

AN INTELLIGENCE PERSPECTIVE ON THE MEANING OF BEING PHYSICALLY EDUCATED – PART 1

Education, literacy and intelligence

The National Curriculum in England (2014) aims to “provide an introduction to the essential knowledge needed to be an educated citizen” (para. 3.1). According to this knowledge-centric curriculum, a physically educated person then could be considered as someone who develops the requisite declarative and procedural knowledge of techniques, skills and tactics to competently engage in a range of sports and physical activities as part of an active, healthy lifestyle. But does this fully capture what it means to be physically educated and the wider role, purpose and potential of physical education (PE)? Does this help to make PE meaningful for all, for example?

It is suggested that the concept of physical literacy first emerged as an alternative way of thinking about being physically educated (Whitehead, 2001). Broadening the focus to emphasise confidence and motivation alongside the foundations of knowledge and competence, physical literacy has certainly helped to provide a more inclusive perspective on what PE could be and do. However, some of the philosophical underpinnings and early ideas that kickstarted the physical literacy movement have since faded into the background (Shearer *et al*, 2018), leaving further potential to contribute to discussions about the meaning of being physically educated unfulfilled.

Many in education are aware of Guy Claxton and his work on building learning power (Claxton, 2015a), promoting a learning to learn approach that challenges the wisdom of a knowledge-centric curriculum. Less well-known, but no less enriching, is his book *Intelligence in the Flesh* (Claxton, 2015b). As the title alludes, thinking about intelligence beyond the mind may have much to offer when contemplating the meaning of being physically educated, especially when you consider the bold claim he makes early on in his book, that bodily or physical intelligence isn't just another type of intelligence, but is, in fact, the foundation for all intelligences!

So, what is physical intelligence? Is it really anything new or different? If so, where does it fit within the PE landscape? What possibilities might it open? Or does it promise only to further obstruct what is already a congested subject? It was with these thoughts in mind that I recently began my PhD studies, exploring the concept of physical intelligence in relation to physical literacy, and subjecting the meaning of being and becoming physically educated to deeper philosophical questioning.

The purpose of this article, which I intend to publish in two parts, is to share some of my explorations to date, explain how they have helped to shape an initial model of physical intelligence, and consider ways in which this could impact on PE. In sharing my research journey to date, I hope to encourage you to reflect on your own thoughts about the meaning of being physically educated and invite you to share and feedback in return, as your comments, critique or conversations may help to continue to develop what I, and others, believe is a promising concept for PE research and practice.

Diverging pathways

Revisiting Whitehead's first published paper outlining the concept of physical literacy (2001), I found that we shared much in common in relation to the motivations for our respective work, in particular our concern about the limitations of reductionist, disembodied approaches to education, and PE in particular. I'm equally interested, for example, in understanding “the range of physical capacities that would enable individual persons to make the most of their embodied dimension; enable them to interact with the world and to awaken the huge wealth of potential capacities; help them to become richer persons both in themselves and in respect of that which they know about the world?” (Whitehead, 2001, p.130).

Unfortunately, the philosophical notion of literacy as Whitehead (2001) intended it to mean has been underappreciated (Durden-Myers *et al*, 2022) and is often overlooked in practice (Edwards *et al*, 2017).



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As a result, our embodied capacity remains largely unexplored within education, and may continue to be held back, not least by the monopolising view of intelligence as a property of mind (Cianciolo and Sternberg, 2004). You need only look at the prioritisation of the logical and linguistic intelligence-based subjects, such as English, maths and science, as a prime example of the hegemony of mind over matter. A further consequence of this metaphorical separation of mind from body is that it effectively relegates the body to be a mere biological machine under the control of the mind (brain), perpetuating the belief that the body is simply a thing to be kept fit and healthy.

So could intelligence lend a hand to the physical literacy movement in helping to reconnect body with mind and encourage a more embodied approach to education? Interestingly, when wrestling with preliminary ideas about the characteristics of a physically literate individual, intelligence features quite prominently in Whitehead's descriptions. For example, she describes a physically literate individual as "...perceptive in 'reading' all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination" (Whitehead, 2001, p.131), and suggests that "Physical Literacy is akin to notions identified by other writers such as Best (1978, p.58) and Arnold (1979, p.17) as kinaesthetic intelligence, skilful action or intelligent action" (Whitehead, 2001, p.131).

