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The relationship between physical development, movement and children's learning

Summary

The journey from birth to maturity is a period of rapid physical and intellectual development, none more so than in the early years of life. To perceive physical and cognitive development as separate areas of growth is to overlook the central role of the physical in learning, exploring and making sense of the world. Indeed, it can be argued that physical and intellectual growth cannot be considered as anything but one, due to the embodied nature of existence (that is, that we all experience life and learning within our bodies). This chapter will consider how practitioners working with young children can use movement and the relationship between physical and cognitive development to enhance learning opportunities for children in the early years.

Introduction

To say that children are active in their learning is probably to state the obvious. It takes little more than casual observation to witness that babies and young children use physical movements to explore surroundings and objects, to form relationships, to express emotions and to seek both pleasure and comfort. From the moment of birth, it is through movement and the physical self that children learn about the world around them. As children grow, their understanding and awareness develop from *physical* experiences and interactions. Of course, this is not news! The importance of play, toys, space and opportunities for children to move and explore are universally recognized (Wood et al. 2010). However, little attention is given to maximizing the potential of children to learn through their physical being within the classroom. Generally, we do not teach babies and young children to reach out, grab, crawl, walk, run and jump; it is assumed these things just happen, that children develop motile capacities as part of their natural growth and maturation. Yet, if we accept that there is an inextricable link between physical and cognitive development, then the importance of maximizing motile potential through teaching movement becomes apparent. In order to capitalize on movement

as a vehicle for learning, children need to know and experience their bodies, their physical capabilities and their embodied self in relation to their environment and other beings. They need to develop a physical literacy (Hayden-Davies 2005: Whitehead 2010). As Hodgson summarizes: ‘everything that we discover about life, we discover through movement’ (2001: 172).

This chapter will further consider how to promote opportunities for children to gain mastery of their own body, understand how different body parts move and feel, explore force and resistance and physically relate to, and interact with, others – in short, how to teach the child to be an embodied, competent, physical learner.

Cameo 1

A Year 1 class of 28 children are seated on the carpet in the book corner to listen to a story. There is very little room on the carpet, so the teacher reminds the children to cross their legs and fold their arms. Some of the children at the back are kneeling so that they can get a better view of the pictures in the book. Some children have difficulty keeping their legs crossed, others lean and sprawl. Some children find it difficult to share a small space with others. The teacher stops reading on several occasions in order to remind children to sit properly and to bring the attention of some children back to the story.

Reflect for a moment:

- Have you ever seen children restrained within their learning environment?
- Can all children sit still with their legs crossed? For how long (in Scotland this is referred to as having one’s legs ‘in a basket’)?
- What could the teacher do differently in cameo 1?

Physical activity as a cornerstone of theory and practice

The importance of the physical nature of learning is readily found within established theories and practices concerning early years teaching and learning. It is likely that both students and practitioners will be familiar with the emphasis on physical space, action and movement located within the history and development of early childhood pedagogy. However, a brief appraisal with this emphasis in mind serves to reposition the familiar and allows us to focus on the centrality of physical movement in learning. In the following swift journey through major influences on practice in early education, note how often physical activity and movement are central features.

Let’s start with Pestalozzi (1746–1827). Building on the philosophies of Rousseau (1712–1778), Pestalozzi saw education as more than the development of

academic skills. Like Rousseau, he believed in stages of development and saw that the natural inclination of young children to move and be active could be harnessed in their physical learning. Pestalozzi's ideas were brought to the UK in 1816 by the Scottish industrialist Robert Owen. Concern for the physical welfare and education of the children of poor factory workers led Owen to establish factory schools which promoted kindness, equality and *physical activity* at the heart of their practice.

