Vygotsky and sports coaching: non-linear practice in youth and adult settings

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Abstract

Over the past 20 years, a significant amount of research has located sports coaching principally as an educational endeavour. In particular, non-linear educative approaches have attracted much attention yet few studies have explored in any real depth the theoretical underpinnings of such practices. Where conceptual analyses have been conducted, the work of Vygotsky has emerged as a useful framework. The aim of the present study was to investigate the extent to which Vygotskian principles of learning and development might be evident within non-linear sports coaching practices and to examine whether embracing these principles might enhance coaching practice both in youth and adult settings. Drawing on qualitative empirical data, this paper explores how six coaches perceived their everyday practice as non-linear. Resultant findings uncover the nuances of both coach and athlete experience in line with three of Vygotsky's key theoretical assertions, namely: Zone of Proximal Development (ZPD), scaffolding and. mediation. The paper concludes by suggesting that the application of theoretical ideas has the potential to inform and enhance non-linear pedagogical approaches, yet coaches must remain cognisant of the bespoke nature of the coaching context.

Keywords

Sport pedagogy; non-linear; learning; qualitative research; Vygotsky

Introduction

Recent discussions in the field of sports coaching have placed increasing importance on the pedagogic expertise of the coach (Light, Harvey, & Mouchet, 2014) with several authors considering such understandings to be crucial not only to coaching practice, but also to the development of the sports coaching industry as a whole (e.g. Jones, 2006; Taylor & Garratt, 2010). Nevertheless, sports coaches have frequently been reported to display a limited appreciation of pedagogy (Evans, 2006; Light & Evans, 2013) whilst commonly demonstrating autocratic, linear, practice which is characterised by transmission-based methods (Harvey & Jarrett, 2014). Linear pedagogies locate the coach as the gatekeeper of knowledge; in turn, athletes are often led to pre-determined learning outcomes by following direct instruction (Light, 2008). Despite the prevalence of such practices, there is evidence to suggest that an increasing number of coaches are embracing non-linear approaches (Vinson, Brady, Moreland, & Judge, 2016), although little guidance exists for those wishing to do so. Moreover, the evidence and guidance which does exist frequently draws upon constructivist principles citing scholars such as Dewey, Piaget and Vygotsky (Day & Newton, 2016; Potrac, Nelson, Groom, & Greenough, 2016; Toner, Moran, & Gale, 2016) as the 'founders' of such work. Where the latter are concerned, attempts have been made to conceive how Vygotsky's theoretical principles might impact coaching practice (e.g. Cushion, 2006; Jones & Thomas, 2015; Jones, Thomas, Nunes, & Filho, 2018; Potrac & Cassidy, 2006; Potrac et al., 2016); yet, to date, there has been little consideration (in the field of sports coaching at least) of the way in which Vygotskian principles might inform sports coaching practice via empirical investigation. A key publication in this area is Santos, Jones, and Mesquita (2013) who examined sports coaching through the lens of social orchestration and, in so doing, suggested that the manner in which coaches' scaffolded tactical problems was commensurate with Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD).

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There are numerous aspects of Vygotsky's work that hold intuitive appeal for sports coaches and coach educators. For example, some of his ideas focus on how educators should offer guidance in order to prepare and enable learners to perform tasks when help is removed (Vygotsky, 1967, 1978, 1987, 2004); the parallels here between training environments (assisted) and competitive play (unassisted) are clear. Furthermore, recent discourse in sports coaching has highlighted the importance of enhancing performers' decision malting (Light et al., 2014; Maxwell, 2006; Ovens & Smith, 2006). A central tenet of Vygotsky's work is an appreciation of cognition, i.e. 'higher' psychological functions (Vygotsky, 1978, 1987, 1997), and the subsequent pedagogical implications for educators, and it is our contention that such considerations have the potential to make an insightful contribution to the sports coaching process. Whilst Vygotsky' s original thesis focuses predominantly on young children, numerous attempts have been made to transfer these principles to a range of wider contexts such as those featuring adult learners (e.g. Andersson & Andersson, 2005; Eun, 2008; Wass & Golding, 2014) although not, as yet, to sports-related settings. Where Vygotsldan analyses have been carried out in the field of sports coaching, they have concentrated largely on the coach (Potrac & Cassidy, 2006) and/or mentor (Cushion, 2006) as educator. Yet, throughout his work, Vygotsky placed significant emphasis on the role of peers within the learning process, particularly those who could be described as 'more capable' others (Vygotsky, 1978, 2004). Many coaching environments are replete with opportunities for performers to work with, and therefore learn from, more competent colleagues and teammates. Hence, the aim of the present paper is .to investigate the extent to which Vygotsldan principles of learning and development might be evident within non-linear sports coaching practice and to propose how embracing these principles might further enhance coaching behaviours and practice both in youth and adult settings. To this end, we consider sports coaching to be an inherently educational practice. In adopting Vygotsky's work as the principal theoretical lens, we aim to analyse how curriculum, in the form of educational and pedagogic practice, can be analysed with reference to the apparent social-historical influencers within sports coaching environments. In so doing we aim to contribute to the understanding of how coaches' and learners' experiences shape the construction and implementation of curriculum in such settings. In order to provide a more detailed conceptual backdrop to our discussion, we begin with some of Vygotsky's key theoretical principles and examine how these might be applicable to the field of sports coaching.

