Physical Education and Sport Pedagogy, 2016
Vol. 21, No. 5, 481–500, http://dx.doi.org/10.1080/17408989.2015.1048211

A new pedagogical model for adventure in the curriculum: part one – advocating for the model

Andy Williams* and Nalda Wainwright

Sport, Health and Outdoor Education, University of Wales Trinity Saint David, Carmarthen, UK

(*Received 23 September 2014; accepted 26 April 2015*)

Background: In recent years increasing attention has been given to models-based approaches to physical education as a way of promoting standards and particular types of learning through better alignment of teacher planning and delivery with pupil learning and achievement. However, little attention has been given to the specific contribution a pedagogical model for outdoor adventure education (OAE) has to make to pupils learning.
Purpose: This paper is presented in two parts. Part one is an advocacy paper and draws upon the broader discourse around models-based practice to make a case for the development of a pedagogical model for OAE. Drawing upon guidelines for models-based approaches to physical education, this paper considers the theoretical foundation, rationale, review of research findings and major theme that inform the development of a model of OAE.
Conclusions: The selected review of the research suggests that the major impact of OAE is upon the affective domain, particularly in relation to pupils developing a positive self-concept. Learning is also evident in the cognitive and physical domains, but this is secondary to learning in the affective domain. Drawing upon the analysis of the research literature, the major theme for the model is identified as 'personal growth through adventure' and 'OAE' is suggested as the name of the model. Part two of this paper builds upon these foundations to outline what a pedagogical model for OAE might look like in a secondary school in the UK.

Keywords: outdoor adventure education; advocacy; models-based practice; affective learning; personal growth through adventure

Introduction

Increasing consideration has been given to the future of physical education pedagogy in recent years (Fairclough, Stratton, and Baldwin 2002; Kirk 2010; O'Sullivan 2013). Kirk (1992, 2010) is one of a number of contributors who have highlighted the continued dominance of team games, and physical education-as-sport-techniques, as barriers to realising the full potential of physical education as a valued learning experience and preparation for lifelong activity participation (Jewett, Bain, and Ennis 1995). Fairclough, Stratton, and Baldwin (2002) are others who have highlighted the influence of tradition, teacher expertise and the media as powerful cultural forces resisting more democratic and meaningful curriculum innovation in physical education. At the heart of these discussions has emerged a growing realisation that physical education pedagogy needs to better connect with recreational practices in and around local communities as the basis for lifelong

*Corresponding author. Email: a.williams@tsd.ac.uk

© 2015 Association for Physical Education

participation. Within these discussions, however, little is heard of the distinct contribution outdoor adventure education (OAE)[1] makes to pupils' learning in physical education. The purpose of this advocacy paper is to make a case for the development of a pedagogical model for OAE that draws upon a broader models-based approach to physical education shared by Jewett, Bain, and Ennis (1995), Lund and Tannehill (2005), Metzler (2011), Kirk (2010) and Haerens et al. (2011). In undertaking this task, we start by briefly outlining the emergence of a models-based approach to physical education and consider the evidence in support of its implementation and challenges to its universal uptake. Next we identify key features of the models-based approach to physical education as applied to OAE. We start by briefly considering its theoretical underpinnings and historical influences and then identify a rationale for the model that highlights the importance of OAE within the UK education system. This is followed by a selective review of OAE research to identify the distinct contribution it has to make to pupils' learning in physical education and to clarify exactly what we know and can evidence about OAE, as well as what we cannot evidence and do not know. We conclude part one of this paper by identifying the 'major theme' (Metzler 2011) of the model that contributes to the 'meta-curriculum' against which schools in the UK may develop their own programmes sensitive to the opportunities offered by their immediate locality (Haerens et al. 2011).

The emergence of models-based physical education

For more than 30 years critical curriculum theorists have argued that physical education needs to change to a more outcome-focused and locality-sensitive set of experiences that better realise the potential the subject has to make to pupil's learning (Jewett, Bain, and Ennis 1995; Lund and Tannehill 2005; Kirk 2010; Metzler 2011). During this time Casey (2012, 2) suggests that models-based practice has emerged to be the '"bookies favourite" to replace traditional teacher-led physical education'. Metzler (2011) elaborates on the concept of models-based practice that has driven this view forward through his definition of an instructional model for physical education.

> An instructional model refers to a comprehensive and coherent plan for teaching that includes a theoretical foundation, a statement of intended learning outcomes, teachers' content knowledge expertise, developmentally appropriate and sequenced activities, expectations for teacher and student behaviors, unique task structures, measures of learning outcomes, and mechanisms for measuring the faithful implementation of the model itself. (22)

Metzler (2011) identifies eight complimentary pedagogical models for physical education as 'Direct Instruction', 'Personalised System for Instruction', 'Cooperative Learning', 'Sport Education', 'Peer Teaching', 'Inquiry Teaching', 'Tactical Games' and 'Teaching Personal and Social Responsibility'. Each model has been validated to show its effectiveness in promoting particular standards (e.g. NASPE[2]) and types of learning in physical education, in order to better align teacher planning and delivery with pupil learning and achievement. Most recently Casey (2012) reviewed the findings of 45 empirically based peer-reviewed papers, reporting on the experiences of teachers who have been involved with implementing a models-based intervention in physical education. His findings suggest that models-based approaches have tangible benefits for teachers and pupils alike, ranging from teachers' acknowledgement of their professional development to 'real differences in their students learning' (Casey 2012, 11). His meta-analysis also sheds light on the limited uptake of models-based practice in the last 30 years and its

relative failure to make a significant and coherent impact on the teaching of physical education. In particular, he draws attention to the tensions that exist between curriculum theory and practice and the need for teachers to be supported throughout the process of change and implementation.

Notwithstanding this continuing tension over future physical education practice, very little models-based research has focused on the contribution of OAE to the process of curriculum change in physical education. This absence of empirically informed OAE research from the broader discourse on models-based practice downplays its potential contribution to the broader process of subject transformation. In seeking to redress this oversight and to locate a model for OAE within the context of models-based approaches, we recognise that OAE shares a number of characteristics with other more established models. These include Cooperative Learning, with its major theme of 'students learning with, by and for each other' (Metzler 2011, 237), and Teaching Personal and Social Responsibility, with its major theme of 'integration, transfer, empowerment and teacher-student relationships' (Metzler 2011, 396). Whilst both these models promote trans-domain learning, it is suggested that important differences are also evident in the major theme, pedagogical content knowledge, teacher and pupil behaviours and implementation needs that support the development of a distinct OAE model in its own right. These will be considered in more detail in Paper two.

Theoretical foundations and historical influence

Metzler (2011, 23) states that all pedagogical models are underpinned by a 'big idea' that 'makes it work'. In other words each model needs to be grounded in one or more theories of learning that link to the rationale and help teachers to understand why and when a model is most effective in supporting pupil learning. The underpinning theoretical framework for OAE identified from the literature suggests that three theories of learning are particularly relevant to this model. These are experiential learning theory, constructivism and, most recently, outdoor environmental education. Whilst none of these theoretical approaches can claim to have universal agreement, they do provide valuable perspectives upon which OAE in the UK has been constructed which, though not uncontested, continue to inform practice today. A brief introduction to these foundational concepts is outlined below as a point of departure for this advocacy paper. Likewise, given the intention to develop a model for OAE that could be trailed in practice within the UK, brief consideration also needs to be given to the historical influence of Mortlock's adventure education model.