Whilst there appear to be shared philosophical roots aligning the concepts of physical literacy and physical intelligence, a potential divergence point emerges when we turn our attention to the meaning of physical, which may not be equivalent in each concept. As Whitehead (2001) contemplated the complex nature of physical literacy in relation to intelligence and dexterity, she stated that "it would simplify the debate if skills such as typing, knitting, playing a musical instrument and painting a picture were not initially considered within the concept. The notion of Physical Literacy will therefore be confined to those aspects of movement involving larger muscle groups" (p.131). Could this focus on large muscle groups, and resultant binding to physical activity, have acted as a form of self-sabotage in the pursuit of embodied capacities to interact with the world? Is the nimbleness, dexterity and sensory capacity of our hands and feet not just as important in communicating with the world? Clearly then, it is not just the concepts of literacy and intelligence that demand further exploration, but also the meaning of 'physical' which requires deeper interrogation.

A map for the journey

Having set the groundwork for my research, it is important to be clear that my approach is qualitatively based, grounded in the interpretivist philosophical assumptions that reality can be different for different people (ontological relativism) and that we each construct these realities based on our values and interpretations of experiences (epistemological constructionism). Essentially, my research is centred around my own subjective interpretations of the various ways in which the notion of (physical) intelligence has been conceived and/or experienced, sharing these ideas and potential implications so that others can make their own sense of them, accepting, rejecting or refining them as necessary to support their own practice. Hence, I am not seeking to find *the* definition of physical intelligence; rather, I am weaving together a variety of perspectives to create a broad framework around which others can make their own meaning.

To guide me on this research journey, I have evolved a form of hermeneutic cycle, flowing between the three distinct, yet interlinked, processes of reflexivity, data collection and analysis, and data-driven literature reviews to both deepen and broaden my understanding, attempting always to keep in mind a view of the whole, even when probing individual parts (see Figure 1).

Figure 1: Hermeneutic circle to afford deeper understanding.



Maintaining congruency with the philosophical underpinnings of my work, data collection was conducted to elicit the opinions of different individuals in response to a single question: 'What are the characteristics of a physically intelligent person?'. This is a method previously utilised by intelligence researchers (Yang & Sternberg, 1997) with responses received from seven participants, each purposefully recruited based on their movement, sporting and/or educational backgrounds, as well as geographic locations, to gain a diverse range of perspectives on the question.

A thematic approach to data analysis was adopted (Sparkes & Smith, 2014) with potential themes constructed, adapted and used to identify further relevant literature for review as the hermeneutic cycle progressed (Whall & Palmer, 2021). A reflexive diary was maintained to track and evaluate my evolving thoughts and potential influence on the research, which serves to enhance the quality and credibility of my work (Attia & Edge, 2017; Saldana, 2018).

The evolution of complex thinking

Whilst there may be general agreement of what intelligence is in common parlance, initial surveillance of the intelligence literature reveals a fascinating history of intense scientific scrutiny and philosophical debate, amongst which a universally agreed definition of intelligence remains elusive. As large-brained animals capable of abstract thinking, reasoning and communication, it is unsurprising that humans commonly perceive that it is exactly these cognitive abilities that characterise intelligence (Barrett, 2015), often measured through a series of logical or linguistic tests. Not everyone shares this narrow-minded view however. Howard Gardner (1999), for example, proposed one of the best-



known oppositions to this view of intelligence with his theory of multiple intelligences, amongst which can be found bodily-kinaesthetic intelligence, defined as “the ability to use one’s body in highly differentiated and skilled ways, for expressive as well as goal-directed purposes” (p.206).

One of the first responses I received included a similar conception, suggesting that “physical intelligence is an ability to effectively and efficiently operate one’s body through movement”. Yet what drew my attention to contemplate this response further was their belief that “practical, vital and adaptable natural movement skills” i.e., skills directed towards goals of “value in the real-world” and which were originally required to “participate in life in the wilderness or may become mandatory for survival in life-threatening situations” would most appropriately characterise physical intelligence. Rather than asking what intelligence *is*, is it more appropriate and important to ask what intelligence is *for*? Robert Sternberg, who has been involved in intelligence research for half a century, has recently adopted this stance, reviewing historical archives to propose a theory of adaptive intelligence: intelligence as the ability to adapt to, change or find new environments as needed (Sternberg, 2019). Intelligence as viewed from this perspective shifts the focus not only back to the purpose of intelligence, but also towards intelligence from a physical, as opposed to cognitive, standpoint.

So where exactly does the ‘physical’ fit within this adaptive view of intelligence? The relationship between body and mind was a standout, recurring theme amongst the collated data and related literature. For example, one respondent wrote that physical intelligence “is the idea that through challenges you learn to speak the language of the body, which has a direct effect on the mind”, with another adding that “physical intelligence is the active management of our physiological state.” Could these be suggesting that the environments to which we need to adapt also include our own internal, bodily or physiological environment? Movement *in* the body and not just movement of the body?

