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Learning the trade – recognising the needs of aspiring adventure sports professionals

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ABSTRACT

This paper aims to stimulate debate and prompt further research regarding the training, development and Higher Education (HE) of aspiring adventure professionals (AP's). The design of the paper draws on 10 years of observations and trends within the HE outdoor degree teaching sector, in tandem with the authors' own extensive professional outdoor careers. Initial findings indicate the role and significance of Professional Judgement and Decision Making (PJDM) in professional practice within adventure sports (AS) coaching and leadership. Consequently, PJDM is found to be a vital element of the education of the AP. The training and practice of these PJDM skills is a situated cognition that is conspicuous in its absence within many coach and leader education programmes where the AP is required to balance pedagogical and welfare demands in consequential environments. A cognitive apprenticeship approach is advocated which builds on recent articles highlighting the importance of PJDM in such domains.

KEYWORDS

Adventure sports coaching; traditional sports coaching; professional judgment and decision making; risk management; adventure professional

Introduction

This paper aims to stimulate debate and promote further research among educators and trainers of neophyte adventure sports leaders, guides, instructors and coaches (Adventure Professionals (AP's)). We draw on literature and our experiences as trainers and educators of AP's across a range of various modes of facilitation.

Adventure recreation such as rock climbing, mountaineering, white water and sea kayaking, has become a growing global phenomenon (Wolf-Watz, 2011). The increased popularity of many aspects of adventure activities has led to a growth in the demand for qualified AP's to supervise and coach these adventure activities (Aadland, Noer, & Vikene, 2016; Eastabrook & Collins, 2019). With this demand for APs has also come a demand for domain specific and more focused research into effective practice and AP development (Collins & Carson, 2021). In the United Kingdom, a range of different developmental routes facilitate the training and education of new AP's. These include undergraduate and postgraduate degrees, level three, four and five apprenticeship programmes that typically take several years to complete and National Governing Body (NGB) training and awards courses that are generally shorter and more technically focused programmes. Increasingly, early career AP's hold a combination of these qualifications and awards. The initial stages and early awards of these programmes in common with many coach and leadership programmes across all sports, are characterised by proceduralised practice and competency-based methods of evaluation (Collins, Collins, & Grecic, 2014). Problematically, these approaches

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rarely suit the adventure environments which are characterised by interacting, multidimensional factors that are continually changing, (see hyper-dynamic, Simon, Collins, & Collins, 2017) across many settings in which these activities occur. Obvious examples can be found in whitewater kayaking, back country skiing and especially sea kayaking, where conditions may change significantly (and become more difficult) within short timeframes.

Proceduralised methods fail to engender and develop the essential adaptability identified by both Tozer, Fazey, and Fazey (2007) and Mees, Sinfield, Collins, and Collins (2020) as essential requirements for the AP. Positively, in the higher levels of the AP's development (for example post-graduate and some of the higher levels of NGB certification), methods are employed that do engender adaptive expertise and the associated criticality, judgment and reflective skills required (Collins & Collins, 2016). However, by this point, significant anecdotal and professional experience suggests the AP's practices may have become engrained and their professional philosophies, tacitly endorsed via certification, become less receptive to evolution. The transition from 'routinised' to adaptable practice becomes challenging for both the student, trainer and educator. This is a particular challenge when the AP moves from engineered and managed environments with inherently less risk, to the hyper-dynamic environments (Simon et al., 2017) and greater risks associated with authentically adventurous environments (Barry, 2015; Collins & Carson, 2021). There is a clear need to understand how we might best develop AP's through this transition.

Both Tozer et al. (2007) and Mees et al. (2020) conclude that it is essential to comprehend how the progression from routine to adaptive expert can be facilitated. We share their position. The hyper-dynamic nature of working in authentic adventurous environments is ever present (Christian, Berry, & Kearney, 2017) along with the risk, and we suggest adaptability and flexibility may be better facilitated throughout the developmental process, with a clear focus on developing adaptive expertise (Hatano & Inagaki, 1984) from the outset. Adaptive expertise requires the AP's to make effective judgements and decisions based on a comprehension of the situational demands by selecting from a range of appropriate options (Collins & Collins, 2019b). Consequently, we contend that along with adaptive expertise, decision-making and judgment making skills are integrated early in the development of AP's. Utilising the context of higher education (HE), we consider how this might be achieved. Our intention being to promote debate and encourage future research focused on the development and education of AP's.