The German educator Froebel (1782–1852) was, like Owen, first introduced to teaching through the Pestalozzi tradition. Froebel believed that young children should come together in a 'kindergarten' where they could be encouraged to grow personal, social and *physical skills* ready for academic learning. Similarly, in the United States, Dewey (1859–1952) advocated that education for young children must be active and interactive, emphasizing that young children learn by *doing*. This is echoed in the work of Erikson (1904–1994), who describes the 5-year-old child as energetic and ready to learn. This energy, in Erikson's view, is best used in *activity* to increase confidence and autonomy in learning.

At the same time, the educational value of space to allow activity and movement for young children was a salient feature of the nurseries established by the Christian Socialist sisters Rachel and Margaret McMillan (1859–1917 and 1860–1931 respectively). Having worked extensively with children in inner-city environments, they noted the relationship between poor physical and poor intellectual development in young children and identified the need for them to have space and opportunity for *physical movement* in order to enhance both learning and wellbeing. Margaret McMillan saw the child's need for movement as crucial to development; 'to move, to run, to find things out by new movement, to feel one's life in every limb; that is the life of early childhood' (cited in Curtis 1963: 333). Like the McMillan sisters, Steiner (1862–1925) believed that young children needed space and freedom to develop self-expression, creativity and morality. Steiner established schools for the children of factory workers in Austria and left the legacy of Steiner schools worldwide.

Much of the work of Susan Isaacs (1885–1948) also centred on a belief in the importance of play and space plus gentle guidance in the educational development of young children. Based on both Dewey and Froebel's philosophies of interest-led, *active* and interactive educational experiences for young children, Isaacs' writing had an impact on provision in early years education throughout the 1930s and 1940s. Similarly, Maria Montessori understood that children use their senses to explore and learn from the world around them. *Physical movement*, particularly manual dexterity, and the enjoyment of educational experiences were regarded by Montessori as central to children's learning and are essential aspects in Montessori schools today.

The legacies of both Piaget (1896–1980) and Vygotsky (1896–1934) stress the importance of creating an environment in which children are stimulated to *actively* explore and learn. Piaget saw physical development as linked to intellectual growth and the child's physical interaction with the environment as integral to learning. Vygotsky placed great emphasis on the role of social interaction in learning; language and social interaction are essential experiences and without these

elements learning is less effective and less purposeful (Vygotsky 1978). Children are context embedded, using body language and their environment in order to achieve this social interaction.

Vygotsky's theories also influenced Loris Malaguzzi's (1920–1994) Reggio Emilia kindergarten in Italy. According to Malaguzzi, those working in the early years should not, primarily, transmit knowledge but enable young children to develop active relationships with others and their environment. Using the *active world of the child* as the starting point of learning is also a central feature of the educational philosophy of Jerome Bruner. Bruner also emphasizes the importance of play, not in the 'free-play' sense of Froebel, McMillan, Steiner and Isaacs, but in the sense that games are 'practice in mastery' (Bruner 1977) of skills for adult life.

In a project for the Froebel Institute, Athey (1990) considered how children acquire knowledge, starting from Piaget's theory of motor schemas. Athey's work concludes that children construct understanding through sequences of actions that have meaning for the child within the context in which they take place. Athey's view is that repeated patterns of actions indicate the development of schemas. Contemporary neuroscience research suggests that, from birth, the child's *active experience of their environment* influences and strengthens the development of neural connections within the brain. The greater the capacity for physical interaction and stimulation, the stronger and more complex the neural networks become (David et al. 2003; Goddard Blythe et al. 2009).

So, even such a brief amble through theories of early learning highlights that the *physical* plays a crucial role in children's development. There are clear and established common threads highlighting that physical and cognitive development are closely intertwined as children move to explore, play and make sense of the world and people around them. In short, physical action is an integral part of how children learn. It could be argued, then, that physical education, and the teaching of movement in particular, offers an exceptional opportunity to ensure that 'every child is a unique child, who is constantly learning and can be resilient, capable, confident and self-assured' (EYFS; DfE 2014: 6). Through providing opportunities for physical movement development within the classroom, the practitioner is enabling and extending the embodied experiences of the individual. By developing the motile capabilities of the child, the educator will enhance the active processes of learning.