Drawing upon the pioneering work of John Dewey (1859–1952), experiential learning theory advocates the central importance of experience as the basis for all learning and the need to consciously reflect on those experiences prior to future practice if learning is to take place. For Dewey the process of education should be grounded in concrete experiences that are real, meaningful and relevant to the pupil. Dewey's principles have been popularised in Kolb's (1984) four-stage model of the experiential learning process that itself draws upon the earlier work of Kurt Lewin. Kolb's model connects the physical doing of concrete experience to the cognitive process of abstract conceptualisation and learning transfer, via observation and reflection. Other experiential models reflect the same four-phase process: experiencing, reflecting, generalising and applying (Joplin 1995). More recently a number of commentators have begun to question the absolute focus on experience that lies at the heart of experiential learning to the detriment of other concerns. Wattchow and Brown (2011) draw attention to the absence of any social, political and historical context around experiential learning and in particular, how the focus on doing and reflection

silences a place-responsive approach to outdoor education. More broadly, Roberts (2012) has sought to highlight important philosophical differences between experiential learning and experiential education. Experiential learning he contends 'can be seen as a *method* or *technique* that any teacher might employ to meet certain instructional objectives' (4, author's italics). Experiential education on the other hand is a 'field' signified by 'common intellectual roots, activities, and a subject of study that holds the disparate, visible curriculum projects together' (Roberts 2012, 7). Two important points can be drawn from Roberts' viewpoint. First, he clarifies the relationship between experiential learning as a method of learning and the broader process of education that is concerned with 'philosophical queries as to the nature of self and society' (Roberts 2012, 4). Second, he acknowledges the diverse and at times contradictory range of projects that make use of experiential learning as a method and are all understood as experiential education. These include terms such as outdoor education and adventure education with their focus on nature and the outdoors, as well as place-based education and service learning (Roberts 2012, 7). In contrast to Roberts' view of experiential education as a field, Itin (1999) presents experiential education as a unifying philosophy under which different curricular projects can sit quite comfortably. Exploring the different philosophical positions around experiential learning/education is beyond the limitations of this paper; however, it is important that a model for OAE should take note of these concerns. First and foremost, a model for OAE must ensure that pupils are active and engaged in order that their experiences are meaningful for current and future learning. In this way teachers can ensure that OAE activities are not seen as one-off, isolated or irrelevant learning experiences that have no bearing on pupils' broader physical education learning**.** Rather, they are seen as progressive, meaningful and motivating experiences that help pupils learn about themselves, others and the real world around them and make connections to future lifelong activities (Mortlock 1984; Hattie et al. 1997; Munoz 2009; Wainwright 2012; Whitehead 2013). Second, along with all other curricular forms of physical education and all other subjects OAE needs to engage pupils with issues of social justice, human agency and democracy (Wurdinger 1994; Martin 1999; Loynes 2012). Roberts refers to this as 'critical pragmatism' in how it relates to schooling and personal experience that leads to the 'advancement of positive freedom through education' (2012, 10). Both concerns need to be reflected in a model for OAE.

Constructivism is the second foundational theory that informs OAE. Constructivism theory emphasises the process and situation as well as the outcome of learning. It views learning as an active process in which knowledge is constructed by the learner rather than being handed out by the teacher (Vygotsky 1978; Rea 2012; Capel and Blair 2013). As such learning is conceived as a socially constructed reality in which experiences only have meaning as a consequence of the individual's knowledge of them in relation to previous experiences and expectations. In other words reality, in the form of OAE, can only be understood as constructed meaning (Rea 2012).

Constructivist theories recognise that learners must be actively engaged in knowledge building and the teacher's role is to create the conditions within which pupils can learn for themselves. This does not mean that teachers abdicate all responsibility for pupil learning. Rather, teachers need to scaffold pupils' learning and help them develop their own understanding of experiences (Vygotsky 1978). Boud, Cohen, and Walker (1993) comment that all learning experiences are personal and unique to the individual. The corollary of which is that pupils construct meaning and knowledge from their experiences that are highly individual and allow for serendipitous learning that cannot be planned by the teacher (Loynes 2002; Williams 2006, 2012a). As such even when they share the same experience pupils

learn in a range of different ways including, but not limited to, those intended by the teacher. Gardner's (1993) work on multiple-intelligence theory supports the idea of pupils learning in different ways and resonates closely with the multiple-domain learning of models-based practice (Metzler 2011). As such it is particularly relevant to a model for OAE on two levels. First, it links closely with its tradition of challenge by choice in which pupils negotiate the level of challenge they are willing to expose themselves to during OAE experiences (Hopkins and Putnam 1993; Hodgson and Bailie 2001; Russell and Bisson 2003). Second, it supports OAE as a place in the curriculum where pupils are encouraged to learn for themselves by constructing their own meaning from experiences, though it remains under-researched within the literature (Loynes 2002; Becker and Schirp 2010). At the same time it poses a significant challenge to the organisation and management of many physical education lessons that are overly teacher centric (Kirk 2010).

A third and emerging theory underpinning OAE is outdoor environmental education. Beames, Higgins, and Nicol (2012) have drawn attention to the growing interest in sustainable development that is emerging in outdoor pedagogy, seeing it as offering 'direct physical/sensory, intellectual, and affective ways of knowing the planet we depend on for our survival, and developing our relationship with it' (32). In Australia Martin (1999) has linked outdoor education with critical theory (Giroux 1983) and the role it can play in challenging the dominant, western, exploitative relationship we cultivate with nature. He proposes a 'nature as friend' approach to the outdoors that is premised on respect and caring and promotes 'ethical action towards the natural environment both in the outdoors and in everyday living' (470).

Beames, Higgins, and Nicol (2012, 41) suggest a similar environmentally focused future for outdoor education if it is to make a meaningful and significant contribution to young people's ability to meet the challenges of the modern world. What is particularly valuable about their contribution is that it is grounded in the everyday practice of the local school and takes a multidisciplinary approach to active outdoor learning. In this context, the value of place-based learning as part of schooling for young people 'goes beyond issues of place, use and provision, yielding also potential opportunities for developing a sense of belonging, identity, self-worth and advocacy as fellow citizens with neighbouring communities' (Percy-Smith and Malone 2001, quoted in Beames, Higgins, and Nicol 2012, 42). Notwithstanding the emergence of outdoor environmental education as a theoretical focus for the future, there is, as of yet, very little empirical evidence to suggest that outdoor practice and attitudes to nature are changing towards a more sustainable and place-sensitive future. Ironically it is the sensitivity to the local context that most closely ties this emerging theory to the models-based approach.

Though not a theory as such, Mortlock's four-stage model for adventure education also merits consideration for its historical influence upon OAE in the UK. Mortlock developed a four-stage model for adventure education specific to outdoor learning experiences in which an experience is categorised according to the physical, mental and emotional demands it places upon participants. In translating practice to theory, Mortlock (1984) identified four stages of experience that participants encounter at some point during an outdoor adventure activity. These he identified as *Play, Adventure, Frontier Adventure* and *Misadventure*.

Many commentators identify with Stages 1 and 2 of Mortlock's adventure model and endorse the particular value of short-duration *Frontier Adventure* scenarios as the point where new learning is created. However, no teacher would subscribe to the possibility of a pupil dying or being seriously injured as a consequence of taking part in a curriculum learning experience that inadvertently slips into *Misadventure*. Such occurrences have happened in the past and have been attributable to technical error and poor decision-making as

well as unavoidable accidents (Ball and Ball-King 2011). Thankfully such incidents are increasingly rare as a result of better understanding of risk management, hazard avoidance and sector regulation via the Adventure Activities Licensing Service. However, there can be no doubt that past fatalities have had a negative and constraining impact upon the opportunities for outdoor adventure pedagogy over recent decades (Gill 2007).

Drawing on the work of Mortlock, Martin and Priest (1986) have developed an alternative more curriculum-friendly model that links pupil competence with the risks inherent in gaining more experience whilst avoiding the potential of major injury, emotional trauma or death. Where competence and risk are matched at Stage 3, they concur with Mortlock in identifying the learning potential of *Frontier Adventure* experiences. However, at Stage 4 they argue for *Misadventure* as a positive learning experience which when properly supported by the teacher can be beneficial to future growth. In this way pupils are encouraged by teachers to push through perceived limitations and attempt new and more demanding challenges in the full knowledge that no permanent harm will happen to them. *Devastation and Disaster*, they suggest, is a more appropriate Stage 5 alternative in their model, akin to Mortlock's Stage 4, and 'is a place where few adventurers choose to tread. Occurring when risks are high and competence is low, this frightening condition should have no role in educational experiences' (Priest 1999, 160). Rethinking a model for OAE into a more curriculum-friendly format that is experienced up to but not beyond Martin and Priest's Stage 4 creates realistic and acceptable parameters around pupils' learning, teacher competencies and curriculum opportunities that are, we suggest, in accord with the models-based approach to physical education.