Clarifying terms

Applying terminology within the scope of coaching and leadership in adventure sports domains is problematic for two main reasons. The first is due to the widespread use of interchangeable terms as they relate to the role of the AP's in operation; for example, instructor leader, guide, coach. The second is that coaching and leadership are considered to be synergetic in adventurous contexts (Tozer et al., 2007). For example, in the sports of cricket or hockey, leadership, as is conceived in adventure, is rarely necessary for successful and safe coaching, nor does the coaching require management outside of the constrained environment areas of pitches and fields or the regulatory constraints linked to the rules associated with participation (Crowther, Collins, & Holder, 2018). The terminology used in such sports is typically one of 'coach' rather than those used within adventure sports, which encompass labels of guide, instructor and leader which maintain implications of leadership within the educative process (Priest & Gass, 2017). Therefore, in this paper, the term 'adventure professional' is used to encompass the multifaceted nature of the role.

HE provision in the UK

There are currently 31 undergraduate degree providers in the United Kingdom offering 63 outdoor-based courses (Universities and Colleges Admissions Service, 2019). These programmes offer education to aspiring AP's, fulfilling the roles of outdoor coaches, leaders and educators. The extent and range of undergraduate provision are prone to fluctuations in market supply, demand and demographic factors. The issue is not new, noting that Barnes (2002) hinted at the longevity and nature of the issues shaping outdoor and adventure course provision, given that at the time of writing, provision is once again in decline.

Demand and uptake have also been affected by changes in the degree course fees for HE in the UK, including a decreasing demographic (Office for National Statistics, 2018), the financial pressures of running an effective outdoor degree programme and a growth in sector-based training in the form of apprenticeships and 'fast-track' instructor training programmes. The latter utilises NGB qualifications as the basis.

In the UK, students typically enter an undergraduate degree course between 18 and 20 years old, direct from secondary education. These students will have been exposed to a range of pedagogic and leadership theories derived from non-adventurous contexts and commonly have limited exposure to authentic, adventurous experiences (Barry, 2015; Christian et al., 2017). In the last few years, outdoor activity provision in the UK has witnessed a shift from adventure activities taking place in natural environments towards site-based activities in manufactured or engineered locations, such as climbing walls, ropes courses, artificial cave systems and white-water sites (examples in the UK include Zip World, Go Ape, Lee Valley Whitewater Centre and Tree Top Treks) and managed environments (such as Canolfan Tryweryn whitewater facilities). This shift away from natural environments is linked to both the 'sportification' (Crum, 1991) and 'commodification' of adventure (Brown, 2008; Loynes, 1998), where the fiscal demands of austerity in the UK and a risk averse culture base (Furedi, 2007) has driven risk management procedures. This occurs through the engineering out of natural variations and facilitating security via proceduralised practice rather than judgment. Notably, this change has had two effects: first, the student's prior experience of adventure activities has been reduced to the role of a 'passenger' (Brown, 2008; Humberstone & Stan, 2012) in contextually poor environments (Brown & Beames, 2017); second, the mental model of professional practice is equally contextually poor where the sophistication of being an autonomous professional capable of making judgements and decisions in context is replaced with one of an accountable practitioner capable of following procedure. This latter point presents an existential threat to professional practice and adventure-based outdoor degrees, and to the value of outdoor learning more broadly.

It can be seen that aspirant AP's move rapidly from the passenger role via participant to pilot (Humberstone & Stan, 2012). Consequently, the students' mental model of adventure sport is possibly more akin to a traditional sport conducted outdoors or an adventure-themed activity in which risk is mitigated via procedure and engineering rather than being recognised, responded to, utilised, harnessed or exploited for learning (Collins & Collins, 2016).

Adventure sports

Adventure sports are a 'broad church' of similar activities that have been incorrectly associated with risk taking and thrill seeking (West, 2012). This misconception is unhelpful (Collins & Brymer, 2020), given that the use of the terms 'thrill seekers' and 'extreme sports' (Brymer & Gray, 2010; Grouzet, Vallerand, Thill, & Provencher, 2004) in the media entrenches this misrepresentation, especially because many non-AS are riskier in terms of injury rates (Ball & Ball-King, 2021), especially considering the prevalence of incidents of concussion within football and rugby, for example. Within practice and academia, the distinction between the differing genres of adventure sports has been unclear and detrimental (Collins & Carson, 2021). The terms are used and applied very loosely with limited

