictures to create integrated and independent concepts and perceptions. Gallese (2009) has shown how embodied simulation provides a means by which we can understand the meaning of actions, intentions, feelings, and emotions. In early childhood these provide the cognitive foundations for our emerging identity and social identification and from this perspective, an empathetic response will result from simulation where the output states are affective or emotional: *'empathy consists of a sort of "mimicking" of one person's affective state by that of another'* (Goldman, 1995a, p. 198).

Children are naturally inclined towards imitation and pretend play in the early years but it is essential that we provide them with enough free time to make the most of these learning experiences, as well as the environmental resources and social interactional stimulation that they require (Fein, 1978). As our most powerful symbolic system, language facilitates the learning process but there are many other significant symbolic instruments. The facial expression of feeling states are extremely influential and, in much the same way as an enriched language environment, an emotionally enriched environment will significantly support the child's development. Multi-sensory experience in the natural and physical environment is highly influential and symbolic representation increasingly provides the child with a means by which events or objects that are not immediately present may be explored and creatively applied in their play to new contexts.

The foregoing discussion suggests that the awe and wonder that many environmental educators seek to instil in children to achieve 'deep learning' should be recognised as 'contagious' rather than simply the inevitable result of frequent contact with nature. Such an experience may be spontaneous but it might more often be socially constructed.

Research conducted by Ewaert et al, 2005) suggests that while experience of the natural environment may be a necessary precondition for the development of pro-environment and eco centric beliefs and attitudes it is unlikely to be sufficient. Early negative experiences or concerns regarding loss or damage to the natural environment are particularly influential (p236). This is also consistent with Dewey's perspective of "transactional realism" (Boyles (2012 p. 153) and the notion that experience emerges from ongoing exchanges between human organisms and their environment. What is required is, as Dewey (1916) argued, is for children to enjoy a deep engagement with the natural world, and for this to occur we need to recognise that the child's social and physical environment will be integral to their education. We need to recognise that:

"…natural, or native, powers furnish the initiating and limiting forces in all education; they do not furnish its ends or aims" (Dewey, 1916/1966, p. 114).

Free play in the natural world isn't sufficient in itself to ensure an adequate education for sustainable development, the free play must be 'seeded' by a stimulating and challenging (and not just a sentimental) social and physical environment. This is something that Montessori understood very well.

A Pedagogical model for ESD in early Childhood

Many early years' practitioners continue to question how they 'weigh-up' the extent of their involvement in children's play, and they question how formal, or informal, structured or unstructured, dependent and independent learning experiences should be to meet each child's interests and needs. Generally, early years' settings recognise the need to provide play and learning experiences which are underpinned by accurate assessment and continual quality-enhancing activities. Laevers' (1999) and Bruce's (2004) application of Csikszentmihalyi's (1979) concept of 'flow' have been extremely influential in describing the complete immersion, involvement and sense of fulfilment that young children experience in their playful learning. Our research findings build upon the insights of Athey (1990) and suggest that more can be done in 'seeding' free-flow play to support the development of skills and competencies that can be assimilated and combined to new contexts: A challenge for many practitioners is to recognise how the internalised operational processes children acquire can lead to new figurative knowledge and conceptual understandings, and,

following a series of studies and trials (Siraj-Blatchford, 2002, Brock 2015, Siraj-Blatchford and Brock, 2015), We have produced a model, and associated training materials consistent with the associated accounts of embodied cognition and learning.[2]

Our model is structured to support practitioners' in differentiating between the children's use of operative knowledge (schemes) and their figurative knowledge (schemas), and in recognising the emotional impact of scaffolding learning, which depends upon the resilience that children have developed in their prior learning experiences. Resilience begins with beliefs, especially the child's beliefs related to self-identity and self-efficacy, which must be nurtured alongside other forms of knowledge.
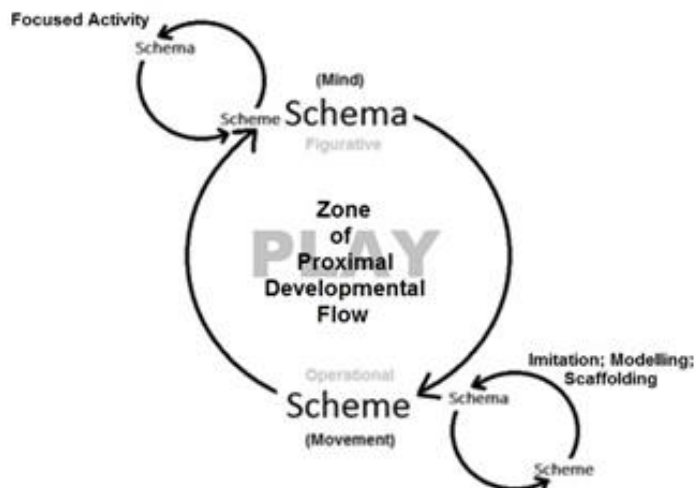
The Schema Play Model