Central to an understanding of frontier adventure within OAE, particularly in the UK, is the concept of risk. Comparing attitudes to risk in Australia, New Zealand and the UK, Lynch, Moore, and Minchington (2012, 256) identify a shared meaning across all three countries around adventure activities being associated with 'extreme' physical activities and specialised technical equipment. In contrast, and emphasising the contested and culturally nuanced nature of adventure in practice, they identify extreme specialised outdoor activity in the UK as having a higher concern with risk compared to that in New Zealand and Australia where it is associated with performance. In effect, Lynch, Moore, and Minchington (2012) have drawn attention to the cultural nuances that inform national interpretations of adventure/risk and encourage future research that will more fully explore different intercultural perceptions. From a different perspective, Wattchow and Brown (2011) also comment on the limitations of the adventure model in which 'the physical location becomes a featureless backdrop for overcoming metaphorical or literal obstacles and challenges' (34) and there have been few attempts 'to provide a sound educational justification for the use of risk as an effective learning strategy' (35). These critiques pose a significant challenge to the future development of a pedagogical model for OAE and how it is experienced by young people in practice.

In considering the importance of risk to OAE, Ball and Ball-King (2011) differentiate between 'objective or real risk' and 'subjective or perceived risk'. Objective or real risk is the actual level of risk that exists for all participants in a given situation to which a teacher and pupil are equally vulnerable and exposed. In contrast, subjective or perceived risk reflects how individuals interpret the situation in which they find themselves based upon their previous experience, level of competence and interpretation of the situation. In formal education situations such as OAE activities, *managed risk* is a more appropriate term as it implies careful consideration of risks against benefits, initially made by the teacher and, with experience, by the pupil. Most importantly *managed risk* recognises that all educational experiences that seek to support pupils' personal growth and

development have an element of uncertainty attached to them and it is impossible to foresee, prevent and control all possible outcomes. Teachers will need to make informed judgements about the level of managed risk that is appropriate for pupils taking part in OAE based on previous experience, knowledge, skills and training.

Crucially important to the concept of managed risk is that it is authentic. In other words, risk needs to be real, immediate and consequential if it is to have current and future benefits for the pupil. In the UK, Gill (2007) argues that our risk-adverse society and education system do not enable children to take risks or learn to make judgements about safety and develop resilience largely because they have so little experience of the outdoors as a place to learn and play. More broadly, Breivik (2007) advocates the need for society to create arenas where people can experience challenges and risks, highlighting, in particular, the crucial role of schools and other educational institutions.

> I think children should be given more opportunities to play outdoors, be active, explore the world, develop skills and strong bodies. We should let the children freeze a bit, get wet, starve a bit, get hurt, face problems, in order to develop resistance to stress and pain. It is not in their interest that we overprotect them. Our kindergartens and schools should give more opportunity for vigorous play . . . They should if possible, get a taste of real nature, of solid earth, running water and natural elements like sun, rain, desert or snow. These are the challenges and environments we are built to live in and to handle. We need to save the wilderness around us, but also the wilderness within us. (20)

Most commonly understood in OAE as physical risk, we strongly believe that this understanding needs to be expanded to recognise risk as multifaceted phenomena. This should include social, psychological and emotional risks (Priest 1999) that are equally as present as physical risk in a pedagogical model for OAE if it is to accurately reflect the holistic nature of learning associated with the theme of personal growth through adventure.

A rationale for OAE

For more than a century educators such as Baden-Powell, Seton and Hahn have lauded the value of adventure to achieve personal and educational goals around character-building and teamwork. Inextricably linked to this belief in the value of adventure is an equally strong belief in the outdoor environment as the location in which some of the best adventures and greatest personal and human achievements are experienced (Mortlock 1984; Hopkins and Putnam 1993; Veevers and Alison 2011). More recently, attention has focused on the purpose, merit and underpinning values of outdoor adventure experiences in the education process. Loynes (2002) identifies the traditional focus on self-reliance, ego, team goals and nature as a resource to be used and overcome within a broader algorithmic paradigm and suggests it is time to move towards an alternative generative paradigm for OAE that is radically different, with a focus on sustainability, egalitarism and political engagement. From a similar perspective, Lynch and Moore (2004, 9) draw attention to the need to understand outdoor adventure as a socio-historical construct that serves three paradoxical purposes. It functions 'as a source of continuity and stability' in times of change as 'an ideological tool that is promoted to foster acceptance of rapid change' (10) and as 'a tool of personal agency' (10). These overlapping and paradoxical roles for OAE identify a new way of thinking about OAE and raise questions about it as a universally positive experience. In so doing they support the call for more localised and culturally responsive forms of OAE akin to the underpinning framework or 'meta-curriculum' upon which models-based approaches to physical education are grounded.

Unpacking OAE in practice, Hopkins and Putnam (1993) identify the outdoors as simply the physical location in which learning happens. However, others would argue in favour of a deeper understanding of the term that highlights different ways of knowing the outdoors including social (Richards 2003), critical (Bowles 2008), sensory (Becker 2010) and spiritual (Macfarlane 2003) constructions. The starting point for this review identifies the outdoors as the location in which a particular range of activities takes place whilst acknowledging the breadth of learning outcomes that might be achieved. Within OAE we include traditional as well as new outdoor activities such as sailing, mountain biking and parkour along with expeditions, residential experiences, problem-solving and initiative tasks. These, and similar activities, have made a distinct contribution to the education process of many millions of people in the UK and internationally for nearly a hundred years (Ogilvie 2013).

A brief overview of the range of programmes and participant groups underscores the popularity of this type of learning. Programmes include formal, informal and extracurricular opportunities, Outward Bound, Scouting, Guiding, Project Adventure, the Duke of Edinburgh Award, residential experiences, solo retreats, reconciliation programmes, youth-at-risk, overseas expeditions, management development and, most recently, Forest Schools and Adventure Therapy. Participant groups are equally diverse including primary and secondary aged pupils, tertiary and higher education students, youth at risk, adults with learning and behavioural disorders and corporate managers. In addition, selective groupings are popular for women-only, mothers and children, fathers and sons, ethnic minorities, ex-servicemen and apprentices as well as any combination of these categories.

Yet, despite the evident popularity of this type of learning, concerns have been raised that young people are becoming increasingly separated from the outdoors as a place to adventure (Louv 2005; Frost 2006; SDC 2010; Moss 2012).Ward-Thompson, Travlou, and Roe (2006) comment on an education system and school curriculum that are failing to provide the challenging outdoor experiences that young people need to become confident, independent, informed risk-takers in their adult lives. Gill (2007) has highlighted a broad trend towards society becoming risk averse, whilst Palmer (2007) has warned of the threat to young peoples' development posed by new technologies. In response governmental recognition of these concerns has shown itself initially with the inclusion of outdoor activities in the national curriculum and more recently in the publication of the *Learning Outside the Classroom Manifesto* (LOTC 2006) in England and Northern Ireland, the *Climbing Higher* agenda in Wales (WAG 2005, 2006) and the *Curriculum for Excellence* in Scotland (2004). Underpinning all these developments is a recognition that young peoples' motivation to adventure outdoors must continue to be nurtured *today*, if we are to give them the same drive and enthusiasm to undertake their own outdoor adventures (irrespective of how grand or modest they may be) in their adult lives *tomorrow* (WAG 2005, 2006).

Reviewing the research evidence: what do we know?

There is a well-developed research literature around OAE grounded, in particular, in studies from the UK, Australia and the USA. In this section we examine some of these main studies and the claims they have made. In undertaking this exercise we readily acknowledge the selective nature of the review and that other studies could have been included. In justifying our decision, we have sought to include only those studies with a focus on participant learning (affective, cognitive or psychomotor), that report on a structured outdoor adventure programme (educational or recreational),[3] that have been published in the last 20 years, and are

readily available in English. We also identify the most important learning that has been gained from these studies as the evidence base from which to construct a pedagogical model for OAE.

