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# The Concept of Physical Literacy

Margaret Whitehead<sup>1</sup>

*The intention of this paper is to open a debate on the concept of Physical Literacy. This is a term that has been used intermittently over the years but has never received serious analysis. The discussion has three parts. The first sets out, briefly, the findings of earlier research (Whitehead, 1987), which created the ground for this paper. The second proposes a context within which the concept of Physical Literacy may be defined and uses this context to discuss possible components of the concept. The presentation is set in an existential and phenomenological context and therefore considers the concept of Physical Literacy from a particular philosophical perspective. The final part of the paper lists a series of questions. These challenge proposals that are made in the paper and, at this stage in the debate, need to be subject to critical consideration.*

## INTRODUCTION

The concept of Physical Literacy has been used within the profession for some years, possibly as an alternative to the idea of being physically educated. A Sports Council flier in 1991 stated 'Physical education creates literacy in movement, which is as vital to every person as literacy in verbal expression itself' (Sports Council, 1991). However Physical Literacy per se has received little attention. Perhaps the first serious attempt to discuss the concept was in 1993 (Whitehead, 1993). Whitehead argued that Physical Literacy was essential to a complete experience of human life. Rather than aim to define the concept in detail Whitehead discussed the importance of drawing on embodied capacities to enable individuals to realise a wide range of aspects of their potential and thus enhance their quality of life.

In relation to the notion of Physical Literacy there have been indications recently, from certain groups in the profession, that the development of a concept such as this, could be useful. The issue has been raised in debating the activities to be included in the National Curriculum for physical education (DfEE, 1999a) and in considering the identification of a generic approach to an understanding of the goal of the subject, for trainees. Questions have been, and are, being asked about whether there is a core goal of physical education which is beyond, or fundamental to, specific proficiency in a number of

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different named activities. An answer to this question could be highly pertinent in respect of the content and delivery of the National Curriculum in Physical Education in England and in relation to approaches to teaching physical education covered in initial teacher training.

No apology is made for using the term 'Literacy' in relation to the physical. Criticisms inferring that the concept is being deployed to gain status for physical education alongside 'literacy' and 'numeracy' as used currently in English education are not accepted. The notion of physical literacy would seem to be wholly legitimate in its own right. It is a concept that was coined before the terms literacy and numeracy became almost 'catch words' in English education, such as in the 'Literacy Strategy' (DfEE, 1998) and the 'Numeracy Strategy' (DfEE, 1999b). The term 'literacy' has been chosen in preference to 'mastery' or 'competence', as the 'literacy' can be seen to connote the holistic and interactive nature of this human attribute. These aspects of the Physical Literacy are discussed in more detail later in the paper.

In an earlier study, Whitehead (1987) argued the case for attention to be given in education to the physical dimension of our being. This study was in no way attempting to legitimise what was currently taking place in school under the name of physical education. The same stance continues in this paper, there being no intention of defending the status quo in working towards a definition of Physical Literacy. The debate herein starts from a clean sheet, albeit at the risk of coming to conclusions that may not feel wholly comfortable to all in the profession.

The paper has three parts. The first shares with the reader key insights obtained from previous research (Whitehead, 1987), which entailed a reassessment of the physical dimension of the human condition and the physical component in education. The second and most substantial part proposes a context within which to define Physical Literacy and sets out a provisional proposal as to the elements of the concept. It should be made clear at this point that this paper is part of a debate – not a final solution, and questions that would seem in need of consideration will be listed at the end of the paper. These form the final and third part of the discussion (Note 1).

## **Philosophical Foundations for Understanding Physical Literacy**

Whitehead (1987) provides a comprehensive background to the centrality of embodiment in existence and points towards the importance of recognising and nurturing embodied attributes. In fact the initial motivation of this investigation was to interrogate existential and phenomenological stand-points on embodiment, both of which question the notion that humans are made up of two separate aspects 'body and mind'. This latter view is held by dualists such as Descartes (1970). Existentialists and phenomenologists more often hold the alternative, or monist, view that humans are to be

considered as an integrated whole. Different dimensions of the human condition are recognised but these cannot be considered in isolation from each other as all are irreconcilably interwoven in existence. From this perspective 'I do not have a body', as a distinctive and separate entity, but 'I am my body.' The notions of 'body as object' and 'body as machine' are rejected and the notion of 'body as self' is advocated.