attempts to differentiate between them (Cohen, Baluch, & Duffy, 2018; Eastabrook & Collins, 2020). However, adventure sports possess some specific characteristics; they are often non-competitive in nature, take place in natural outdoor environments, operate to a set of ethics that are held within the community of practice (Wenger, 1998) or by the individual participant and can be characterised by an active engagement with risk (Brymer & Gray, 2010). The combination and extent of the relationship between these factors differentiates adventure sports from other sports, such as action sports that occur in manufactured or maintained environments. As an example, downhill skiing (or even ski racing) is undoubtedly risky with opportunities for injury, but given it takes place in a managed environment, this facilitates prompt access to medical assistance should it be required. By contrast, back-country skiing or winter climbing takes place in natural and unmanaged settings where prompt assistance is rarely available, and so there is a requirement to be engaged with risk appraisal and management on a higher and more connected level (West & Allin, 2010). Consequently, those working within the domain of adventure sports are required to dynamically manage the potential for harm against the anticipated benefit for the learner, (Cohen et al., 2004). This occurs through a situation specific, nuanced and considered risk vs. benefit analysis which needs to combine pedagogy and client welfare.

The AP: a multi-faceted role

In 2012 and 2016, Collins and Collins conceptualised the role and reach of the AP and provided a model that illustrates the typical role demands in practice. They presented the AP as having three interacting roles: performance development (coaching), personal development (education/ therapy) and experience development (leadership). The role is scaffolded around the AP's sophisticated epistemology (Christian, Hodgson, Berry, & Kearney, 2019; Schommer, 1994) and synergised by a refined judgment and decision-making ability based on a nuanced comprehension of the situational demands in a given situation (Collins & Collins, 2021). In other words, the views of the AP about how knowledge is constructed and known, serves as an underpinning structure upon which subsequent decision making rests (Howard, McGee, Schwartz, & Purcell, 2000). For example, this may present as a positive view of adventure, session organisation which promotes independence, or shared agency in decision making processes. The ability of the AP to autonomously make prompt decisions on how to utilise the risk for benefit (as opposed to deciding how to remove it) is a vital tool that is complex in both nature and deployment (Brown & Fraser, 2009).

AP's share skills across the three broad roles and move between performance, experience and personal development functions as the situation demands. The AP role is additionally supported by a skilfully independent ability in the activity, ensuring that the AP can focus their attention on the learning and security needs of their group. As an example, an AP may aim to develop communication skills between individuals in the group (personal development) by undertaking an canoe journey in tandem canoes (experience development) and will need to teach the group the skills to paddle the canoe effectively as a pair (performance development). To undertake the journey, the AP would need to be able to paddle their own canoe sufficiently well to be able to focus on the demands of the group in the environment, which will include the roles of welfare management, rescue and pedagogy. The approach utilised will presumably reflect the AP's own views of effective teaching and learning (epistemology), based on their experiences and worldview (ontology). The AP will fulfil the different functions to achieve the session aims while retaining a coherent epistemological stance that links the philosophical position directly with the AP's practices, namely an epistemological chain (Collins et al., 2014). (Figure 1)

In their early development, the AP makes decisions and judgements to move between the functions based on their comprehension of the situational demands, but maintains a positional locus centralised in the three overlapping circles. Reflecting the AP's need to move around the roles in response to those demands, the AP requires a comprehension of the discrete functions of each