We start this review by considering the research that has sought to explore the impact of OAE upon pupils' affective learning. In the UK Rickinson et al. (2004) undertook a review of 150 studies into outdoor learning, identifying substantial research evidence for the positive impact of outdoor and adventurous activities upon young peoples' affective learning. In particular, young people were felt to have benefitted in their development of more positive attitudes, beliefs and self-perceptions as well as interpersonal and social skills (6). The report also found more value in programmes with specific features: longer duration, more sustained involvement in activities and well-designed preparatory and follow-up work; as well as programmes that make links to the school curriculum, emphasise the role of facilitation in the learning process and make clear links between programme aims and practices. Key recommendations from the report included more research into the outdoor learning process, that is, how and why programmes work (or not), the relationship between indoor and outdoor learning and the effectiveness of programmes that seek to build progression from local to more distant contexts (Rickinson et al. 2004). From Australia, another meta-analysis of 96 different studies by Hattie et al. (1997) identified an overall effect size from the programmes of 0.34% or a 15% improvement across six dimensions of learning (academic, leadership, self-concept, personality, interpersonal and adventuresome) incorporating 40 sub-categories. Significant increases in affective learning were noted for social competence, cooperation and interpersonal communication. Most prominently affective learning impacts were identified in relation to an individual's self-concept where the impact was most noticeable for independence, confidence, self-efficacy and self-understanding. Even more impressively, the authors suggest 'these short term or immediate gains were followed up by substantial additional gains between the end of the programme and follow-up assessments' (Hattie et al. 1997, 43). Running contrary to most educational research, this suggests a major and lasting impact on the lives of participants as new learning is transferred to everyday life. However, the authors advise a note of caution in stating, '(T)here is a great variability in outcomes between different studies, different programmes, and different individuals' (77) with Australian Outward Bound programmes for adults, which lasted more than 20 days, identified as the most effective. Most importantly for the purposes of this paper, programmes for school-aged participants were also deemed to be highly successful with a mean effect size of 0.26 recorded. As with Rickinson et al.'s study, the report calls for more focused research into the process or formative aspects of programmes and how they impact participants' affective learning. In particular they identify the need to better understand how participants make links between decision-making in the earlier parts of a programme to critical decisions later in the programme. In addition they identify the need for more research focused on the relationship between programme goals, tasks and participant achievement.

Other meta-analyses researching aspects of affective learning confirm the positive impact of OAE programmes upon aspects of participants' self-esteem. Hans (2000) reported a 0.36 effect size on locus of control from 24 studies involving 1632 subjects. Also from the USA Cason and Gillis (1994) found an average effect size of 0.31 from 43 studies of adolescent adventure programmes or the equivalent of a 12.2% improvement in the rate of learning. Significant differences were recorded for effect sizes between longer programmes (3 weeks to 10 months) and shorter programmes (under 3 weeks). However, contrary to the findings of Hattie et al. (1997), younger participants benefitted more from the programmes

than older participants, whilst self-concept (0.3%) and locus of control (0.3) both demonstrated significant affective learning.

Other studies exploring different forms of activity experience have consistently supported their positive impact upon young peoples' affective learning. One such form is the outdoor activity expedition. Researching the impact of a six-week expedition experience upon young people, Allison (2000) identified four distinct categories of learning: self-self, self-other, self-nature and self-career. In seeking to better understand the meanings participants attached to their experiences, Alison adopted a hermeneutic approach of data collection, analysis and participant consultation for a post-expedition period of 18 months. His findings provide strong support for the longer term impact of OAE upon participants' affective learning and the transferability of learning from the expedition context to everyday life. Alison also identified the post-expedition adjustment period as a significant developmental phase through which participants had to pass in order for them to be able to fully process their experiences. He also identified the need for post-expedition opportunities for participants to meet or communicate to enhance learning transfer. Gassner and Russell's (2008) study of the effects of a 21-day Outward Bound course in Singapore provides a different lens through which to consider the long-term benefits and transfer of learning to everyday life. Adopting a retrospective rather than a concurrent approach to their study, they identified a long-term impact on participants' lives going back 11 years. Interestingly, the study provides cultural insight into the use of outdoor activity programmes in Asia and gives some balance to the largely Caucasian focus of much of the literature. Significant features of the course identified as contributing to participant perceptions of long-term impact included challenging physical activities out of doors such as a Final Expedition and Solo time, as well as individual and group reflection time. Of particular interest, they noted the course instructor was not deemed to be a significant predictor to long-term impact. In explanation the authors note the course was for young adult groups training as police or airline cadets and state scholars, with a personal development focus rather than for school pupils with a curriculum focus.

Expedition experiences have also provided a valuable activity form for assessing affective learning. Mirroring the findings and approach of Gassner and Russell (2008), Takano (2010) researched Japanese participants' retrospective perceptions of an overseas outdoor activity youth expedition. Her findings show that 99% of the participants considered their expedition experience to be significant in their lives, whilst 96% stated the experience had influenced their present selves (77). What is so unusual, and impressive, about these findings is that they refer to an outdoor activity that happened 20–23 years ago and was still felt to be influencing individuals' lives. In other expedition-focused research and echoing the findings of Allison (2000), Beames (2004) identified participant self-sufficiency and physically demanding activities as the most significant features of an expedition along with the diversity of the group and the isolated location. Similar results were also noted by Stott and Hall (2003) after a six-week wilderness expedition to Greenland. In their study, participants' self-reported changes were identified in relation to social and personality traits including enhanced ability to control their emotions and live in crowded circumstances, lead problem-solving through consultation with others, set priorities and demonstrate confidence.

Solo experiences are a different OAE form also identified to have a significant impact on affective learning. Campbell (2010) suggests that the 'pre-solo mindset was the most important factor in determining positive outcomes for participants and that offering students the opportunity to take responsibility for their own solo increased the likelihood that this would be achieved' (33). In a similar study, Williams (2012a) acknowledges the potential

of the solo experience to support intrapersonal and interpersonal learning. In addition, he draws attention to the potential for unplanned or emergent learning to occur as a direct result of the facilitator adopting a more learner-centered approach. In contrast Knapp (2005) emphasises the importance of the facilitator directing the participant through the solo by setting goals and structuring opportunities to brief and debrief participants. Discussion over the role and approach of the teacher/facilitator within a pedagogical model for OAE is contentious as it raises important questions about programme design, learning outcomes and teaching approaches that will need careful consideration.

At the other end of the adventure participant spectrum, Lan, Sveen, and Davidson (2004) sought to investigate the impact of a six-day Wilderness Adventure programme for youth at risk in Australia. Major findings from pre, post and follow-up data included greater participant self-actualisation, decreased feelings of hopelessness and a significant reduction in recidivism rates during the following two years. A similar study investigating the impact of a personal development outdoor activity programme for disadvantaged and disaffected young people in the UK identified differences between the immediate, short-term effects of the programme and the sustained long-term effects (a year later), in relation to improvements in attitude, behaviour and most notably participants' self-confidence (Astbury and Knight 2003). Acknowledging the fall-away of impact scores, the authors suggest that although short-term improvements in personal and social skills did not last, they were a good indicator of longer term improvements. Also from Australia Quay, Dickinson, and Nettleton (2002) sought to investigate whether there were any differences between year 9 pupils' experiences of caring situations (the school had identified caring as a core school value for all pupils) in the subject of outdoor education compared to other classes. Focusing on a five-day bushwalk aimed at gaining experiential understandings of caring, pupils reported that a more caring attitude was fostered than in other classes at school and these caring relationships were evident not only with close friends but in relationships formed with fellow pupils not deemed to be close friends. The authors suggest the study provides evidence of the bushwalk activity as a vehicle for developing caring relationships amongst pupils. Put another way and echoing the findings of Rickinson et al. (2004), well-designed learning experiences with a clear focus that make links to the school curriculum provide better learning contexts in which pupils can achieve.