Mediation, collaboration and dialectic development

Over the past 20 years, there has been a considerable increase in writings concerning the work of Vygotsky which is evidenced by the rise in related citations and the growing number of texts proclaiming his legacy (e.g. Daniels, 2017b). Germane to this work is a belief in the sociocultural foundations of child development. Vygotsky (1978) proposes a theoretical framework which attempts to explain interpersonal and intrapersonal pro- cesses of development and which is shaped by the social, cultural and historical forces impacting upon a child's existence. To this end, he emphasises the need for these forces to be taken into consideration when examining the complex and dynamic surroundings through which child development takes place. Perhaps the most significant contribution which Vygotsky makes is his extension of traditional notions of social learning theory and cognitive anthropology by suggesting that it is predominantly social processes which enable the internalisation of what he calls the 'higher psychological functions' (Vygotsky, 1997).

Vygotsky (1978) distinguished between two forms of child development: (i) the elementary – which he classified as being of biological origin, and (ii) the higher psychological functions – which he proposed were of sociocultural origin and comprised any activity which combined the use of 'tool' and 'sign' (milestones within paediatric development which are frequently discussed within the child development literature). Vygotsky (1978) believed that the history of child behaviour was conceived in the interweaving of these two elements.

Specifically, he outlined three stages of internalisation around which these higher psychological processes took place: (i) an operation that initially represents an external activity is reconstructed and begins to occur internally (ii) an interpersonal process is transformed into an intrapersonal one and (iii) the transformation of an interpersonal process into an intrapersonal one is the result of a long series of developmental events. Vygotsky (1978) used the term 'mediation' to represent the mechanism by which external social processes become internalised considering these principles to be applicable to all higher psychological processes including voluntary attention, logical memory and the formation of concepts. In his later writings, he argues that speech plays an integral role in the development of all of the higher psychological functions and incorporates both biological and cultural influences (Vygotsky, 1997). Indeed, the acknowledgement of the importance of speech and dialogue in such processes is a central component of his legacy (Daniels, 2017a).

Vygotsky (1978) proposed that intelligent action was not independent of speech and argued for the integration of speech and practical thinking in the course of child development. In so doing, he placed much emphasis on speech as an 'organising' principle claiming that speech and action were part of 'one and the same psychological function' and that speech was as important as action in goal attainment (Vygotsky, 1978, p. 25). In addition, he claimed that the more complex the task, the more important the role of speech in the child finding an appropriate solution. Furthermore, Vygotsky argued that, during the latter stages of child development, speech moved more towards the start of the learning process thereby eventually preceding action and becoming central to the planning function (Vygotsky, 1987). In particular, he cited oral speech as a situational-motivational and situational-conditioning process, emphasising the need to create an environment via which to encourage the development of speech and, therefore, to stimulate action. Central to Vygotsky's analyses of such developmental environments is his thinking around two related concepts, the Zone of Proximal Development (ZPD) and 'scaffolding', and it is to a more in-depth examination of these that we now turn.

The zone of proximal development and scaffolding

Vygotsky's conception of the ZPD comprises a significant contribution to sociocultural learning theory (Santos et al., 2013). At the centre of his thinking on this matter is a belief that what children can do with the assistance of others may, to some extent, be more illustrative of their mental development than what they can do independently – a belief which attempts to capture the relationship between intellectual development and social and cultural influence (Wass & Golding, 2014). For Vygotsky (1978, p. 86) the ZPD can be defined as:

> The distance between actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers.