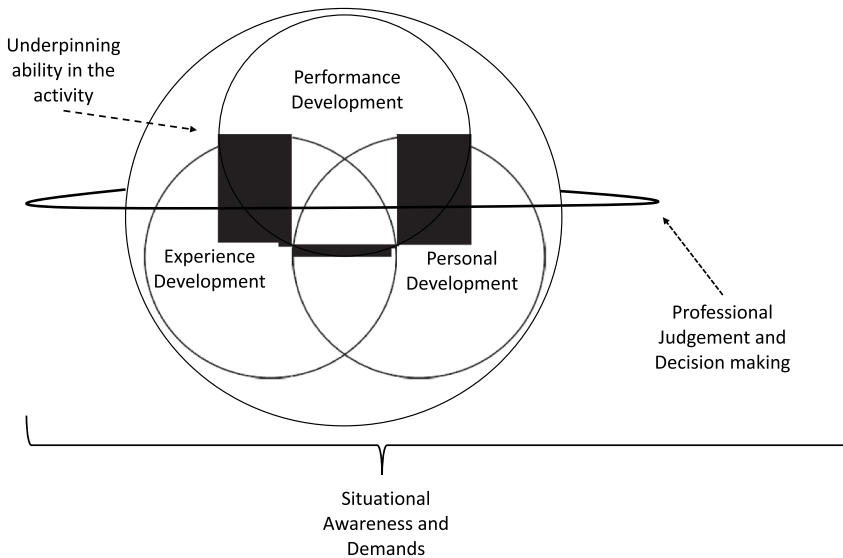


Figure 1. Re-conceptualising the ASP (adapted from Collins & Collins, 2012, 2016).

role, as well as their integration in practice. The AP draws on skills, such as risk management, risk-benefit exploitation, personal ability, pedagogic skills, leadership skills, domain-specific declarative knowledge, and technical skills as required to fulfil their complex and challenging role.

Decision making and the AP

Collins, Collins, and Carson (2016, 2016) have presented Professional judgment and Decision Making (PJDM) as a possible model for the decision-making aspects of the AP role. PJDM proposes a contextually situated, dual decision-making processes in which classic (CDM) and naturalistic decision-making (NDM) work together (Shea et al., 2016). The proportion or weighting of each aspect depends on the context of the decision. One aspect of the process is a deliberate, analytical, logical, thought-through and considered style (CDM), which places high cognitive demands on the decision maker because of the requirements for accurate, expansive information and processing (Kahneman, 2011). This demand can be reduced through time spent in pre-planning and session organisation. The other approach (NDM), enables decisions to be made in shorter timeframes with less or poorer quality information. This NDM aspect is less cognitively demanding in simpler tasks but prone to bias and decision-making traps (McCammon, 2004). In complex tasks, the process appears equally cognitively demanding because of the time frame context and sub-optimal information (Collins & Collins, 2019b). Additionally, a metacognitive (Collins et al., 2016) aspect (i.e. knowledge about the knowledge) of the process takes the form of a continual audit by the decision maker, that extends beyond *just* the quality of the outcome. During pre and post-activity, CDM is used to a greater extent and weighting than NDM because time can be allocated to a more complete process of information gathering and verification of its reliability. This aspect includes the planning of a range of decisions on venue choice, activity, logistics and equipment, and one that is often implemented initially via a 'strawman plan' (Collins & Collins, 2019a).¹ In action, NDM is predominant in response to or when dealing with short-term challenges, ambiguous information and the hyper-dynamic environmental pressures commonly experienced in adventurous sports settings.

Kahneman and Klein (2009) described this blending as 'skilled intuition' and as being appropriate for the applied and dynamic practices typically found in the AS environment. Such skilled intuition, though, needs to be considered against not only the environment, but also the known fragility of the

human decision-making process (Martindale & Collins, 2013). Intuition has a long tradition in coaching (Nash & Collins, 2006) but has particular relevance for the AP, as reported in the frequency of the 'feel right' decisions in adventure contexts (McCammon & Hægeli, 2007).

However, Ball, Gill, and Spiegel (2008) and Vickers (2007) have all indicated that experts do not always make sound decisions. In this respect, NDM may only really be the realm of the adaptive expert with broad, lengthy and rich experience. By default, a novice has little experience (Kahneman & Klein, 2009). Students gain experience while practicing decision-making in authentic, varied and contextually appropriate environments, situating the cognition required under the guidance of more experienced coaches and tutors.

Dowding and Thompson (2003) acknowledged the positive role of intuition in coaching and hazard evaluation. Kahneman and Klein (2009) indicated that a key attribute of an expert is that they know when they are wrong, whereas non-experts do not know when they do not know something, akin to the Dunning-Kruger effect (Dunning, 2011). Such issues are highlighted by Dunning (2011), who discussed the nature of being ignorant of one's deficiencies and of the abilities of others. This effect may be applicable in the over perception of one's abilities and, more importantly, by being unable to understand how a learner may struggle with practice environments that the AP finds undemanding.