The recognition of the importance of the embodied dimension arises from the fundamental views of many existentialists and phenomenologists. These views are firstly that individual persons are the result of all the interactions they have with their surroundings. Individuals from this point of view make themselves, from day one, out of these interactions. Secondly, that individual persons are by nature 'beings in the world'. This, in a sense, follows from the first tenet. If individual persons are the result of their interactions with the world, that with which individuals interact is the material out of which they create themselves. The corollary of these views is the notion that individuals interact with the world around them in whatever ways they can, and the richer these interactions in breadth and depth, the more fully realised a human, the individual will become. An individual person's embodiment is identified as one dimension with which interaction with the world can take place. Furthermore this embodied interaction is not viewed as in any way insignificant in life. Indeed it is seen by some as the foundation stone of all interaction.

In advocating this view Sartre wrote for 'human reality, to be is to act' (Sartre, 1957, p.476), and Merleau-Ponty claimed 'Existence is a perpetual incarnation' (Merleau-Ponty, 1962, p.166); and 'The perceiving mind is the incarnated mind' (Merleau-Ponty, 1964, p.3). Nietzsche (1969, p.69) supported this position in writing, 'Behind your thoughts and feelings, my brother, stands a mighty commander, an unknown sage – he is called self. He lives in your body, he is your body.' More recently, Gill (2000, p.97) in explicating the work of Michael Polanyi, explains 'Our body is the entry point into the world, the medium through which and in which our reality is constituted'.

It is quite clear that these philosophers have great respect for our embodied dimension. It was not just a disposable extra to life, it is an integral part of our human nature. Clark (1997, p.45) endorses this view asserting 'Mind, body and world thus emerge as equal partners in the construction of robust, flexible behaviours.'

There is a great deal more that could be said from a metaphysical point of view, however to recap the points made so far. Individual persons are in the world, creating themselves out of their interaction with everything in the world, via whatever human dimensions they have that can realise this interaction. One significant dimension is the body, the embodied dimension. It is the case that the more individual persons learn about the world the more they learn about themselves. The world awakens capacities in individual persons as new aspects of the world are discovered, encountered and mastered. (Swimming is a good example – without water individuals would not realise their capacity to swim). The richer the interactions, the more individuals develop their human potential.

## **A Concept of Physical Literacy**

A clearly defined concept of Physical Literacy would seem to be needed to answer the question – ‘What is 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’?

As a starting point it is proposed that the concept of Physical Literacy should not only be about being able to ‘do’. The notion of an ability to ‘do’, of physical competence, could be conceived as involving no more than muscle strength and joint flexibility. Physical Literacy from a phenomenological and monist perspective is a far broader term and includes aspects concerned with being able to perceive intelligently and respond appropriately. Physical Literacy must encompass more than physical movement, it must include an ability to ‘read’ the environment and to respond effectively.

Consideration of the concept of Physical Literacy, however, is not straightforward and there are a number of questions that need to be answered at the start of any discussion. These questions arise in relation to identifying the context in which the concept is to be considered. Seminal to this identification is the exact category of individual persons to whom the concept is to be applied.

Firstly is the concept universal, or is it culturally grounded? For example – is the physically literate individual to be described resident in UK, or can this individual be living anywhere in the world?

Secondly is the concept age related? Is the concept an end state achieved by an adult – or is there a need to create a concept that can be unpacked at different stages of life – infancy, childhood, adolescence, adulthood, old age?

Thirdly where do the physically challenged fit in – those with a physical and/or another disability?

And fourthly how far is what could be called for short, dexterity, to be included? Should the concept be confined to movement involving larger muscle groups?

A provisional answer to these questions is necessary to provide a framework for any attempt to define the concept. It is suggested at this stage in the debate that a narrow prescriptive context is identified that will generate a preliminary definition. This preliminary definition can be reconsidered from different view points should the context be broadened or elaborated.

In limiting consideration of the concept of Physical Literacy to a narrow context, the answers to the questions posed above are as follows. Firstly the concept will be considered as universal, on the grounds that all living humans, wherever they are located, are embodied and interacting with the world. Secondly, the most straightforward approach will be to attempt to describe an end state (Note 2). In defining Physical Literacy as an end state of significant value to each individual, a case is being made for the development of this mode of literacy to be established as a fundamental element of education.