Vygotsky (1978) proposed that the ZPD enables the delineation of children's immediate futures and their dynamic developmental state, allowing for concurrent development achievements but also for maturing capabilities. The explicit role of the educator within this process was never comprehensively outlined by Vygotsky (Eun, 2016) although he did cite as examples questioning, demonstrations and introducing the beginnings of task solution (Vygotsky, 1978). Moll (1990) argues that the focus of utilising the ZPD should be on the creation, development and communication of meaning through 'scaffolding' rather than on any transmission-based pedagogy involving the explicit transfer of skills from the more to less capable peer. The term 'scaffolding' was not coined by Vygotsky but has frequently been applied to his work and concerns the pedagogic structuring implemented by the teacher or coach in order to help participants learn (Moll, 1990). Jones and Thomas (2015) have illustrated how scaffolding may be applied to the macro-, meso- and micro-levels of sports coaching thereby providing insight into the multiple levels on which this idea could inform practitioner behaviours. They go on to posit that sociocultural conceptions of scaffolding at the macro level concern the overarching cultural influences and the dynamics of power through coaching dis- course. Scaffolding at a mesa-level is illustrated

through the medium of practice design, whilst at micro-level, the concept encapsulated the notion of interactional talk (Jones & Thomas, 2015). Vygotsky (1987) proposed that learning generates a range of internal developmental processes that only function when children interact with people in their environment; this includes cooperation with peers. Internalising these interactive processes enable them to become part of the child's independent developmental achievements. The natural development of concern with the pedagogic implications of Vygotsky's work, and, in particular, the ZPD, has yielded a number of considerations of potential interest for educators. For example, Wass and Golding (2014) have argued that the ZPD holds great relevance for all teaching and learning environments. Whilst acknowledging the potential limitations of applying Vygotsky's work to adults, Eun (2008) has similarly argued that the processes surrounding learning and development are consistent throughout the lifespan. Therefore, the aim of the present research was to investigate to the extent to which Vygotsldan principles of learning and development might be evident within non-linear sports coaching behaviours and to propose how embracing these principles further might enhance coaching practice both in youth and adult settings.

Method

The study adopted a constructionist ontology and interpretive epistemology with the aim of eliciting the subjective interpretations of respondents in relation to their behaviours and practices as contemporary sports coaches (Bryman, 2015; Smith & Sparkes, 2013). Six multi-method case studies were conducted of youth *(n* =4) and adult *(n* = 2) sporting environments in which coaches claimed to be non-linear practitioners.[1] Within each environment, data were sought primarily from coaches, but also from a broader range of stakeholders such as assistant coaches, parents and athletes. To identify a sample, requests were sent via e-mail to coaching officers within all major UK National Governing Bodies (NGBs) requesting that they asked coaches within their respective sports to make contact with the lead researcher if they believed their practice to be innovative or, in any way, markedly different from the norm. Twenty responses were purposefully filtered via e-mail exchanges and subsequent telephone conversations to leave six cases featuring approaches which represented ·environments founded upon explicit, sound, non-linear pedagogic rationale.

Informal, qualitative, in-situ/fieldwork observations were conducted at each case study site with the researcher adopting the role of 'observer-as-participant' (Robson & Mccartan, 2016). Four hours of observations of coaching practice were conducted in each coaching environment (and recorded as field notes) with the purpose of informing interviews with lead coaches and other key stakeholders. One-to-one interviews were carried out with the lead coach in each case study setting with questions specifically addressing: (i) the beliefs of the coach in relation to learning and pedagogy, (ii) the rationale behind the setting of set tasks, (iii) how coaches facilitated interactions between participants and (iv) pragmatic considerations which may have enhanced or diluted pedagogic intent. Interviews lasted between 55 and 75 min, were transcribed verbatim and returned to the participants to check for accuracy. Other key stakeholders were identified in each of the cases through negotiation between the lead researcher and coach. These individuals were interviewed collectively by way of semi-structured group interview where discussions featured questions concerning: (i) the nature of the activities coaches deployed during training (ii) the nature of facilitated interactions between coach-player and player-player (iii) the nature of the decisions athletes were required to make during training exercises (iv) their perceived value of the various different types of training activity. In each case, data were collected several months or more into the lead coaches' interactions with participants, therefore, the relationships between coaches and athletes were well established. Ethical approval for the study was granted by the University of Gloucestershire Research Ethics Committee.

CASE 1:

Case 1 featured an international Paralympic team sport. The lead coach, Stewart, held the highest level coaching award available and was a senior coach educator within his sport with over 30 years coaching experience. Stewart had extensive experience as both an Olympic and Paralympic coach. Coaching sessions featured practical activity, game play and time viewing video analysis and typically comprised 8-12 participants. Stewart was selected on account of his stated commitment to games-based approaches and a focus on 'coaxing' as opposed to 'coaching' tactical understanding. Three of his athletes participated in a group interview.