What is movement education?

We have already noted that there is a general tendency to expect children to crawl, walk, run, jump and throw automatically when their physical development reaches a certain level of maturity. It is true that most children follow a pattern of physical and motor development. Starting with a rapid increase in body size, babies develop into toddlers with the growth of large muscles and core gross motor skills, before the development of fine motor skills and the more intricate movements of hands, fingers and toes (Haywood and Getchell 2009). We could ask, therefore, why teach movement at all? The truth is, most often, we don't! When children start school, the closest experiences of being taught movement come in the form of physical

education (PE). In the present climate, PE covers a wide spectrum of activities, beliefs and values. While some regard it as exercise and fitness training, related to physical health and obesity control, others think of PE in terms of competitive games and sports (think of the national excitement at Team GB's performance of at recent Olympic Games). In fact, PE is a very broad church and may involve dance, athletics, swimming, outdoor activities, games of all types and gymnastics. Physical education, furthermore, is necessarily underpinned by motor development, motor skills acquisition and movement education.

The National Curriculum and EYFS (DfE 2013, 2014) give schools and educators guidance on the physical learning and competencies of children from the Foundation Stage onwards. The EYFS tells us that children in the early years need to be active and interactive, to develop their coordination, control and movement. Furthermore, children should learn to be strong and independent through positive relationships. By Key Stage 1, pupils should develop fundamental movement skills, they should develop competence to excel in a broad range of physical activities and lead healthy, active lives. Then, in Key Stage 2, they should use running, jumping, throwing and catching in isolation and in combination, develop flexibility, strength, technique, control and balance. In order for a child to develop such physical skills, they must be competent in their movement and fluent in their physical literacy.

Good movement education for children has a very definite pedagogical foundation. Traditional PE and Games have a subject- and skills-based pedagogy, while movement education has a child-centred pedagogy. Movement education is fully inclusive, as it starts with the child, their body and their motility. There are no pre-determined outcomes and no permanent output and movement education encourages fluidity and development. Movement education challenges the child to solve open-ended tasks, through *active thinking and doing*, all contained within their own familiar environment. The aims of movement education are to provide children with the opportunity to explore what their bodies can do; how to use space; when to employ different dynamics or force and how to interact physically with others and with objects. As confidence and experience grow, children will develop a 'movement vocabulary' as part of their physical literacy (Whitehead 2010). Children who can use their bodies with confidence and purpose can use movement to express themselves, interact with others and their environment and be able to create their own movement sequences and movement stories.

Teaching movement

The most important skills required by the teacher for movement education are the ability to observe (Marsden 2010) and an understanding of movement principles. Perhaps the most influential exponent of movement and its centrality to human existence and interactions was Rudolf Laban (1879–1958). Laban was a scientist, teacher, artist, social activist, visionary and creator, although now probably most associated with Laban dance and drama methods. Laban understood human movement and activity as innate means of exploration, learning and communicating through sensory and physical experiences (Laban 1998). The principles of *dynamics*

(the nature of the movement, force, speed, weight, time and flow), *space* (the way the body inhabits, uses and travels within the environment) and *relationships* (the way the body interacts with others and with objects) are fundamental to observing and understanding movement.

Cameo 2

There are 30 children aged 9–10 years old in class. They are changed and ready to start a 35-minute movement class in the gym. The teacher has mats, hoops, cones and benches organized at the sides of the gym. As soon as the children enter the gym, they are told to sit quietly and listen. The teacher goes through the safety rules and the aims of the lesson. She then spends ten minutes laying out the equipment and showing the children how to use it before allowing a three-minute warm-up. The teacher then rotates the groups so that everyone has a turn with the different equipment. As the groups change, some children are asked to demonstrate what they have been doing while the others watch. When all the equipment has been returned, the children sit still until they are allowed one at a time to line up at the door.

Reflect for a moment:

- How many minutes do you think the children were active in this lesson?
- Did the children learn anything about movement?
- How would you improve this lesson?