A central paradox

The challenge for the aspiring AP lies in balancing the risk and benefits of a given activity via effective decision-making (Collins & Collins, 2013). Risk is sometimes mistakenly perceived as a central component of outdoor education and adventure programmes (Brown & Beames, 2017; Brown & Fraser, 2009). In the AP's role, the relationship between risk and benefit is recognised, manipulated and exploited rather than simply minimised, as in many other situations, and in this context, risk-benefit decisions are an essential aspect in maintaining authenticity for the learner (Beames & Brown, 2016). Engagement with real risk (Guthrie, 1997) is the central paradox of coaching or leading in adventurous environments (Priest & Gass, 2017), a factor virtually absent in the commodified activities mentioned earlier and reduced by being 'built out' literally or via regulation (Collins & Carson, 2021). This paradox is fundamentally different from concepts of risk aversion (Ball et al., 2008) and the risk naivety engendered in the proceduralised practice associated with risk management in manufactured and managed environments. The AP is required to make a 'risky shift' (Stoner, 1961, cited in Breakwell, 2007) and have a refined comprehension of 'edge work' (Lyng, 2008, 2017). Although the concept of 'edge work' is based on voluntary risk taking chiefly for its own sake, there are strong links which underpin risk management in-action for the AP.

We conceive of Collins and Carson's model (Collins & Carson, 2021) as a decision making model, as considered as presented in Figure 2. The vertical axis reflects the constraints acting on the outdoor practice as a result of the rules or culture of a given activity (for example, resting on gear while climbing, or the placement of bolts), which influence the decision-making aspects of the AP's role. Viewed by Collins and Carson (2021) as constraints on participation, we propose these may equally act as professional constraints, and that the process of coaching or leadership actually acts as a constraint in the vertical axis. The horizontal axis represents the range of natural or manufactured environments in which the activities take place. Caving, for instance, can take place in a natural cave system or an indoor caving tunnel facility, but the experiences will vary significantly, as will the demands on the leader. Some adventure-based activity examples are presented for the reader to consider. Traditional (trad) climbing has few rules other than the ethics agreed by the community of practice (Wenger, 1998) and typically takes place in natural, unmanaged environments and would therefore be plotted in the top right-hand quadrant. Contemporary slalom kayaking, which takes place on managed or manufactured white-water courses and has strict rules, would be plotted in the bottom left quadrant. Although some adventure-based sports can have 'rules' (e.g. bouldering) and take place in manufactured settings (e.g. ice climbing towers), paradoxically almost every adventure

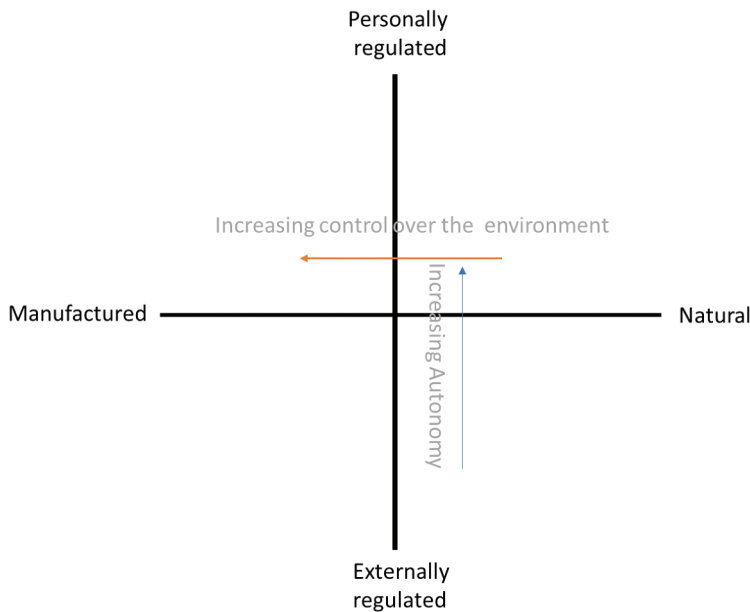


Figure 2. Regulatory and environmental factors in sport (Carson & Collins, 2021).

sport can take place in a managed or manufactured environment, with each bound by regulation and rules. This reflects trends in participation and arguably, how risk is tolerated. It is not so much the activity, more the how, why and where of the participation. However, whether white-water kayaking on an artificial course (or caving indoors) can still be considered an adventure sport is contested, as definitions such as these remain unclear and varied (Immonen et al., 2017). Indeed, such anomalies may equally apply, for example, to skiing on or off piste, or climbing on an artificial climbing walls or on a natural crag.