CASE 2:

Case 2 featured an international netball team. Lead coach, Mary, had worked with her crop of players for three years and ran sessions on two evenings per week. During this period the team's international ranking had improved significantly. Mary was selected for the study because of her stated commitment to a games-based approach to her coaching practice. Six of her players participated in a group interview.

CASE 3:

Case 3 was a community taekwondo club based in the South East of England. The club comprised a number of groups which varied in age from novice five-year-olds to junior international (D18) athletes. The lead coach, Kam, had been in post for 16 years and held the highest level of instructional award available in his sport. Kam was selected due to his stated commitment to empowering athletes to make decisions, to take responsibility for their own development and to create a 'family' within the club by training novices alongside junior internationals. Kam was supported by three or four assistant coaches at each session depending on availability. Three of his athletes pa1ticipated in a group interview.

CASE 4:

Case 4 was a weekly extra-curricular soccer club open to all 14-16-year-olds based at a large, mixed comprehensive school in the South-West of England. Lead coach, Peter, was a Football Association Level 2 Tutor with 18 years coaching experience and was assisted by Alistair, a relative novice. As a key stakeholder in this environment, Alistair was individually interviewed. Peter was selected due to his stated commitment to a reductionist coaching pedagogy, characterised by a withdrawal of adult intervention.

CASE 5:

Case 5 was a junior golf academy operating out of a private golf club in the South of England. Lead coach, Nigel, was a professional golf association coach with 15 years' experience and had also operated at junior international level. Nigel's pedagogy rejected what he considered the 'normal', technique-led, approach to junior golf coaching and was based on a stated commitment to 'mind set, movement and golf skills' – in that order of importance. Nigel also articulated a belief in developing fundamental movement skills and reflection. Nigel was committed to involving participants' parents as active observers and so group interviews were undertaken with parents. Three interviews were conducted with between two and four parents in each group.

CASE 6:

Case 6 was a 16-member Under-lls squad from a professional football league club academy in the West Midlands of England. The squad were considered to have considerable potential and had been selected from the local area. Lead coach, Andrew, held a UEFA B Coaching Licence, had been coaching for 10 years and held an MA in Sport Development. Andrew articulated a commitment to peer-learning and development of leadership through games-based coaching.

Data analysis adhered to the five-stage thematic coding analysis model outlined by Robson and McCartan (2016) commensurate with our constructionist ontological position and examined the ways in which incidents, meanings and practises were shaped by the range of discourses perceived and experienced by respondents within the various coaching environments. Following familiarisation with the data, initial codes were generated based on text from verbatim transcripts and observational field notes and were grouped to represent prominent themes. These themes were then amalgamated into a broader network which was subsequently integrated and interpreted so that the final thematic structure could form the basis of discussion for the empirical investigation. The lead researcher completed the initial stages of analysis independently and then engaged the second author in reflective discussion concerning the analytical process. The final thematic structure was agreed through collaborative reflective discussion and features three main categories: (i) 'The culture of the learning environment'; (ii) 'Context rich practice design'; and (iii) 'Embracing diversity and facility learning'. *Hence,* it is these themes that provide the framework around which our findings are presented.

Results and discussion

The culture of the learning environment

As we have seen, one of the key concepts within Vygotsky's work is the creation of appropriate learning environments in which individuals can develop. Jones and Thomas (2015) suggest that the foundational point for appreciating the 'macro' level component of the scaffold lies in understanding the physical and cultural context of the learning environment. In terms of coaching ethos and approach (and corresponding underpinning philosophical beliefs about learning), without exception, all of our respondents invested heavily in the creation of positive learning environments and experiences for the teams and individuals with whom they worked. Typically, pedagogic approaches were described by the lead coaches as 'inclusive' and/or 'holistic' and often characterised as 'developmental' in nature. Mary (netball coach, Case 2), illustrated the latter two of these descriptors, but particularly her holistic perspective:

> All [aspects], the whole lot, the whole holistic approach ... that's my approach as a coach. If you speak to any of my family members they say that I work 24/7 and it's crazy but I need to get into the brain, I need to get into the mind, I need to understand mentally, physically, emotionally, spiritually, where my players are at.