A 'tippy-tap' at Townsend Montessori UK

To take a concrete example of the model in action we may draw from a project that we developed as a collaboration between OMEP preschools in the UK and Kenya. The project was launched on United Nations World Water Day (March 22nd 2016) and it showed how children could learn through self-directed and exploratory free-flow play, and how teacher directed focused learning activities could be used to 'seed' this free play, and support progression in each child's learning and development. In Kenya and in the UK the children were shown how to make 'tippy taps' from recycled materials. The tippy taps varied in shape size but they all provided the same affordances in terms of providing an inexpensive and

efficient means of providing and conserving water for hygiene purposes wherever it was needed. The use of the tippy tap schema was then encouraged in the children's free flow play in the settings, and at home. In the process all of the children learnt about the experience of living in each country, about the importance and global scarcity of clean water, about the importance of hand washing, and perhaps most significantly, they learnt about how they could be part of a solution to this practical problem of conservation.

Applying the model more generally to the curriculum content identified in our literature review we can begin to identify some of the cognitive prerequisites of sustainable citizenship. Looking beyond values, relevant schemas include the knowledge and understanding of

A 'tippy-tap' at Mount Kenya Academy

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[2] For more information see http://www.schemaplay.com

animal species, global geographic and environmental features, learning about their own ethnicity, about problem solving and how conflicts can be resolved and about their rights and responsibilities in the world.

The Early Childhood ESD curriculum: The legacy of Maria Montessori

"Nurturing a sense of awe and wonder through frequent contact with nature was integral to Montessori's philosophy" (Kahn and Kellert, 2002, p22)

Montessori's understanding of sustainable development was consistent with Lovelock's (2001) conception of Gaia and 'Earth System Science' that suggests that the Earth's biosphere forms a self-regulating homeostatic system analogous to a living organism[3]:

"The trees that purify the air, the herbs that capture vitanins 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)

Even in the early 1900s Montessori believed that humanity had become seduced by the technology it had created and that the challenges of over consumption and possessiveness were of equal importance to the environmental problems that we face:

"Each person is set apart from every other by his own private interests; everyone wants only some sort of work that will satisfy his material needs; everyone is attracted by and trapped in the interlocking gears of a mechanised and bureaucratic world. It is obvious that mechanisms alone cannot make man progress, for progress depends on man. And eventually a time must come when humanity assumes control of progress and gives it direction. That Time has come. Either mankind as a whole will organise and master the mechanical world, or the mechanical world will destroy humanity" (Montessori, 1949, xii)

Montessori's 'Cosmic' perspective was profoundly ecological and emphasised the importance of harmony and balance between humanity and the natural world, and also across mankind. She argued that the role of education should no longer be limited to furthering the progress of material civilisation, which she consider might, even at that time 'become too highly developed' (Montessori (1949, p100):

"Schools do not prepare young people for social life but rather for earning a living. They train young people for a trade or a profession. And all of them exercise their trade or practise their profession like slaves. This really means that we replace true social life with a degrading caricature of it. We cannot keep a society that is threatening to fall to pieces intact with men whose only training is in a trade that will earn them a living. We need whole men". (Montessori, 1949, p109)

Montessori also rejected the idea that life could be understood simply in terms of adaptation and a struggle for survival against an often hostile environment (*op cit,* p94-5). She argued that such a view ignored the complex nature of ecological interdependence and the ways in which the survival of every species is ultimately dependent upon the survival of others. She aligned herself with biologists

The continental origins of animal species

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[3] http://www.sf-encyclopedia.com/entry/gaia#sthash.LIMJeIyT.dpuf

who; *'consider life to be intimately related to the existence of the earth as a whole'*, and argued that:

"Living creatures create a universal balance. Animals and plants are not forms of life that are separate from their environment and merely adapt to it mechanically. One might say that life is the force that creates the world" (Montessori, 1949, p94).

She aimed to create a; *"universal syllabus that can unite the mind and consciousness of all men in one harmony"* (Montessori, 1979, p111).

Montessori argued that we need to develop a *"society consciously aware of its destiny"* and a new form of morality that has the overall aim of promoting harmony and balance, and a society that recognises that:

"…any act that hinders the establishment of a genuine community of all mankind must be regarded as immoral and a threat to the life of society". (Montessori, 1979, pxiii)

Montessori's first preschool the Casa dei Bambini was opened in a tenement block in San Lorenzo a slum district of Rome in 1907. At San Lorenzo Montessori was engaged in both social and educational reform and aimed to provide a "pedagogy for the oppressed" (Khan, 2008, p13). She felt that planned efforts had to be made to reduce the poverty of San Lorenzo, Montessori feared that: "If the trend continued, the poor would be isolated in poverty-ridden ghettos, which Montessori called 'islands of the poor' (*op cit*)

Montessori's believed we should provide an holistic well-being of the child's total environment, and removing whatever obstacles we can to ensure the free self-directed activity of children. Montessori (2007) believed children should be supported to:

- Take responsibility for themselves, for others, for the environment and within society.
- Foster co-operation and understanding of what it means to be a "Citizen of the World"
- Learn to respect themselves, others, the environment and communities.