‘Speaking the language of the body’ guided me towards the field of somatics, which centres on the body-mind relationship (Hanna, 2004) and often uses terms such as natural intelligence (Aposhyan, 1999) or body intelligence (Sumner, 2009). Whilst

there are good examples of somatic work purposefully aimed towards children and young people (Bauer, 2018), there has been, to the best of my knowledge, little success in integrating it within physical or general education, despite its potential to develop what Whitehead (2001) perhaps meant by embodied capacities. There is certainly potential here to be intelligently explored.

‘Active management of our physiological state’ also has somatic undertones, and additionally points in the direction of emotions as the Latin root of emotion – *emotere* – can be translated as energy in motion. Does this potential aspect of physical intelligence provide a basis for emotional intelligence? Damasio and Carvalho (2013) clearly demonstrate that there was an evolutionary advantage that animals, and particularly humans, gained from developing nervous systems that enabled the ability to feel, manage and respond intelligently to our emotions, where emotions are considered as action programmes, i.e., physical movements. Therefore, it seems that our nervous systems developed, in part, to enhance the communication between body and mind, increasing our capacity for intelligent behaviour and highlighting that, when it comes to the mind, the body really does matter!

A further response, which proved particularly intriguing in this regard, offered that physical intelligence could be viewed as “a by-product of the development of the cognitive functions known as introverted sensing and extroverted sensing”. But should physical intelligence be considered a ‘by-product’ of these cognitive, sensory functions, or did the requirement for physical intelligence, in relation to Sternberg’s (2019) adaptive intelligence theory, drive the evolution of our cognitive and sensory functionality? Put another way, are we intelligent because we have big brains or do we have big brains because we are (physically) intelligent? If you retrace the evolution of nervous systems, it can be demonstrated that, amongst the earliest forms of life on Earth, physical bodies existed without brains, yet with the sensorimotor capacity for intelligent movement (Keijzer, 2015). Nervous systems evolved later, including the development of centrally co-ordinating brains, to support more complex bodies and their abilities to sense and move (Fultot *et al*, 2019). Furthermore, as this relates to

human species, it is believed that the complex co-ordination required to gain and maintain our unique, upright, bipedal posture, coupled with the freeing of our hands, created a greater connection between our bodies and brains; this not only fuelled the growth of larger, more powerful brains, but the expanded, more complex neuronal systems that initially developed to support movement also provide the basis for what are considered our higher cognitive functions (Leisman, Moustafa & Shafir, 2016).

Pausing for thought and moving towards practice

In summary then, I hope to have illustrated the mereological fallacy that is the artificial, reductionist separation of body and mind (Bennett & Hacker, 2000) which fails to recognise the real-life complexity and holistic nature of intelligence. Recognising the importance of our physical body in intelligence, a view that is gaining significant traction within cognitive science (Adams, 2010), can help to reconnect body and mind within education and may broaden the notion of being physically educated beyond the boundaries of PE. Indeed, there are already many great examples of physically active learning in UK schools, with significant interest amongst researchers in robustly exploring the impact of physical activity on academic performance, the strength of evidence that currently exists relating predominantly to performance in maths (Singh *et al*, 2019). Perhaps it will not be too long before it can be conclusively proven that Claxton (2015b) was right when he stated that physical intelligence is the foundation for all intelligences!

But what about physical intelligence in the context of PE more specifically? I would certainly suggest that here, too, the meaning of being physically educated is much broader than the current curriculum affords. A more detailed discussion and potential model of physical intelligence will be presented in part two of this article in the next edition of *Physical Education Matters*. What I will offer for now are suggestions for what I believe a conception of physical intelligence should include and potential implications for PE practice:

- Intelligence can be considered as the capacity to understand yourself and the world around you and your resourcefulness to adapt to, or overcome, the challenges posed (Sternberg, 2019; Wechsler, 1975).
- Physical intelligence, then, relates to both your internal environment (physical body) and surrounding (physical and social) environments and your capacity to solve movement-related problems.
- Intelligent movement, therefore, is both an embodied and embedded capacity (Masis, 2014), meaning that it is important to pay attention to movement in the body and not just of the body, alongside varying the environments in which movement challenges are posed.
- The ability to learn is evident in many definitions of intelligence (Legg & Hutter, 2007), which implies that the opportunity to face a wide range of movement problems, in a variety of contexts and environments, is essential for the development of physical intelligence.
- Furthermore, this range of movement problems, contexts and environments should include evolutionary-rooted challenges that may extend beyond the traditional sport-focused activities and settings of the gym, sports hall or playing fields.

To share your thoughts or feedback on this article, please contact: RWhall@uclan.ac.uk ■

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