A holistic perspective was evident in the approaches of all of the coaches interviewed and this was perceived by some of their athletes. For example, Abdullah (junior international Taekwondo), said of his coach Kam (Case 3):

> He's impacted a lot because he develops an understanding of us as individuals; he knows what we're feeling at the time. So, if we're feeling down, then he'll try to get our spirits up. He's with us all the way, so if something's not going right then he'll keep us up and motivated.

The 'type of culture' that all of the coaches sought to create was entirely commensurate with the sociocultural foundations of development espoused by Vygotsky (1978). In short, the context of the learning environments was conceived of as being much more than the mere acquisition of skill and tactical understanding. In addition, coaches intentionally embraced a holistic appreciation of athlete development inclusive of emotive and even spiritual understandings of the athletes' developmental 'place'. Of course, such conceptions of culture resonate strongly with understandings of the broader underpinning environment as macro-level scaffolding as illustrated by Jones and Thomas (2015).

An alignment between Vygotskian principles and the participants' coaching practice can also be seen in other elements related to the culture of the learning environment. For example, Nigel (Case 5) talked of the importance of creating a learning environment where his golfers felt safe to air their views and which encouraged athlete exploration. Especially important for him was reducing the degree of coaching control:

> We are saying to the kids "Here is an environment and lets support you in that environment"... We don't need to plan as much as I thought we did; plan the environment, plan the general themes, what questions might crop up and then let's see what goes from there ... Again just letting the learning occur ... I would say [that] playing in a non-threatening environment is the key thing.

By overtly seeking to organise the physical and cultural contexts within which they worked, respondents revealed at least some commitment to pedagogic design – or a scaffolding of athlete learning. In each of the environments described, the principles of this pedagogic design were founded in social interaction and the joy of playing with, or competing against, peers. These principles are strongly aligned with the work of Eun (2008), most notably in the perceived unity between behaviour and consciousness but also in the belief of the social nature of psychological development. Furthermore, the coaches' strong emphasis on the importance of their athletes solving problems and arriving at their own solutions is commensurate with Vygotsky's (1978) concept of 'higher psychological functions'. Andrew, (youth professional football coach, Case 6), believed that fun and enjoyment should also be integral to athlete-centred coaching and to the creation of positive learning environments:

> I encourage my players to express themselves and give them a lot of freedom. Some coaches don't like that and some of them embrace it. I think freedom is something that has been labelled [*sic*] to me as allowing the players to play ... To facilitate learning they have to be relaxed, they have to be enjoying it and that's the best way that they can learn for me because if it is fun they remember what they doing ... [however], you can't just go into a group and start your normal session; you have to ease them into it and win them over.

Here, Andrew highlights the difference between his intended approach to scaffolding, distinguishing this from how he chooses to coach in the early phases of working with a new group. Andrew believes 'freedom' isn't something his participants are normally ready to embrace at the outset and so require some 'easing in'. Empowering athletes by offering carefully managed degrees of freedom to make decisions relating to their sporting experience has frequently been associated with the concept of athlete-centred coaching (Kidman, 2005). Andrew's description of his approach relates, in part, to the principle of fading; a concept which has been discussed at considerable length within educational research and relates to the reduction of teacher (coach) intervention over time and a transfer of responsibility to the learner (van de Pol, Volman, & Beishuizen, 2010). Jones et al. (2018) were sceptical that the concept of empowerment through 'athlete-centred' approaches fitted particularly well with Vygotskian thinking. However, when viewed through the lens of fading and the implicit, gradual, transference of responsibility from coach to athlete, Andrew's commitment to allowing freedom to play would seem to comfortably accommodate at least a degree of athlete involvement and decision making. Jones and Thomas (2015) contention was that fading in sports coaching involved leaving a 'ghost scaffold' of instruction

which the coach might return to at any point – to go 'back to basics'. Again, Andrew's contention here is quite different – his beliefs imply that the shackles of his early scaffolding are to be quickly, and permanently, cast aside.

Perhaps not surprisingly, all six coaches articulated a connection between the overall complexion of effective learning environments and their philosophical beliefs. The evidence presented thus far illustrates an approach to mediation by the respondent group in which emphasis was placed on the environment and self-discovery, rather than on explicit coaching interventions. Such approaches demonstrate vestiges of Vygotsky's work, although an exploration of the mesa-level scaffolding of the learning environments is important to understand potential enhancements to the coaches' pedagogic practice. Our participants' consideration of mesa-level scaffolding featured context-rich practice design and it is to this concept that we now turn.