Taking a different approach, Ward-Thompson, Travlou, and Roe (2006) sought to investigate how young people engage with 'wild adventure space' outside of formal education in less organised and spontaneous ways as well as in structured and managed activities. Findings demonstrated that experience of the outdoors and wild adventure space has the potential to confer a multitude of benefits on young peoples' development, including positive self-image, social and educational development and mental and physical health. Young peoples' statements about why they value wild adventure space included

> a place that offers risk and challenge; a place that inspires you to do things; a place where you can do what you want, where you can relax and feel free; a comfortable place without adults, where you won't be told to go away; and a place to have a good time with your friends. (Ward-Thompson, Travlou, and Roe 2006, 111)

Recommendations for future research included establishing a longitudinal study to investigate the long-term benefits of access to wild adventure space for different subgroups and how young children's experiences link with later teenage and adult life experiences and lifestyles.

Other studies have also considered the impact of OAE residential experiences upon affective learning (DES 2004; Williams 2012b). One study involving 900 schools concluded that 7 out of 10 pupils have the opportunity to take part in a residential experience during their time at school (DES 2004). Yet despite the traditional popularity of the OAE residential as a vehicle for impacting pupils' affective learning outcomes around team building, personal confidence and social skills, they identified a systematic lack of formal evaluation of these experiences. As such despite the informal observations of teaching staff about the positive effects of residential experiences, it is difficult to justify the claims that are made. In providing a more robust approach to evaluating the impact of adventure-based residential experiences, Williams (2012b) suggests that four features contribute significantly to pupils' learning: living with others, challenge, teacher relationships and learning about self. Whilst his study focuses on the impact on primary school pupils, it goes some way to addressing the lack of evaluation noted in the DES study and we would suggest that it can be extrapolated as a starting point for understanding secondary school pupils' residential learning as well.

Summarising the research into affective learning, there appears to be a strong and robust evidence base for the positive impact of OAE in particular upon pupils' self-esteem. Whilst we fully acknowledge the diverse interpretations of self-esteem and the difficulties in trying to measure it, the research evidence clearly supports the positive impact of OAE and appears to be consistent across all participant groups and all forms of activity. Distinctive features underpinning positive learning outcomes appear to be well-designed programmes that make clear links between aims, practices and the school curriculum; emphasise the importance of appropriate facilitation techniques before, during and after the experience; include challenging and risk-taking activities with uncertain outcomes; require sustained commitment and make use of a range of outdoor locations. It is suggested that the development of a pedagogical model for OAE that is grounded in a reliable and robust evidence base will need to be structured around such features in order to acknowledge the demonstrable impact it makes to pupils' affective leaning.

A second broad area of research into OAE focuses on pupils' cognitive learning. Evidence for the positive impact of OAE upon pupils' cognitive learning is arguably quite weak and indirect. Rickinson et al.'s (2004) meta-analysis suggests this is, in part, due to the failure of many programmes to have specific aims related to academic goals. In most studies there is very little evidence of links between programme aims and the curriculum or to the transfer of learning from the activity to the school (Clay 1999). Hattie et al.'s (1997) study draws a distinction between outdoor activity programmes impacting on general academic learning such as problem-solving and subject-specific related academic gains. They give a cautious endorsement of outdoor activity experiences enhancing general academic development in providing experiential contexts for pupils to think creatively to overcome real challenges they face when participating. Likewise, whilst some significant claims have been made for improvements in subject-specific learning linked to mathematics and language skills, these are limited to just a few programmes which have been designed specifically with these aims in mind. The authors warn against these findings being generalised to all OAE programmes. Other researchers have also noted the indirect benefit on cognitive learning resulting from participants being more motivated after they have been involved in an OAE programme (Gass 1987). Dismore and Bailey (2005) have taken a broader perspective to suggest a range of possible explanations supporting the cognitive and academic benefits of different physical activities that could equally be applied to OAE. These include increased mental alertness resulting from physical activity (Hills 1999), increased feelings of personal empowerment due to the fun and enjoyable

nature of the activity (Daley 1988) and the use of cooperative learning approaches that have been associated with positive improvements in academic achievement (Slavin 1996). Their own study sought to investigate whether OAE could contribute to raising standards in primary school settings and suggests that

> structured reflection on experiences encouraged pupils to build up links between their outdoor activities and classroom based learning; this expressed itself in greater understanding of concepts and improved application in real-life settings. (Dismore and Bailey 2005, 17)

However, they stopped short of attributing causation to pupils' experience of OAE due to limitations in the study.

One significant area of cognitive learning that has a strong anecdotal evidence base is for the impact of OAE upon young peoples' environmental knowledge and understanding. Cooper (2010a, 2010b) has argued for the compatibility of outdoor education and environmental education, whilst Nicol (2002) suggests that environmental learning should be the ontological focus of a new subject area known as outdoor environmental education. In contrast, others suggest that outdoor education and environmental education are incompatible, with only superficial recognition of the principles underpinning environmental processes being evident in outdoor education teaching (Van Matre 1990; Keighley 1997). The findings of Hattie et al. (1997) concur with van Matre's position in highlighting only limited evidence relating to improvements in environmental awareness. More radically, we would suggest that OAE does not currently have a body of knowledge around environmental education upon which practice can be developed and the research evidence supporting enhanced environmental learning through OAE is, at best, weak. In relation to developing a new curriculum model for OAE as part of physical education, this paper suggests that whilst environmental learning remains an important aspect of pupils' broader curriculum learning, it can no longer be considered to be a primary learning outcome of OAE or physical education (Brown 2006). This is not to refute the potential for environmental learning to occur as a serendipitous outcome for some participants (Williams 2012a). However, we feel the evidence for significant environmental learning to occur as a result of pupils' participation in OAE is weak and inconsistent and cannot form the underpinning rationale for pupils' involvement. Indeed, we would suggest that it is disingenuous for OAE to claim to be able to deliver the breadth of knowledge and depth of understanding around environmental learning that are required to do justice to this increasingly important issue. Whether the traditionalists like it or not we would suggest that the development of a pedagogical model for OAE has to reconsider its rationale and recognise the relatively weak evidence base for any continued claims practitioners may make to impact upon pupils' environmental learning. Quite simply we do not see the evidence for this in the research studies into OAE. More broadly a pedagogical model for OAE also needs to recognise that its most significant impact on pupils' cognition occurs in the area of general academic achievement rather than in subject-specific knowledge and understanding.

The third area of research into OAE focuses on pupils' physical learning. Evidence for the positive impact of OAE upon pupils' physical learning is positive but lacking in quantity. Three studies from Scandinavia explore the potential of outdoor environments rather than structured outdoor activities to impact positively upon children's physical activity levels. Mygind (2007) compared children's activity levels during outdoor learning days in the forest with activity levels during a traditional school day and a traditional school day inclusive of two lessons of physical education. His findings indicated higher levels

of physical activity were experienced during the forest days than in either of the other two days. Fjortoft (2000) has explored the relationship of environmental affordances to gross motor skill development in Norwegian preschool settings. She suggests that the complexity and diversity of natural outdoor play environments support significant improvements in the development of coordination and balance skills. In contrast Storli and Hagen (2010) found children's physical activity levels were relatively independent of the play environment and there were no differences, as measured by accelerometers, between the traditional playground environment and the natural environment. In Australia, Purdie, Neil, and Richards (2002) noted strong evidence of improved physical ability perceptions in participants after an outdoor experience, whilst Hattie et al. (1997) juxtaposed changes in physical self-concept with changes in physical fitness. Similar to the findings of Astbury and Knight (2003), small, short-term and greater long-term gains were recorded in physical self-concept in comparison to substantial short-term gains and reduced long-term gains for physical fitness. Seeking to explain this apparent contradiction, they surmise that comparisons with other course participants are likely to be framed against self-selected measures of physical fitness and the challenging physical demands of the programme, leading to a lower perception of physical self-concept. Returning home these perceptions are likely to reverse, with higher physical self-concept being more evident (in comparison to immediate friendship groups) and gains in physical fitness reducing where challenging physical activities are no longer the norm. In another study Farnham and Mutrie (1997) found no significant changes in the perceptions of physical self-worth or sports competence held by children with special educational needs at the end of a four-day outdoor programme (Rickinson et al. 2004). A more recent review of the literature on children's health and outdoor spaces by Muňoz (2009) concludes that access to green space brings general health benefits and contributes significantly to higher levels of well-being with attendant psychological benefits such as stress reduction. Positive impacts on levels of physical activity are also identified, but no specific reference to OAE is made.