The issue of the physically challenged is complex. At this stage it could be clearer to focus the concept of Physical Literacy on making the best use of what could be described as the full range of human embodied capacities in interaction with the world. It could be the case that the same principle should be used for those with a different or restricted cluster of capacities. Physical Literacy may need to be relative, to some extent, to the make up of an individual person's embodied dimension.

In respect of dexterity 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.

So at this stage in the debate it is proposed to define Physical Literacy prescriptively as being a universal concept, that is an end state relating to full human capacities, involving larger muscle groups. At a later stage in the debate it could be valuable to consider the concept from a cultural perspective or perhaps define progressive steps in attaining Physical Literacy. It may also be seen as appropriate to make the concept relative to each individual person's physical capacities.

Using the above prescriptive definition the following is proposed as a preliminary description of a physically literate individual. This individual moves with poise, economy and confidence in a wide variety of physically challenging situations. Furthermore the individual is perceptive in 'reading' all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination. 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. These authors would support the proposal that Physical Literacy is not a pure 'bodily' capacity, rather it describes a holistic engagement that encompasses physical capacities embedded in perception, experience, memory, anticipation and decision making.

In looking at this preliminary prescriptive description a number of questions need to be considered. Firstly can the notion of moving with 'poise, economy and confidence' be elaborated? Secondly can 'a wide variety of physically challenging situations' be clarified? And thirdly what is meant by 'reading' the environment? These questions will be looked at in turn.

## **Movement Capacities**

While this is the most obvious element in any description of Physical Literacy, and one that needs to be looked at separately, it must be remembered that this aspect alone can never constitute the whole definition. From existentialist and phenomenological perspectives movement provides the conduit to the world and it is in this context that it is fundamental to fully realised human existence. What might be loosely called 'a fit body' is only of significance in the total context of the individual using his embodied dimension to interact holistically with the world.

The specific embodied capacities that are needed to interact effectively with the environment are familiar to those in the physical education profession (Note 3), being fundamental to any understanding of human movement. These would include capacities such as balance, co-ordination, flexibility, agility, control, precision, strength, power, endurance and the ability to move at different speeds – that is explosively, right through to sustaining a movement over a long period of time.

It is accepted that each of these concepts will need to be defined, and that there could be more that could be included, but at root they describe that of which the embodied dimension is capable. The list defines and delimits the ways in which an individual can interact with the world. These capacities set the parameters. They describe human potential. And it is true that without any one of these capacities the ability to interact with the world would be restricted.

These capacities afford humans the opportunity to carry out a wide range of movement skills such as walking, running, jumping, climbing, turning, balancing, propelling oneself through water, striking, catching and throwing. It is the case that these capacities and skills would have afforded early humans the ability to survive through effective hunting, gathering and self defence.

An individual person endowed with the embodied capacities sketched above should be able to achieve an effective and dynamic interaction with his or her surroundings. If, as suggested earlier, humans, as they develop, create themselves out of interactions with the environment, an embodiment endowed with a rich variety of efficient capacities is essential for a fully realised human existence.

## **Physically Challenging Situations**

This section of the definition considers individuals in their surroundings and is perhaps not a perspective that is often addressed discretely. More often, perhaps, physical skills are tested in certain situations rather than these situations being selected to initiate an enrichment of embodied experience.

The notion that embodiment is a significant characteristic of individual persons who are at root 'in the world' is supported by Clark (1997, p.98) who writes 'Adaptive success finally accrues not to brains but to brain-body coalitions embedded in ecologically realistic environments.'

Physically challenging situations in which an individual should thrive would include given aspects of the natural world, environments such as water, different surfaces, hills and mountains and all manner of situations in nature ranging from moving in different weather conditions such as wind, to climbing trees. Situations in which an effective movement response is needed could also include those that are man made; those that have been created for individuals' comfort and efficiency. This list could include the use of, for example, cars, bicycles and ladders.

There are also other man made environments that could be seen to have been created with the sole intention of utilising, extending and challenging

embodied capacities. Some are based on natural environmental situations such as jumping and sailing. Others have moved on from the natural environment somewhat e.g. trampolining and gymnastics.

Each of these man-made environments has been created to be in tune with embodied potential and would not have been created unless individuals had the capacity to engage with them. It would seem plausible to suggest that they have been created as ends in themselves perhaps with the instinctive knowledge that in interacting with these environments, humans realise and refine their potential in ways that are rewarding, satisfying and help to develop unique individual human identity. World wide these man-made situations draw on a common bank of human capacities but are clearly culturally grounded.