Context-rich practice design

Tensions surrounding planning and control in mediation appeared to emerge, at least in part, a result of all of the coaches' commitment to context-rich practice design. In sport, a context-rich practice design necessarily involves shaping practices to most closely 'represent' (Griffin & Patton, 2005) the competitive settings in which athletes will ultimately find themselves. Here, Peter (Case 4) describes the way in which he utilised observation and reflection within games-based scenarios to shape the environment and thus maximise learning opportunities for his athletes:

> It's really about setting out that kind of games-based environment ... It's about reflecting and thinking on your feet. So it's setting out that environment and seeing where that leads and I think you have to be brave to do that ... It's everything about creating the environment for the kids and letting them run with it and then tweaking it ... You know, you observe and watch, watch, watch and not step in too early to see actually what's happening. That's really the key to it ... As I have gone along as a coach I say less and step back more.

Peter's commitment to 'what is actually happening' illustrates his desire to ensure that athletes were exposed to as authentic a context as possible. However, he also articulates a relatively relaxed approach in relation to the need to control the environment and outlines a perspective commensurate with the notion of pedagogical noticing as discussed by Jones, Bailey, and Thompson (2013) and Jones et al. (2018). Pedagogical noticing involves turning normal and everyday observations of what is happening into actionable mediation. When describing Peter's coaching practice, Alistair (his assistant), highlighted how Peter would intervene within sessions based on what he had consciously noticed:

> He will put in little bits [of information] in there [his coaching interventions] as well and you will see a kid look up and think that's being noticed and I think that goes a long way and is effective. But also just letting them getting [*sic*] on with it and letting them play ... [I]f things are not going well, if it's unfair to one team, he might add rules, change little things or, if the little ones aren't getting the ball, we make sure they are allowed to dribble with it without being tackled. You know, that's when he's probably most effective. He can see what's happening and change it to improve it to get everyone involved.

These findings provide empirical evidence relating to what is being noticed and how Peter subsequently approached mediation. Alistair's illustration highlights Peter's focus on competitive engineering to ensure balanced gameplay and a generally inclusive environment. Whilst research illustrating such pedagogic interventions is not uncommon within sports coaching, these findings further confirm the appropriateness of a Vygotskian lens in such contexts and add to the body of evidence called for in recent work (e.g. Jones et al., 2013). There were further instances of noticing within tl1e junior golf academy (Case 5). Jim, one of the parents said:

> Even just the talking after the golf now, [Nigel has] got everyone's attention ... all ten kids have something to say and he will pick out whichever the one is that hasn't spoken and ask them direct, which I think is so important ... [but] it's not just about golf, there is hand eye co-ordination stuff, [my son's] catching has got a lot better, his confidence is much better and I was pleased to leave him to it as he got to know the group. Now it's got to the stage where I can stand there and he's confident enough in the group that I am not a distraction.

Nigel's noticing of those who had and had not spoken reflects Peter's approach above in terms of first recognising, and then acting on, information which influenced their pedagogic approach. Nigel's practice also amplifies the importance of verbal interactions within the coaching process. In fact, all of the cases demonstrated a strong emphasis on the importance of questioning and also frequently on peer discussion. This emphasis not only suggests a clear focus on cognition within the learning process but also the convergence of speech (e.g. within a games context, athletes acknowledging a collective understanding of a verbally espoused tactical principle) and practical activity, thus demonstrating further alignment with Vygotsldan thinking. Whilst context-rich and game-like environments were broadly welcomed by the athletes, the consensus around this was not universal as Victoria, an international netball player, explained:

> Personally I hate it because I don't think - apart from getting match fitness - I don't think we gain a lot from the [full games play]. I mean you obviously ... build-up more of a link with people that you are playing with but it does get quite tedious.

Fellow international Anna, also questioned the usefulness of such approaches:

> I don't think it helps sometimes when we go off and do some things by ourselves because everyone in the sub-group has got ... different opinions and different ways of doing things rather than if you had someone telling you what to do then you will all focus on the same thing.

What is being illustrated here are some of the practical difficulties in enacting a faded approach featuring greater athlete responsibility and less coach intervention. Whilst Victoria and Anna struggled to see the value of Mary's approach .characterised by full-games play followed by small group discussion, it is important to note that Mary was not at all perturbed about such perceptions: 'Sometimes I won't even listen ... but I will look at people's faces, and a face will tell you so much more then what the words that are being said'. In this way, the creation of context-rich environments illustrates how degrees of challenge can be manipulated to best suit the developmental needs of athletes whilst demonstrating an appreciation of the structure and agency of the practice environment as posited by Jones and Thomas (2015).