We consider the AP as operating in the upper right quadrant, where they work in natural and largely unmanaged environments, maintain skilful independence in their domain, have a positive view of adventure and maintain an epistemological position, where risk is sought to be understood and harnessed for learning, rather than simply avoided. The present challenge is that the experiences and training of the aspiring AP prepares them to work in a manner more suited to the lower and upper left quadrants of the figure. Although work and professional practice associated with those quadrants may be valuable for a range of reasons, the risk is that the AP is unable to work across the whole spectrum of the model. It is posited as a framework for useful academic debate, rather than as a source of contention and one which serves to highlight the potential differences in role and in the coaching and leadership demands according to the quadrant or field in which the AP works.

Moving forward: the cognitive apprenticeship as one possible approach

A cognitive apprenticeship (CA) is a graduated multi-stage approach (Larsen, 2015; Collins, Brown, & Newman, 1988) that has been highlighted as a potential method for developing the cognitive and PJDM skills associated with adventure sports coaching and leadership (Collins & Collins, 2016, 2019a). The CA has been advocated and applied in a range of activities, such as reading, writing, mathematics, clinical skills, teaching, web-based learning, and musical improvisation (Collins et al., 1988; de Bruin, 2019; Järvelä, 1996; Woolley & Jarvis, 2007). CA attempts to bring the tacit (Polyani & Sen, 2009) aspects of a process into the open by guiding participation in the learners' zone of proximal

development (Vygotsky, 1978, cited in Hedegaard, 2021). Exploiting this dynamic region, beyond the learners' ability and skill level comprehension can be developed in synergy. CA enables aspects of the process to be articulated and considered once a clear conceptual understanding of the process has been gained, facilitating improved training, knowledge generation and education of the AP's. CA is rooted in the constructivist assumption of learning (Brown, Collins, & Duguid, 1989) in that knowledge and meaning are constructed by the individual, in tandem with a professional, or as part of a community of practice and are important factors of developing a situated cognition (Tversky, 2009).

During a CA, social interaction between the apprentice and experts, important skills, interactions, decisions, problem solving and experiences are all contextually shared. The expert often passes down techniques, methods and the culture associated with the apprentice role and their development. The apprentice learns in an authentically situated sense, specifically the interwoven processes of cognition, practice and application, comprehending that the apprentice understands knowledge to be time and contextually framed, dynamic and culturally bound yet gradually accumulated and developed by the learners themselves (Howard et al., 2000; Schommer, 1994).

The expert, in this case the educator, should be a skilful practitioner, versed in the traditional meaning of the skills used and practiced in their application in everyday life. This may reflect a challenge for academics and practitioners. Some academics may not have recent hands-on experience of the AP's role. Equally, some practitioners may not be capable of articulating the process beyond just the techniques involved or the technical options available and their selection (or deselection). Namely the 'whys' and 'hows' in addition to the 'what'. A CA approach relies on the decision maker recognising and comprehending how they make decisions, namely the meta skills. Providing a practice environment that has sufficient authenticity, validity and contextual accuracy is crucial in the development of PJDM skills via the CA, allied to plentiful opportunities for prolonged practice. Receiving prompt, unequivocal and high-quality feedback is central to this process (Martindale & Collins, 2013).

Collins et al. (1988) and Marton and Säljö (1976) proposed six teaching methods that are integral to CA. These are modelling, coaching, scaffolding, articulation, reflection and exploration. Such methods enable apprentices to develop cognitive and metacognitive strategies to support the construction of knowledge by the apprentice, while also addressing the criticisms linked to other situated learning approaches (Clancey, 1995). Expert modelling is utilised to build a conceptual and practical model of the task at hand, a mental model in the learners' mind of the full process and its context. A shared mental model (Cannon-Bowers, Salas, & Converse, 1993) is created by engaging with a range of practical experts and other apprentices. Significantly, the cognitive and practical aspects of the process are given equal attention and support structures, such as coaching and scaffolding with fading (the gradual withdrawal of support) for independent performance (Pea, 2004), are put into place. In some instances, the expert may have to help with aspects of paying attention to the environment, the context, or to introduce new tasks that the student cannot yet accomplish, which is akin to, but not exclusively, a problem-based learning approach.