In specifying the man-made situations in which an individual might need to interact effectively – it appears that the context for the debate has shifted from the intended culturally neutral setting, to the 21<sup>st</sup> century developed world. Not every culture incorporates the use of, for example, cars. It could be that the notion of physical literacy being formulated may only be pertinent to the developed western world. In other words it could be that those with a significantly different life-style are either physically illiterate, on the given terms, or need to have a different concept of physical literacy to which to aspire.

Looking at the concept from the perspective of the 21<sup>st</sup> century in the developed world, can the following question be answered *'What categories of situations exist in the world within which a physically literate individual should be able to interact?'*

The first category of situations should surely be those that are given in the natural world. To engage fully with the world effective interaction should be achieved with such phenomena as gravity, gradient, fixed and moving objects and water. This would seem to involve for example, walking, running, jumping, climbing, swinging, turning and propelling oneself through water.

The second category might be located in man-made situations. These could demand the application of the first category engagements to specific features such as using a ladder or an escalator or driving a car.

This second category might also include engagement in those man made situations created simply to challenge and celebrate embodied capacities. These situations might demand specific types of running, jumping, propelling oneself through water as well as the manipulation of implements and missiles. A development of this second category might be those man-made situations that involve interplay between individuals, together interacting with a specific aspect of the environment. Participants here would be demonstrating a shared appreciation and celebration of embodied capacities.

Working from the ideas outlined above, it might be possible to fulfil the original intention in this paper to formulate a universal concept by linking situations and environments to embodied potential. Perhaps there should be an attempt to identify a cluster of natural and man-made environments that challenge different aspects of our embodied potential. Culturally the contexts or environments could be different, but the overall embodied, interactive challenge the same.

Given the commitment that Physical Literacy is not a discrete bodily end in itself but a capacity through which we can come to know ourselves and the world more fully, this aspect – the environmental situations with which an individual should be able to interact becomes central to the debate.

In looking at situations in which the embodied dimension is central to effective interaction, those that can be realised between humans has so far been omitted. Interactions between individuals rely on effective self-expression as well as sensitive response. Self-expression is essentially an embodied capacity and through this means attitudes, moods and personality are communicated. It would therefore, seem legitimate to propose that a physically literate individual should also have the interpersonal embodied attributes that facilitate effective communication with others. This aspect of physical literacy could relate to effective self-presentation and non-verbal communication and also to self-expression in the context of art forms.

### **'Reading' The Environment**

The physically literate individual not only has the embodied capacities identified in the first section and has mastered the interaction with different environments mentioned above, but in addition has the ability the 'read' the demands of the situation. What is meant by the word 'read'?

In describing the notion of 'reading' the environment it is useful to consider what is meant by 'reading' in relation to the written word. Broadly an ability to read could be described as indicating that an individual is able to give meaning to the written word and furthermore is able to relate separate items together, such as words, sentences and paragraphs, to make a coherent and meaningful whole. On these terms 'reading' goes beyond recognising individual words and requires an understanding or grasp of a passage or text. The reader is able to engage with the material that is read as it resonates with existing knowledge and experience. To do this the reader has to draw on a range of cognitive skills. New information connects with existing understanding and enriches the experience and knowledge base of the individual. In addition to being able to engage meaningfully with the written word the reader is able to respond verbally or in writing (or through bodily communication), in order to articulate, develop or contest what has been read. There is a sense that in reading, new knowledge is created. This pertains both to the reader who has added to his store of understanding, and to the world at large, because the interaction between the reader and the material has brought into being a unique and new perspective on the passage read.

If this is translated into the context of Physical Literacy, the following picture emerges.

The physically literate individual, on perceiving the environment, through a range of senses, appreciates, via experience, the relevant components of the display e.g. shape size, weight, surface, speed, movement of others. These attributes of the environment are immediately understood as meaningful, in that they resonate with embodied capacities, and the individual will know

at once how to move, to relate effectively with the combined aspects of the environment in question. This knowledge of how to relate is the result of previous experience.

In a situation where the display is comparatively novel the mover will draw on a range of previous experiences, to make movement sense of the environment. In actually moving in relation to this novel environment a new blend of application of movement skills is brought into being. In a manner similar to reading the written word, new knowledge is created both for the mover and for others, in that the mover has created a new and unique response – a novel interaction with the world.