Despite not coaching a game activity, 'Kam was equally committed to context-rich environments, specifically citing a commitment to a constraints-led approach (Chow et al., 2006). Kam's 'match-like' practice is evidenced through the following observational field notes recorded at a taekwondo training evening:

> Kam frequently presents each pair with a scenario akin to a real match – one partner is placed a designated number of points ahead and the time remaining in the bout is also given. The pair are then challenged to find ways to either protect their lead or recover the deficit in the time remaining in the match. Kam slams together his hand-held pads and yells loudly – the fights begin.

Kam's context-rich environment represents a clear attempt to scaffold ahead of learning (Vygotsky, 1978) via the creation of scenarios reminiscent of real tournament situations which he foresaw could occur

in his athletes' futures and for which he needed to help them prepare. Kam justified this approach by way of an emphasis on authenticity, faded scaffolding and enhanced athlete responsibility:

> We try to imitate real-life situations, just everything you can think of that can affect a match or go wrong. Now I'm thinking what constraint can affect athlete A the most? During our preparation now we're trying to imitate all of the happenings as much as possible, but I don't say it, it just happens. What we do is give ownership to the athletes to make certain decisions. I give them some flexibility. I give them responsibility, there will be athletes coming in early because they want to come in early. They warm-up, they'll get ready for their session or they will actually support the next session.

Traditional (linear) pedagogies feature technique development prior to application to context-rich environments such as the competitive activity in question. Given the nature of the sampling procedure utilised within this investigation, it is perhaps unsurprising that the coaches approached mediation in a very different way. In Vygotsldan terms, their 'instruction' comprised the creation and facilitation of context-rich environments through which specialist sporting skills were developed in competitive situations. It is in this way that their instruction can be seen to move ahead of their athletes' development rather than merely utilising what had already matured (Vygotsky, 1978). The commitment to context-rich practice design evidenced here reflects that discovered by Santos et al. (2013), particularly concerning the importance placed on game/match-like activities to stimulate curiosity and develop tactical understanding. The understanding that developing tactical awareness represents a complex task that requires a high degree of speech also tallies with Vygotsldan principles. In this sense, the epistemological beliefs of the coaches concerned resonated strongly with Vygotsldan principles which, in turn, represent an appropriate lens through which to view more tacit coach-athlete interactions. A significant component of the tacit coach-athlete interactions was evident through with they embraced diversity and facilitated learning and it is these considerations that we now explore.

Embracing diversity and facilitating learning

As we have seen, the practical application of Vygotsky's work has predominantly taken place within educational settings. In schools, the age range of pupil groups is frequently narrow, though ability can vary greatly. Coaching often presents a broader, and more diverse, mix of ages and experiences than typically discussed within educational contexts and this, in some ways, greatly magnifies the challenge to coaches to construct appropriate learning environments. Irrespective, the coaches featured here universally embraced the challenge of diverse groups. For example, Stewart (Case 1) explained how his approach to utilising the sociocultural context of the group was based on his understandings of the diversity of the squad itself:

> I suppose one thing that I am very comfortable with is the diversity of cultures and social structures they come from, you have some very young girls and the old girls and the mums. I think that's a real challenge because if I was coaching a standard group within a range that would be a homologous group; they would all have certain lifestyles, certain training every day, they do everything the same. This [setting] could not be more diverse.

In this way, diversity becomes a sort of 'abstract' mediator (Daniels, 2001; Jones & Thomas, 2015). Stewart perceived the sociocultural diversity of the group strengthened individuals' athletes' ability to make sense of their environment. For Peter too, diversity and interaction were key factors in the learning experiences of young footballers, in particular, with respect to the different types and levels of learning afforded by mixed-age coaching sessions:

> So the learning environment for me is where children are playing together at different ages and learning together at different ages and the reason why that is, is because ... that's how we learn. Whether it's about football or about life or just going out and playing ... younger children learn from the older children . .. but also the older children learn from the younger ones in terms of encouraging, they are acting like coaches they are acting like leaders, they are having to instruct and help kids you know where to go what to do, giving them instructions and also being role models as well. I think ... you have to have mixture ... When you have lots of different ages ... it just throws up lots of different challenges and lots of different things which is a lot more interesting that just working with just one body of people who are all just the same kind of level. Personally I don't find it as interesting, you can learn a lot more; things come out of that environment. You set that environment up and you see lots of different things all the time so it's really about creating that environment.