Movement of any kind is very transient, so the teacher will need to remember what happened, record it and use the information to inform learning and teaching. First, it is important that the teacher is aware of safety (is the child safe in what they are doing? is the environment safe?); and next it is important to consider what the children are learning and how this can be developed.

'Elastic boxes' (Figure 13.1) can be successfully used both to analyse movement and to aid in planning balanced movement lessons *ad infinitum*. It is a visual summary of *Laban's Principles of Movement* (Laban 1998). The boxes are 'elastic' because they are not definitive and there is room to add more types of movement vocabulary as required; for example, in the BODY box, falling and rising are not present, nor are kicking and trapping. Using one box at a time, any movement, motor skill or sequence can be analysed by circling the observed movement vocabulary. It seems daunting at the beginning but with practice, any observer can become highly skilled and speedy at analysing. The teacher of young children will find this fascinating as, over time, a clear picture of the development of each child's movement vocabulary will become clear. Similar to in literacy when children are learning new vocabulary and it is the teacher's aim to introduce more

<p style="text-align: center;">BODY</p> <p>Actions: Stepping, jumping, rolling, sliding, vaulting, twisting, turning, swinging, balancing, gesture, stillness</p> <p>Parts of body: Can lead, can support, can relate, can move symmetrically, can move asymmetrically</p> <p>Body shape: Arrow, ball, pin, wall, screw</p>	<p style="text-align: center;">SPACE</p> <p>Levels: High/Medium/Low</p> <p>Directions: Left – right High – deep Back – forwards</p> <p>Extensions: Near – far</p> <p>Air and floor patterns: Straight, curved, twisted, angular</p>
<p style="text-align: center;">DYNAMICS/EFFORT</p> <p>Time: Sudden/quick.....sustained/slow</p> <p>Weight: Strong/heavy.....light/fine touch</p> <p>Space: Direct/straight.....flexible/circuitous</p> <p>Flow: Bound.....free</p>	<p style="text-align: center;">RELATIONSHIPS</p> <p>With other people: Alone/Partner/Small group/Large group</p> <p>With apparatus The floor/Small (mats, benches)/Large (climbing materials, ropes, boxes)</p> <p>With equipment: Small (balls, hoops, cones etc.) Large (tunnels, goals, weights etc.)</p>

Figure 13.1 Elastic boxes: a framework for observing movement

words that the children have not yet experienced or may be finding difficult, the Elastic boxes can extend the children's movement vocabulary and thus help you plan future lessons. If children need to develop space awareness in PE, the classroom and in their general interactions with each other, you can choose to take elements of the SPACE box as your main aim for a sequence of movement lessons. In the first lesson, you can choose one element from each of the three remaining boxes as sub-aims and then, by changing one of the sub-aims each lesson, you can have a completely different lesson. This will further extend the children's vocabulary of movement while still keeping the main emphasis on spatial awareness. Thus, by interchanging different elements over the years, you can plan lessons *ad infinitum* and give the children a wide experience of movement vocabulary. This is especially useful because children, as well as adults, tend to have preferred ways of moving without naturally experiencing all the possibilities or extending the movement vocabulary of which we are capable.

Movement for children with additional needs

Children with SEN or additional support needs are especially at risk of never experiencing a wide range of movement vocabulary.

Cameo 3

Dylan is aged 6 years old and has cerebral palsy, which has affected his legs, and he uses a walking frame. He is a bright, sociable and creative boy, popular with his classmates. He is able to join in with everything except PE. In PE lessons his classroom assistant takes him through a prescribed set of physiotherapy exercises on a mat in the gym.