The guided aspects of cognitive apprenticeship, namely; modelling, mentoring, and coaching, are highly socialised elements of the process. Often this guidance is provided tacitly by the expert in a naturalistic, and thus contextual, way. These in-context components are therefore inherently situated. For these interactions to be successful these interactions must occur within the learning zone of proximal development (Vygotsky, 1978), be authentic and gauged at an appropriate level for the apprentice. Vygotsky defines the zone of proximal development as the evolving space between the learner's current ability level and potential ability; consequently, the zone for the learner is continually being reconfigured and shaped as the learner develops. As the learner progresses and the zone shifts, so do the nature of the social interactions, with the apprentice taking an increasingly prominent role in the construction of the knowledge associated with the process or task at hand.

Articulation of the process may be situated, and where the apprentice is encouraged to separate, expose and clarify the component knowledge and skills as well as their synergetic interaction (McLellan, 1996). Apprentices are encouraged to articulate their knowledge, reasoning or problem-solving process in context, thus developing the meta aspects of the process. The expert may ask apprentices pre-structured questions via the use of crib cards, for example, that allow the student to refine and restate their learned knowledge and form conceptual models (see inquiry teaching by Collins & Stevens, 1991 and 'The Big 5'; Collins & Collins, 2021). Concurrent and retrospective thinking aloud approaches can also play a part in encouraging apprentices to articulate their practices, thoughts and problem-solving strategies (Kuusela & Paul, 2000).

Learners are encouraged to reflect on-action, in-action and on-action in context (Schon, 1983) to situate the cognitive processes and to examine their past performances with those of the expert to identify similarities and differences. In particular, they 'compare their own problem-solving processes with those of an expert' (Collins & Stevens, 1991, p. 483). Doing so will enable the apprentice to form a mental conceptualisation of adaptive expertise. The apprentice's reflection involves the requirement to look back and analyse their performances with a focus on understanding and making self-improvements towards the behaviour of an adaptive expert.

The apprentice is encouraged to problem-solve independently and develop personal exploration strategies (Collins, Willmott, & Collins, 2016). The former requires the expert to gradually withdraw support (fading) and to scaffold both the problem-setting and solving methods. The latter requires the expert and apprentice to explore, research and hypothesise in an accurate and authentic context. Such problem-based approaches have a positive role to play within the development of high-quality and agile AP's given the real-world environments in which they operate, but these approaches should not be considered the only route to achieving contextually accurate training and coaching for the development of the AP.

Conclusion

Most undergraduate students who embark upon an outdoor or adventure-based degree originate from a traditional sports background (Barry, 2015; Christian et al., 2017) and consequently must make a significant 'double paradigm shift' to reappraise their views of risk and personal constructs of adventure as they move from a position of 'follower' into the role of coaching and leadership. There is a requirement for the aspiring AP to become skilfully autonomous in the environment of their leading and coaching expertise and it is contended that until this independence has been acquired, the cognitive demands of managing the constraints of task, environment and pedagogical needs of the learner through a PJDM process may be overwhelming.

This considered, there is a requirement for the new generation of AP's to become better thinkers in context, where the ability to access a PJDM process is central, characterising the transfer from proceduralised training and assessment practices (to which students may have become accustomed) to a more expertise and experience-orientated approach. Achieving this will be through the use of real-world scenarios and the avenue of an adaptive expertise and cognitive apprenticeship with the training and enhancement of decision-making skills as a potential starting point for PJDM. It is contended that metaphors and analogies are inadequate and not sufficiently robust in the authentic domain of the AP. As suggested by Philipps, Klein, and Sieck (2004), utilising scenario-based, well-structured training sessions, it is possible to successfully facilitate the acquisition of decision-making expertise as it relates to the specific domains found within the multi-faceted remit of the adventure professional.

Note

1. A disposable plan created with the intention to be adapted as factors change.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Martin Barry is currently writing for a Professional Doctorate at the University of Central Lancashire. He holds high level coaching and leadership certifications in a range of adventure sports. With over 30 years' experience of guiding and leading around the globe, Martin has a passion for adventurous outdoor activities which promote positive interactions between people and the environment. He has worked as a schoolteacher, university degree course leader, military instructional officer and Outward Bound tutor. His research interests lie in understanding and teaching the complex decision making processes within adventure sports.

Loel Collins is an independent researcher based in the UK. He has worked in adventure sports and outdoor education for over 35 years, principally at the National Centres and with the Institute of Coaching and Performance at the University of Central Lancashire. Loel holds high level coaching certifications in a range of adventure sports and is one of the few researchers investigating the specifics of coaching and coach education in adventure sports. His primary interests lie in understanding judgement and decision making in complex environments.

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