As we have seen, for Vygotsky (1978) dialogue plays a central role as an organising function of subsequent internalised development. The coaches within this study demonstrated a strong commitment to interactional talk as a foundation for micro-level scaffolding (Jones & Thomas, 2015) and this is consistent with previous investigations of constructivist-framed coaching pedagogies (e.g. Evans, 2006; Evans & Light, 2008). Santos et al. (2013) has posited that such approaches are illustrative of an appreciation of the ZPD and coach respondents strongly believed that more capable peers were an important component of younger athletes' learning journeys. The interactions reported here were generally planned to some degree, although the formality and specificity evident was relatively low. Coaches were committed to a much more reductionist approach to mediation than reported by Santos et al. (2013) where the predominant position was for coaches to regard themselves as the ultimate mediator of learning. In turn, they were comfortable for the learning derived from the interaction between more and less capable peers to be more implicit, free and emergent. Reiterating his own perception of the value of older children in peer learning scenarios, Peter highlighted the case of Alistair, his 16-year-old assistant coach:

> I would say Ali is a better coach than me; not because he has any qualifications but because the children connect with him much more. So what I have kind of said to him is that the children are watching you for clues: a) of how to behave and also b) your passion for football. And he's very, very good because he is a child himself; he may be a few years older but he is basically a child himself and so they look up to him and, without knowing it, he is coaching them. It's not a specific thing but they are always kind of watching what he does and the way he does a specific turn or whatever but also they get a lot of feedback from him in terms of encouragement and I think those coaches, the young coaches, are really, really important and incredibly under-used because of the politics ... which I think is a huge shame because there is a lot of learning going on both for the young coaches and the players.

The learning implied by the approaches we have described appears consistent with Tudge's (1990) notion of relativistic teleology – that learning unfolds in the direction of culturally acceptable practices – i.e. that the more capable peers represent idealised influencers, role models and directive leaders, rather than educators in their own right and this may have a limiting effect on the younger athletes reaching the upper bounds of their 'ZPD'. Tudge (1990) warns that, without careful planning, such interactions may have a regressive impact on the more capable peer; there was no acknowledgment of this by coaches.

Conclusions

In seeking to operate as non-linear practitioners, the coaches featured within this study strongly aligned themselves with socially, culturally and historically-informed understandings of their athletes and the learning environments which they constructed. We have argued that such understandings are entirely commensurate with Vygotsldan principles of education. Furthermore, coach conceptions of their own roles in designing and facilitating those learning environments can be viewed through the lens of macro-, meso- and micro-level mediational scaffolding (Daniels, 2017a; Jones & Thomas, 2015). Whilst accepting that Vygotsldan principles represent a relatively sound conceptual 'fit' when considering the broader epistemological and practice-related beliefs of the coaches concerned, the evidence presented here raises a number of key issues with regard to ways in which their coaching practices might be refined and enhanced.

If athletes inhabit an inherently social, cultural and historical space, the logical implication is that each must also inhabit their own, unique, learning context. Correspondingly, the capability of an individual to achieve a particular task when mediated through interactive talk with more capable others must also be unique to that individual. The implication for coaches is that the better the understanding they have of the social dynamic of cultural settings, the more likely they are to provide a suitable scaffold for athlete learning. Whilst the realities and challenges of developing such understandings when working with even moderately sized groups are daunting, coaches should strive to construct the most bespoke scaffold possible, rather than applying a blanket framework or relying on 'accidental' interactions. Vygotsky (1978) believed that purposeful, goal-directed, mediation was the most influential in child development and one potential avenue for future research is the examination of how coaches might be helped to construct bespoke scaffolds for their athletes from a realistic and pragmatic perspective.

The position of the more capable other as mediator in helping individual athletes negotiate their individual development also warrants further research. This is particularly true in collaborative learning environments where the more capable other might be a peer. The coaches featured in this investigation held a relatively flexible position in terms of how such interactional talk influenced the learning journeys of both parties. Tudge's (1990) work concerning the potential regression of the more capable peer provides pause for thought and coaches should carefully consider how such interactions will be mutually beneficial. Such considerations demonstrate that, in adopting Vygotsky's work as the principal theoretical lens, we have shown how curriculum, in the form of educational and pedagogic practice, can be scrutinised by considering social-historical influencers within sports coaching environments. This investigation has provided empirical evidence that contributes to our understandings of how coaches' and learners' experiences shape the construction and implementation of the educational and pedagogic practice.

Note

1. The term 'case study' is used here to refer to the logistics (and geography) of data collection rather than as a theoretically-informed methodology or approach.

Disclosure statement

No potential conflict of interest was reported by the authors.

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