In the USA, a number of studies have investigated the relationship between adventure activities and physical fitness outcomes within Project Adventure curriculum experiences. Fersch and Smith (1978) noted increased pupil scores in relation to several physical fitness measures including sit-ups, 50- and 300-yard runs and pull-up capability for males and flexed-arm hang for females. In contrast the studies of Gehris et al. (2011) and Quimby (1982) recorded no significant differences in fitness scores for pupils in adventure classes compared with peers in traditional physical education classes. One additional study by Gerhis et al. (2012) has sought to explore physical activity levels as opposed to physical activity outcomes. Making use of a validated direct observational technique known as System for Observing Fitness Instruction Time (SOFIT), data were generated in relation to the amount of lesson time pupils spent in moderate to vigorous physical activity (MVPA). Making use of data for a range of experiences including 'high elements' such as vertical or traverse climbing and 'initiatives' such as problem-solving tasks, their findings concluded that less time is spent in MVPA during adventure lessons that in traditional physical education lessons, with the highest amount of MVPA registered in 'high elements' tasks. Overall, these findings are not surprising given the lack of evidence for physical education to set the foundations for lifelong physical activity (Trudeau et al. 1999; Kirk 2010) and the marked decrease in physical activity levels experienced during adolescence (Armstrong et al. 1990; Cale 1996; Calvin 2001). This is not to suggest that OAE does not contribute directly to pupils' overall physical development as noted in some of the Scandanavian and American studies. On the contrary, OAE has a significant role to play not only in contributing to pupils' physical development whilst at school but also in supporting their

physical literacy journey by providing opportunities for young people to learn about physical movement in a range of different locations and contexts as part of a broad and balanced physical education curriculum (Whitehead 2013). Likewise, we feel OAE has an important role to play in promoting physical activity and encouraging healthy lifestyle choices (Dismore and Bailey 2005; Bailey et al. 2009; Metzler 2011). We agree with others that OAE has a part to play as physical activity experiences that are relevant, interesting, enjoyable and motivating (Fairclough, Stratton, and Baldwin 2002; Bailey et al. 2009). However, we feel their inclusion, as part of young people's curriculum experience of physical education, is tenuous if premised solely on the basis of relatively weak research evidence about their impact upon objectively measurable physical activity levels and fitness. In response we feel confident that we can now evidence the broader trans-domain learning and personal growth to which physical education contributes. We do though recognise that more research is urgently needed into the specific nature of the impact of OAE on pupils' physical development in order to fully realise the potential of OAE in physical education.

Identifying the major theme for OAE

Drawing together the main findings from this selected review, we believe it is possible to identify the 'major theme' (Metzler 2011) of a pedagogical model for OAE against which schools may develop their own programmes sensitive to the opportunities offered by the immediate locality. Hopkins and Putnam's (1993) conceptualisation of *personal growth through adventure* provides a point of departure that resonates with our review and could form the major theme for a pedagogical model for OAE. This theme provides an opportunity to promote an OAE focus in physical education because the affective domain will be prominent within the model whilst also recognising the holistic nature of OAE learning upon the cognitive and physical domains. Hopkins and Putnam provide guidance in helping us to understand what *personal growth through adventure* might mean.

> The concept of growth . . . is not just the exposure to wild places, or the simple discipline of working with others. It is the inevitable outcome of the process of confronting oneself within the context of other people and the environment. The relationship is dialectical, the aspiration synergy. It is within this synthesis that the value of adventure education lies. (Hopkins and Putnam 1993, 15)

Developing this idea further, Hopkins and Putnam comment on the prioritisation of affective learning outcomes as the primary focus of OAE which have 'a positive impact upon an individual's self-confidence, upon their understanding of the world and on their actual behavior' (Hopkins and Putnam 1993, 15). Hopkins and Putnam's explanation sheds light on the subjective and individual nature of different peoples' understandings that are attached to OAE experiences. This clearly locates the major theme of *personal growth through adventure* primarily within the affective domain of learning where its impact is significant, evidenced and transferable. At the same time we recognise that the learning process does not occur exclusively in only one domain (Metzler 2011) and our review of research provides support for related contextual learning in the cognitive and psychomotor domains as well. Metzler (2011, 19) refers to this as 'domain interaction' and we believe this best describes the complex learning interactions that occur when pupils are actively engaged in OAE and which support pupils' holistic learning through physical education. The evidence we have considered suggests that domain interaction can and does occur; however, the overwhelming benefit of OAE is recognised to impact on pupils' affective

learning and it is in this domain that the research evidence can legitimately justify its place within the curriculum.

Remembering the major theme of the model and the findings of our review of research, it is important for teachers to ensure the affective domain has the main prominence in programme design and planning. However, we also acknowledge that broader research into physical education recognises its potential impact upon the cognitive and physical domains of learning, as well as the affective domain (Bailey et al. 2009; Metzler 2011). As such we suggest that the primary focus of teachers in their design and planning of programmes has to be on affective learning outcomes linked particularly to pupils' self-concept with cognitive and physical learning outcomes acknowledged to be of secondary importance.

Conclusion

Drawing upon the work of Jewett, Bain, and Ennis (1995) and Metzler (2011) on curriculum models for physical education, part one of this advocacy paper has sought to make a case for the development of a pedagogical model for OAE in the UK. This aspect of physical education has largely been overlooked in the development of curriculum models over the last 20 years, yet it has a long and influential history in the UK as well as being popular as a distinct set of activities in many parts of the world. In presenting this advocacy paper, we considered the emergence of model-based approaches to physical education as the 'bookies favourite' to replace traditional teacher-led physical education in the future. Making use of Metzler's (2011) design specification guidelines for pedagogical models, we briefly considered the historical influence of important theoretical foundations (experiential learning, constructivism and outdoor environmental education) and Mortlock's adventure education model on OAE in the UK. Recognition of the contested influence of these foundations on OAE practice today and the implications for a pedagogical model for OAE were highlighted. Building upon these foundations, we identified a rationale for the model noting important cultural reference points including the increasing separation of young people from the outdoors and governmental response to the lack of outdoor adventure opportunities in education and society. We also undertook a selected review of OAE research over the last 30 years in order to evidence its impact upon participants and the main learning associated with these experiences. Our review identifies pupil learning in the affective domain to be the most prominent impact of OAE, particularly in relation to developing a positive self-concept closely supported and inter-linked with learning in the cognitive and physical domains. From this we identified the major theme for the model to be *personal growth through adventure*. Part two of this paper will build upon these foundations to outline what a pedagogical model for OAE might look in practice in a secondary school in the UK with a particular focus on the implementation needs in relation to non-negotiable aspects of the model, key assumptions about teaching and learning behaviours and important assessment concerns.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. For the purposes of this paper, the term OAE is used to represent the varied range of alternative names such as adventure education, outdoor education, outdoor activities, outdoor and

adventurous activities and outdoor learning that are to be found in the literature. Whilst we acknowledge that philosophical, cultural and practical differences exist between many of these terms, consistency in the use of terminology and word count dictates that we adopt a single term.

2. NASPE is the National Association for Sport and Physical Education in the USA.
3. Given the purpose of this advocacy paper, we feel it is appropriate to draw upon the breadth of research evidence that is available from OAE and outdoor recreation programmes rather than to limit the paper to a relatively small number of studies organised as part of an official curriculum.- Whilst we readily acknowledge that distinct differences exist between education and recreation programmes in relation to aims, context and approaches, we feel justified in including findings from both types of programme because they all have the potential to identify personal learning as an outcome of the experience.

References

Allison, P. 2000. *Research from the Ground up: Post-expedition Adjustment*. Ambleside: Brathay Hall Trust.

Armstrong, N., J. Balding, P. Gentle, and B. Kirkby. 1990. "Patterns of Physical Activity Among 11–16 year old British Children." *British Medical Journal* 301: 203–205.

Astbury, R., and B. Knight. 2003. *Evaluation of Fairbridge: Summary of Practitioner's Issues*. London: Charities Evaluation Services.

Bailey, R., K. Armour, D. Kirk, M. Jess, I. Pickup, and R. Sandford. 2009. "The Educational Benefits Claimed for Physical Education and School Sport: An Academic Review." *Research Papers in Education* 24 (1): 1–27.