Montessori believed that the knowledge, understanding and respect gained from what she termed 'Cosmic Education' would guide children towards being considerate, respectful citizens of the world; valuing all life on our planet, and work actively towards not only preserving it but also contributing towards it's on-going sustainability.

In terms of pedagogy, the most significant scheme promoted in the Montessori setting is the 'cycle of activity' where the child is encouraged take an activity or resource of their own choice, apply it in their play and then return it to the shelf replenished and ready to use by another child. As Khan (2003) has argued Montessori had an intuitive understanding of the importance of encouraging the children to achieve an 'optimal experience' or 'flow' in their play:

"Flow has been shown to promote learning and development because experiences of deep and total concentration are intrinsically rewarding, and they motivate students to repeat an activity at progressively higher levels of challenge" (Czikzenmihalyi, Rathund & Whalen in Khan, 2003, p19).

Another key principle of the Montessori model is to encourage the child's independence, their ability to assess risk and to take responsibility. This starts initially with toddlers; handling real objects, such as child-size glass jugs, and carrying jugs and glasses on trays, cutting up their own fruit for snack. As noted above these are precisely the kind of imative and operative (schematic) activities that the child can assimilate multiple cognitive and affective schema from.

Montessori believed that it was only through being given freedom and the opportunity to learn to be independent that children could learn to be sociable and take on any responsibility for active sustainable citizenship. In arguing the point, she made the distinction between a human society, and the submissive and dependent colonies of more

Children playing spontaneously with the Sun Game

primitive species'. She argued that the democratic and peaceful organisation of a society depends upon the independence of the individuals that make it up. For Montessori, social interaction is something that enhances the value of individuality, and this in turn promotes the individual person (Montessori, 1949, p56).

The management and assessment of risk is facilitated throughout the day through their freedom of independent choice and decision making in the Montessori environment. The children have the freedom to choose which activity to work with and where to work with it. Children make their own choices, explore and take responsibility. The freedoms within limits (ground rules and time to make choices) offer empowerment and support the development of responsibility for themselves and others. They are constantly challenged with decision making such as 'I need to carry glass jugs, which will be the best route? 'How should I handle these china plates?' This early freedom and the responsibility that goes with it promotes self-respect, respect for others and self-discipline.

Relevant Montessori focused learning activities include activities that introduce the child to the concept of the Earth being divided into continents, identification of the animals that live in each continent and the 'Sun game'. The 'Sun game' is a series of activities that may be pursed with a small group of children over a period of several days or even weeks The activities support children in recognising and classifying the diversity of species, demonstrate the pyramid of life/food in order to appreciate interdependence; how we all rely on the sun.

In every case following the introduction of these activities, learning has been observed to continue in the children's free-flow play. Children spontaneously take the food chain animal cards from the shelf, organise and sort them and at times they extend this play using the continent maps. The knowledge and new understanding are expressed in a wide range of playful activities, in paintings and art, junk modelling, in the sowing of seeds to grow vegetables and other edible plants and in the care of plants and their responsible care of animals.

Conclusions

Montessori argued that we must remedy a great injustice to the child by cooperating with him:

"If we are among men of good will who yearn for peace. We must lay the foundation for peace ourselves, by working for the social world of the child". (Montessori, 1949, p72)

Between the years of three and six Montessori said that the child is in the *"embryonic period for character and society"* (Montessori, 2007, p243) a time when the child's character and sense of society would be developed, much as the physical organs developed in utero and the brain developed in the first years after birth. This was the opportune time to imprint on the child's soul life-affirming, pro-social qualities of character. She also identified this same period as the time of a psychological *"second chance"* (*op cit,* p195). She believed this was a time to correct any physical, social or emotional difficulties that may have developed earlier in life.

While Montessori wrote critically about popular assumptions regarding scientific and technological 'progress' her optimism was also fuelled by a powerful respect for science and development. She uses the example of the introduction of sanitation and hygiene in overcoming the scourge of the plague as an analogy for the scientific efforts that might end war for ever and bring about a new recognition of humanity as 'one nation':

"Solar energy will be transformed into more nourishing bread and heat for men's dwellings. What nation will be able to claim exclusive rights over it? There are no limits, no geographical restrictions on the new riches that man is acquiring

as he moves towards the stratosphere, towards the infinite heavens, towards the starry heart of creation. What point will there be then in a struggle of man with man?" (Montessori, 1979, p22)

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