Reflect for a moment. How do you think Dylan feels during PE? What could you do to include him in the PE lesson? How might you give Dylan the opportunity to be creative physically? Like Dylan in cameo 3, some children are given limited exposure to creative movement opportunities. But by using Laban's Principles of Movement and the Elastic boxes for planning and observing, they can be encouraged to expand their movement vocabulary, explore new physical spaces, learn to work with a partner and create new movement stories. Veronica Sherborne worked with children of all ages and all abilities and disabilities and came to the conclusion that all children have two basic needs. First, they need to feel at home in their own bodies and second, they need to be allowed to explore relationships with others. Sparkes (2001), a very experienced physical education teacher who had watched Sherborne's brilliant and innovative work through three decades, wrote of the Sherborne approach: 'It is a way of working that sets out to give confidence, to engage the participant in non-judgemental teaching, to develop an individual's self esteem and to ensure both consolidation and progression in personal learning' (Sparkes 2001: xi).

Sherborne's work, now internationally recognized as *Sherborne Developmental Movement* (www.sherbornemovement.org), was solidly based on Laban's Principles of Movement and research has shown that it is especially useful for developing movement vocabulary and social development of children in mainstream school (Marsden et al. 2004); for strengthening parent-child bonding in disaffected young children (Weston 2012); for focus and concentration of children with autism (Astrand 2007; Konaka 2007) and for enabling teachers to plan child-centred, holistic and balanced lessons (Weston 2007).

The interconnected curriculum

Through developing movement capabilities within PE, children's potential to learn through physical action and interaction is enhanced. In the classroom context it is important to consider opportunities for movement, physical experiences and 'learning by doing', as expounded by so many educational theorists. We recognize that activity, exploration and 'doing' supports and enhances children's understanding, so it follows that teaching movement will enrich the learning experience. Utilizing physical movement within active learning offers the

opportunity for some exciting, innovative teaching. This is summed up in cameo 4, observed in a lesson for a class of 6-year-olds.

Cameo 4

The teacher was introducing units of measurement. The initial lesson involved children estimating lengths of various objects using straws. The teacher then stopped the lesson and the children arranged the desks and chairs in a horse-shoe, affording plenty of space in the middle of the room. The children were encouraged to carry on measuring, but now using body parts. They guessed how many footsteps it took to cross the carpet; how many children lying head-to-foot would measure the room; how many handspans measured a friend's height. When a new way of measuring was offered by a child, the class watched the inventor carry out the measurement.

As the activity progressed, one child recalled that her father had told her how cats measure the width of spaces using their whiskers. This prompted a new activity, using the straws to make whiskers and trying out the cat-theory. Children crawled through chair legs and under tables, discovering that turning and twisting or slithering on bellies allowed them to get through spaces without squashing their whiskers. The children were invited to describe the way they moved through spaces to avoid crushing their 'whiskers' – adding vocabulary to their exploratory movements.

Further discussions emerged about height as well as width – did cats use their ears for judging spaces too? There was considerable disappointment when it was time for lunch, but there was a wealth of activities for the teacher to return to another time and an incredible amount of varied and valuable learning.

Conclusion

This chapter has reviewed the importance of movement and physical activity in the learning and development of children. In doing so, movement teaching has been highlighted and explored. As well as children becoming confident in their own bodies and using their motile capacities, the link between movement and the classroom experience is also established. Being able to utilize the physical within learning is integral to inclusive practice and offers a wealth of opportunities. Finally, just observing any school playground should serve to remind us that children are naturally physically active. We must not overlook the sheer pleasure and enjoyment that children derive from activity and movement, but should seek to foster it.

Questions to Promote Thinking

- 1 Observe two children of quite different ages playing outdoors and note down the skills and body movements each child uses. What are the differences in the physical competencies between the two children?
- 2 Think about the physical environment of your classroom. How can you create an environment which fosters active learning?
- 3 Look at the learning outcomes planned for a lesson. Can any of these be met through physical, active, learning experiences? Could experiences from PE be utilized and re-visited within the classroom context to aid and support learning?

Useful websites

PEA UK www.observingchildrenmoving.co.uk (children aged 3–7).

PEA UK www.observinglearnersmoving.co.uk (children aged 7–14).

Sherborne Developmental Movement www.sherbornemovementuk.org.

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