The description above paints a picture of the physically literate individual as interacting almost intuitively with the environment. While it is proposed that this could be the case where the environment sufficiently resembles others previously encountered and mastered, this would not be the case in a totally novel situation. In this latter situation there would seem to be a conscious awareness and perhaps an experimental approach to bringing a new set of co-ordinated actions into being. Newly acquired responses would be added to a bank of movement responses that can be drawn on as needed in the future. The physically literate individual would be successful in responding to a new environment both because he or she has a rich bank of established responses and because he or she has the capacity to draw on this bank to 'solve the problem' of an unfamiliar environment.

Clark (1997, p.224) sees our bank of available responses as actually being located in the environment. He writes 'The combination of embodiment and embedding provides for persistent informational and physical couplings between John and his world – couplings that leave John's 'knowledge' out in the world and available for retrieval, transformation, and use as and when required.' This is an unusual perspective and warrants further attention.

This section has proposed that a physically literate individual is a mover with a rich bank of established movement responses acquired through interacting with a wide range of challenging environments. The mover exhibits intelligent movement interaction with the world through perceptive reading of the environment, astute application of existing responses, effected alongside newly created responses where needed. The physically literate individual is adept at appreciating similarities between environments as well as recognising unique features. The mover demonstrates acuity in practical reasoning that combines sub-conscious and conscious levels of motor control. The mover is acutely aware of the effectiveness of responses and readily assesses levels of success. The physically literate individual learns from all interactions, ceaselessly modifying and refining his or her response bank (Note 4).

So far in this paper any reference to speech or verbal literacy has been omitted. In a sense what has been said so far could be interpreted as occurring at a non-verbal level. How far should a physically literate individual be able to verbalise the planning and evaluation of movement actions or responses – as indicated in the current National Curriculum in Physical Education in England? (DfEE, 1999, p.16, 18, 20, 23) Or is verbalisation more a tool in becoming physically literate – for the pupil and the teacher? This is certainly

a question to be answered. As an extension to this, how far does the academic study of disciplines that relate to movement and movement forms – as seen in GCSE and A Level contribute to physical literacy?

The section above has attempted to look in more detail at the proposed overarching definition spelled out earlier, being that:- *the characteristics of a physically literate individual are that the person moves with poise, economy and confidence in a wide variety of physically challenging situations. In addition the individual is perceptive in 'reading' all aspects of the physical environment, anticipating movement needs or possibilities and responding appropriately to these, with intelligence and imagination. Physical Literacy requires a holistic engagement that encompasses physical capacities embedded in perception, experience, memory, anticipation and decision making.*

## CONCLUSION

As an aspect of human potential integral to a fully realised human existence and influencing much of life as habitually experienced, the achievement and exercise of Physical Literacy plays a very significant part in the development of self-realisation, self-confidence and positive self-esteem. There is undoubtedly huge potential for enhancing quality of life via the development and deployment of Physical Literacy (Note 5). However the task of convincing those outside the physical education profession is problematic as the view is based on a particular philosophical perspective. However if a definition of Physical Literacy can help the profession in its cause, this is a task that must be undertaken. There is much work to do. Involvement in the debate by those from other disciplines is welcomed.

This paper has outlined a provisional context for a definition of Physical Literacy and has drawn up some proposals as to components that this context could accommodate. Wide debate and comment are welcomed. Questions arise in respect of the use of the concept of Physical Literacy, the narrow context proposed and the components identified.

**Questions 1 – 4 address the use of the concept. Questions 5 – 8 relate to the context proposed. Questions 9 – 15 relate to the components set out in the paper. Questions 16 – 18 address supplementary but related topics.**

1. Is 'literacy' a more appropriate term than 'mastery' or 'competence'?
2. Has the concept been articulated in such a way as to refer only to humans? Could animals fall under the same definition, as suggested?
3. Would a focus on the development of Physical Literacy help the profession to move on from the view that developing competence in different physical activities is the central goal of physical education?
4. Should the achievement of Physical Literacy rather than the involvement in physical education be championed as an essential element in education?
5. Is Physical Literacy a universal concept?