Ball, D. J., and L. Ball-King. 2011. *Public Safety and Risk Assessment: Improving Decision Making*. London: Routledge.

Beames, S. 2004. "Critical Elements of an Expedition Experience." *Journal of Adventure Education and Outdoor Learning* 4 (2): 145–158.

Beames, S., P. Higgins, and R. Nicol. 2012. *Learning Outside the Classroom – Theory and Guidelines for Practice*. London: Routledge.

Becker, P. 2010. "About the Necessity of an Education that is Oriented Towards Sensory Perception and Physical Activity." In *Water – Space for Experience*, edited by P. Becker and J. Schirp, 7–18. Marburg: Bsj Marburg.

Becker, P., and J. Schirp. 2010. *Other Ways of Learning*. Marburg: Bsj Marburg.

Boud, D., R. Cohen, and D. Walker. 1993. *Using Experience for Learning*. Buckingham: Open University Press.

Bowles, S. 2008. "Some Other Ways Not Taken." In *Other Ways of Learning*, edited by P. Becker and J. Schirp, 245–261. Marburg: Bsj Marburg.

Breivik, G. 2007. "The Quest for Excitement and the Safe Society." In *Philosophy, Risk and Adventure Sports*, edited by M. McNamee, 10–24. London: Routledge.

Brown, M. 2006. "Adventure Education and Physical Education." In *The Handbook of Physical Education*, edited by D. Kirk, D. Macdonald, and M. O'Sullivan, 685–702. London: Sage.

Cale, L. 1996. "An Assessment of Physical Activity Levels of Adolescent Girls – Implications for Physical Education." *European Journal of Physical Education* 1 (1): 46–55.

Calvin, N. 2001. *Children and Young People – The Importance of Physical Activity.* European Heart Health Initiative. Brussels: European Heart Network.

Campbell, L. 2010. "'Go Somewhere, Do Something'. How Students Responded to the Opportunity to Complete an Unstructured, Five-day, Wilderness Solo in the Cantabrian Mountains, Northern Spain." *Journal of Adventure Education and Outdoor Learning* 10 (1): 33–49.

Capel, S., and R. Blair. 2013. "Who Should Teach Physical Education in Curriculum and Extra-curricular Time." In *Debates in Physical Education*, edited by S. Capel and M. Whitehead, 120–139. London: Routledge.

Casey, A. 2012. "Models-based Practice: Great White Hope or White Elephant?" *Physical Education and Sport Pedagogy* 17 (4): 1–17.

Cason, D., and H. L. Gillis. 1994. "A Meta-analysis of Outdoor Adventure Programing with Adolescents." *Journal of Experiential Education* 17 (1): 40–47.

CfE (Curriculum for Excellence – The Curriculum Review Group). 2004. http://www.scotland.gov.uk/Publications/2004/11/20178/45862.

Clay, G. 1999. "Outdoor and Adventurous Activities: An Ofsted Survey." *Horizons* 4: 83–89.

Cooper, G. 2010a. "Outdoor Learning, Environment and Sustainability – Seeing the Big Picture." *Horizons* 49: 4–8.
Cooper, G. 2010b. "Outdoor Learning, Environment and Sustainability – Presenting the Big Picture." *Horizons* 50: 4–7.
Daley, D. 1988. "Language Development Through Physical Education." *British Journal of Physical Education* 20: 264–281.
DES (Department of Education and Science). 2004. *The Scout Association and Duke of Edinburgh's Award – Research into Residential Opportunities Available for Young People Through Schools*. London: Department for Education and Skills.
Dismore, H., and R. Bailey. 2005. "'If Only': Outdoor and Adventurous Activities and Generalized Academic Development." *Journal of Adventure Education and Outdoor Learning* 5 (1): 9–19.
Fairclough, S., G. Stratton, and G. Baldwin. 2002. "The Contribution of Secondary School Physical Education to Lifetime Physical Activity." *European Physical Education Review* 8: 69–84.
Farnham, M., and N. Mutrie. 1997. "The Potential Benefits of Outdoor Development for Children with Special Needs." *British Journal of Special Education* 24 (1): 33–38.
Fersch, E., and M. Smith. 1978. *Final Quantitative Evaluation for 1971–72*. Hamilton, MA: Project Adventure.
Fjortoft, I. 2000. *Landscape as Playscape: Learning Effects of Playing in a Natural Environment on Motor Development in Children*. Oslo: Norwegian University of Sport and Physical Education.
Frost, J. 2006. "The Dissolution of Children's Outdoor Play: Causes and Consequences." Presented to the Value of Play: A Forum on Risk, Recreation and Children's Health, May 31. http://www.ipema.org/Documents/Common%20Good%20PDF.pdf.
Gardner, H. 1993. *Multiple Intelligence – Theory in Practice*. New York: Basic Books.
Gass, M. 1987. "The Effects of a Wilderness Orientation Program on College Students." *Journal of Experiential Education* 10 (2): 30–33.
Gassner, M. E., and K. C. Russell. 2008. "Relative Impact of Course Components at Outward Bound Singapore: A Retrospective Study of Long-term Outcomes." *Journal of Adventure Education and Outdoor Learning* 8 (2): 133–156.
Gerhis, J., E. Myers, and R. Whitaker. 2012. "Physical Activity Levels During Adventure-Physical Education Lessons." *European Physical Education Review* 18 (2): 245–257.
Gill, T. 2007. *No Fear – Growing up in a Risk Averse Society.* London: Calgoustie Gulbenkian Society.
Giroux, H. 1983. *Critical Theory and Educational Practice*. Melbourne: Deakin University Press.
Haerens, L., D. Kirk, G. Cardon, and I. De Bourdeaudhuij. 2011. "Toward the Development of a Pedagogical Model for Health-based Physical Education." *Quest* 63: 321–338.
Hans, T. 2000. "A Meta-analysis of the Effects of Adventure Programming on Locus of Control." *Journal of Contemporary Psychology* 30 (1): 33–60.
Hattie, J., H. W. Marsh, J. Neill, and G. E. Richards. 1997. "Adventure Education and Outward Bound: Out-of-Class Experiences that Make a Lasting Difference." *Review of Educational Research* 67 (1): 43–87.
Hills, A. P. 1999. "Scholastic and Intellectual Development in Sport." In *Sports and Children*, edited by M. Chan and L. J. Mitchell, 76–88. Champaign: Human Kinetics.
Hodgson, C., and M. Bailie. 2011. "Risk Management – Philosophy and Practice." In *Adventure Education – An Introduction*, edited by M. Berry and C. Hodgson, 46–62. London: Routledge.
Hopkins, D., and R. Putnam. 1993. *Personal Growth Through Adventure*. London: David Fulton.
Itin, C. M. 1999. "Re-asserting the Philosophy of Experiential Education as a Vehicle for Change in the 21st Century." *Journal of Experiential Education* 22 (2): 91–98.
Jewett, A., L. L. Bain, and C. D. Ennis. 1995. *The Curriculum Process in Physical Education*. Dubuque, IA: Brown & Benchmark.
Joplin, L. 1995. "On Defining Experiential Education." In *The Theory of Experiential Education*, edited by K. Warren, M. Safkos, and J. Hunt, 15–22. Iowa: Kendall/Hunt.
Keighley, P. W. S. 1997. "The Impact of Experiences Out-of-Doors on Personal Development and Environmental Attitudes." *Horizons* 2: 27–29.
Kirk, D. 1992. *Defining Physical Education: The Social Construction of a School Subject in Postwar Britain*. London: Falmer.
Kirk, D. 2010. *Physical Education Futures*. Oxon: Routledge.

Knapp, C. 2005. "The Mountains Can't Always Speak for Themselves: Briefing and Debriefing the Solo Experience." In *Exploring the Power of Solo, Silence and Solitude*, edited by C. Knapp and T. Smith, 19–30. Boulder, CO: Association for Experiential Education.

Kolb, D. A. 1984. *Experiential Learning*. Englewood Cliffs, NJ: Prentice-Hall.

Lan, P., R. Sveen, and J. Davidson. 2004. "A Project Hahn Empirical Replication Study." *Australian Journal of Outdoor Education* 8 (1): 37–43.

LOTC (Learning Outside the Classroom Manifesto). 2006. www.teachernet.gov.ac/learningoutsidetheclassroom.

Louv, R. 2005. *Last Child in the Woods: Saving our Children from Nature Deficit Disorder*. Chapel Hill, NC: Algonquin Books.

Loynes, C. 2002. "The Generative Paradigm." *Journal of Adventure Education and Outdoor Learning* 2 (2): 113–125.

Lund, J., and D. Tannehill. 2005. *Standards-based Physical Education Development*. Sudbury, MA: Jones and Bartlett.

Lynch, P., and K. Moore. 2004. "Adventures in Paradox." *Australian Journal of outdoor Education* 8 (2): 3–12.

Lynch, P., K. Moore, and L. Minchington. 2012. "Adventure Cultures: An International Comparison." *Journal of Adventure Education and Outdoor Learning* 12 (3): 237–260.

Macfarlane, R. 2003. *Mountains of the Mind: A History of a Fascination*. London: Granta Books.

Martin, P. 1999. "Critical Outdoor Education and Nature as Friend." In *Adventure Programming*, edited by J. C. Miles and S. Priest, 463–472. State College, PA: Venture.

Martin, P., and S. Priest. 1986. "Understanding the Adventure Experience." *Journal of Adventure Education* 3 (1): 18–21.

Metzler, M. W. 2011. *Instructional Models for Physical Education*. 3rd ed. Scottsdale: Holcomb Hathaway.

Mortlock, C. 1984. *The Adventure Alternative*. Cumbria: Cicerone Press.

Moss, S. 2012. *Natural Childhood*. London: National Trust.

Muňoz, S. 2009. *Children in the Outdoors – A Review of Literature*. Forres: Sustainable Development Research Centre.

Mygind, E. 2007. "A Comparison Between Children's Physical Activity Levels at School and Learning in an Outdoor Environment." *Journal of Adventure Education and Outdoor Learning* 7 (2): 161–176.

Nicol, R. 2002. "Outdoor Education: Research Topic or Universal Value? Part Three." *Journal of Adventure Education and Outdoor Learning* 3 (1): 11–27.

Ogilvie, K. 2013. *Roots and Wings. A History of Outdoor Education and Outdoor Learning in the UK*. Lyme Regis: Russell House.

O'Sullivan, M. 2013. "New Directions, New Questions: Relationships Between Curriculum, Pedagogy, and Assessment in Physical Education." *Sport, Education and Society* 18 (1): 1–5.

Palmer, S. 2007. *Toxic Childhood*. London: Orion Books.

Percy-Smith, B., and K. Malone. 2001. "Making Children's Participation in Neighbourhood Settings Relevant to Everyday Lives of Young People." *PLA Notes* 42 (October): 18–22.

Priest, S. 1999. "The Semantics of Adventure Programming." In *Adventure Programing*, edited by J. C. Miles and S. Priest, 111–114. State College, PA: Venture.

Purdie, N., Neil, J. T., and Richards, G. E. 2002. "Australian Identity and the Effect of an Outdoor Education Program." *Australian Journal of Psychology* 54 (1): 32–39.

Quay, J., S. Dickinson, and B. Nettleton. 2002. "Students Caring for Each Other: Outdoor Education and Learning Through Peer Relationships." *Australian Journal of Outdoor Education* 7 (1): 45–53.

Quimby, T. R. 1982. "The Effect of Project Adventure on Selected Affective and Psychomotor Outcomes." Dissertation Abstracts International: Section A. Humanities and Social Sciences 43: 2929. Boston: Boston University.

Rea, T. 2012. *Wild Country Hall – An Ethnography of Outdoor Education*. Saarbrucken: Lambert Academic.

Richards, K. 2003. "Critical Feminist Reflexive Action Research in Adventure Therapy and 'Eating Disorders': Exposing the Narrative(s) of Relational, Embodied and Gendered Self." In *Whose Journeys? The Outdoors and Adventure as Social and Cultural Phenomena*, edited by B. Humberstone, H. Brown, and K. Richards, 49–74. Cumbria: IOL Press.

Rickinson, M., J. Dillon, K. Teamey, M. Morris, M. Y. Choi, D. Sanders, and P. Benefield. 2004. *A Review of Research on Outdoor Learning*. London: National Foundation for Educational Research and Kings College London.

Roberts, J. W. 2012. *Beyond Learning by Doing – Theoretical Currents in Experiential Education*. London: Routledge.

Russell, C. V., and C. Bisson. 2003. "Teaching Group Formation Activities, Group Formation Tools and Group Process Tools." In *Developing Challenge Course Programmes for Schools*, edited by S. Wurdinger and J. Steffen, 103–138. Dubuque, IA: Kendall Hunt.

SDC (Sustainable Development Commission). 2010. *Improving Young People's Lives – The Role of the Environment in Building Resilience, Responsibility and Employment Chance*. London: Sustainable Development Commission.

Slavin, R. E. 1996. "Research on Cooperative Learning and Achievement: What We Know, What We Need to know." *Contemporary Educational Psychology* 21: 43–69.

Storli, R., and T. L. Hagen. 2010. "Affordances in Outdoor Environments and Children's Physically Active Play in Pre-school." *European Early Childhood Research Journal* 18 (4): 445–456.

Stott, T., and N. Hall. 2003. "Changes in Aspects of Students Self-reported Social and Technical Skills During a Six-week Wilderness Expedition in Arctic Greenland." *Journal of Adventure Education and Outdoor Learning* 3 (2): 159–169.

Takano, T. 2010. "A Twenty Year Retrospective Study of the Impact of Expeditions on Japanese Participants." *Journal of Adventure Education and Outdoor Learning* 10 (2): 77–94.

Trudeau, F., L. Laurencelle, J. Tremblay, M. Rajic, and R. J. Shephard. 1999. "Daily Primary School Physical Education: Effects on Physical Activity During Life." *Medicine and Science in Sports and Exercise* 31 (1): 111–117.

Van Matre, S. 1990. *Earth Education – A New Beginning*. Greenville, WV: Institute for Earth Education.

Veevers, N., and P. Alison. 2011. *Kurt Hahn: Inspirational, Visionary, Outdoor and Experiential Educator*. London: Sense.

Vygotsky, L. 1978. *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

WAG. 2005. *Climbing Higher: The Welsh Assembly Government Strategy for Sport and Physical Activity*. Cardiff: Welsh Assembly Government.

WAG. 2006. *Creating an Active Wales*. Cardiff: Welsh Assembly Government.

Wainwright, N. 2012. "Outdoor and Adventurous Activities: From Desks to Dens." In *An Introduction to Primary Physical Education*, edited by G. Griggs, 161–176. London: Routledge.

Ward-Thompson, C., P. Travlou, and J. Roe. 2006. *Free Range Teenagers: The Role of Wild Adventure Space in Young People's Lives*. OPENspace Research Centre Report for Natural England. http://www.openspace.eca.ed.ac.uk/pdf/wasyp_finalreport5dec.pdf.

Wattchow, B., and M. Brown. 2011. *A Pedagogy of Place – Outdoor Education for a Changing World*. Victoria: Monash University Press.

Whitehead, M. 2013. "What Is Physical Literacy and How Does It Impact on Physical Education?" In *Debates in Physical Education*, edited by S. Capel and M. Whitehead, 37–52. London: Routledge.

Williams, A. 2006. "Serendipity and Co-learning in Outdoor Education." *Horizons* 34 (Summer): 32–35.

Williams, A. 2012a. "Taking a Step Back: Learning Without the Facilitator on Solo Activities." *Journal of Adventure Education and Outdoor Learning* 12 (2): 137–155.

Williams, R. 2012b. "The Impact of Residential Adventure Education on Primary School Pupils." Unpublished EdD thesis, Exeter University.

Wurdinger, S. 1994. *Philosophical Issues in Adventure Education*. Dubuque, IA: Kendall Hunt.

Copyright of Physical Education & Sport Pedagogy is the property of Routledge and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.