6. Is Physical Literacy an end state?
7. How can the concept relate to the physically challenged and those with other disabilities?
8. Should the concept be confined to whole body action or should it include e.g. dexterity? In the prescribed definition it would seem that activities such as darts are not included.
9. What are the embodied capacities that are essential to the concept?
10. Can the range of natural and man-made environments in which we need to interact effectively be identified?
11. Should these environments be those which, collectively, challenge all the different aspects of embodied capacities and capabilities?
12. What is meant by 'effectively' in respect of interaction with the environment?
13. Is there a need for the identification of embodied attributes related to self-expression? Does this include non-verbal communication?
14. How can the holistic capacities essential to Physical Literacy best be described?
15. How far should a physically literate individual be able to verbalise/ articulate the components of this attribute?
16. Has an understanding of personal health promotion a place in the concept of Physical Literacy?
17. Does study at GCSE and A Level contribute to Physical Literacy?
18. How does the concept of Physical Literacy affect what is and might be the practice of physical education?

## NOTES

1. While this paper is significantly the work of the author, a number of colleagues are to be thanked for their contribution to the development of the concept.
2. This end state is however not one that can be attained and then forgotten. It is an end state that needs constant attention to be maintained. Just as in acquiring a foreign language, one needs to maintain one's fluency by regular use of the language, Physical Literacy cannot be attained and then forgotten.
3. Lists of fundamental movement skills can be found in a wide variety of publications. Those listed in the Key Stage 1 and Key Stage 2 entries in the Physical Education National Curriculum, 1992 for England, pages 3-7, are a useful example.
4. It is accepted that considerable work is needed to clarify the nature of a number of the concepts and notions included in this paragraph.
5. The way in which the achievement of Physical Literacy can enhance the quality of life can be simply expressed through considering it alongside the aural ability. The basic level of human ability to interact physically with the environment can be compared to the basic ability to hear. Physically, most humans readily acquire the basic abilities to, for example, walk, sit,

grasp and reach. In respect of hearing at a basic level an individual can simply pick up sounds and hear speech. However for those individuals fortunate to have good hearing, it is generally accepted that the fulfilment achieved in differentiating between a wide range of subtly different sounds is profound. This would include, for example recognition of many types of music and bird song. This experience would add hugely to the quality of a life, previously lived only using hearing to pick up the most mundane of sounds. In a sense individuals can manage without developing their physical capacities, as individuals can manage without refining their sense of hearing, but this denies the enormous potential all individuals have of realising aspects of human nature and appreciating facets of the world.

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## REFERENCES

- Arnold, P.J. (1979). *Meaning in Movement, Sport and Physical Education*. London, Heinemann.
- Best, D. (1978). *Philosophy and Human Movement*. London, Unwin.
- Clark, A. (1997). *Being There: Putting Brain, Body and World Together Again*. Cambridge, MA., MIT Press.
- Department of Education and Science (DES) (1992). *Physical Education in the National Curriculum*. London, HMSO.
- Department for Education and Employment (DfEE) (1998). *The National Literacy Strategy*. London, HMSO.
- Department for Education and Employment (DfEE) (1999a). *Physical Education. The National Curriculum for England*. London, HMSO.
- Department for Education and Employment (DfEE) (1999b). *The National Numeracy Strategy*. London, HMSO.
- Descartes, R. (1970). *Philosophical Letters* (trans. and ed. A. Kenny). Oxford, Clarendon Press.
- Gill, J.H. (2000). *The Tacit Mode State*. New York, University of New York.
- Merleau-Ponty, M. (1962). *Phenomenology of Perception* translated by Colin Smith. London, Routledge and Kegan Paul.
- Merleau-Ponty, M. (1964). *The Primacy of Perception* translated by James Edie. Chicago, IL., NW University Press.
- Neitzsche, F. (1969). *Thus Spake Zarathustra* translated by R.J. Hollingdale. London, Penguin Classics.
- Sartre, J-P. (1957). *Being and Nothingness* translated by Hazel Barnes. London, Methuen.
- Sports Council (1991). *The Case for Sport* (Publicity leaflet). London, Sports Council.
- Whitehead, M.E. (1987). "A study of the views of Sartre and Merleau-Ponty relating to embodiment, and a consideration of the implications of these views to the justification and practice of physical education." Unpublished PhD thesis. London, University of London.
- Whitehead, M.E. (1993). *Physical Literacy*. Unpublished paper given at IAPESWG Congress Melbourne, Australia.