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Exploring Coach Behaviours, Session Contexts and Key Stakeholder Perceptions of Non-linear Coaching Approaches in Youth Sport

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ABSTRACT

Gaining better understanding of coaching pedagogies remains a crucial aspect of developing practice. In particular, pedagogic strategies which do not follow transmission-based, technically-focused, approaches have been under-investigated. Furthermore, most investigations into coaching processes have elicited an incomplete understanding of the respective pedagogies due to deficiencies in the methodology such as limited triangulation of methods. This study utilises two systematic observation instruments, field notes, individual coach interviews and parent group interviews in order to investigate non-linear coaching pedagogies in three youth sport environments. The systematic observation instruments revealed a lower rate of coach behaviour than has previously been reported alongside fewer technical interventions and more questioning. The qualitative data revealed three themes; creating an environment of participant centredness, holistic development and authentically situated learning. The methodology effectively elicited understanding of the coaches' pedagogic strategies. Future research should utilise such methodologies to investigate other sporting environments such as in elite and disability sport, particularly studying those approaches which feature non-linear pedagogies.

INTRODUCTION

Coaching pedagogies have enjoyed increasing prominence in the recent research literature, particularly over the last decade in which it has become clear that a considerable number of scholars believe the development of a unique and specialised body of knowledge based on pedagogic principles is crucial to the development of global coaching practice [1-8]. Whilst the increasing prominence of pedagogically-focused coaching research is encouraging, this body of knowledge is of only "emerging" [9: 107] status and far more understanding is necessary to meaningfully develop coaching practice. Coaching practice remains a relatively opaque area of study [1, 10-11], although it is commonly reported that the majority of practitioners remain committed to technically-led, linear pedagogies. For the purposes of this paper, linear pedagogies are considered to be transmission-based practices in which the coach, as power-holder and 'expert', seeks to lead participants to pre-determined learning outcomes by following technical and/or tactical instruction. Within this investigation, non-linear pedagogies are considered to be multidimensional, psycho-social constructions of athlete expertise which are increasingly advocated within the literature [12-13]. Light [14] referred to such approaches as examples of pedagogies which embrace 'complex' learning theory. The lack of development in pedagogically-informed coaching practice is, perhaps, hardly surprising given the relatively recent emergence of this discussion and the paucity of sport pedagogy work based on instructional methods [15]. Nevertheless, numerous authors have suggested that coaches' pedagogies are ill-defined and poorly underpinned [16-18]. Taylor and

Garratt [9: 105] suggest that whilst excellent practice undoubtedly exists in the UK, such work tends to occur in “small isolated clusters” and is not a product of systematic, formal, coach education systems but has developed through the support of exceptional mentors. Coaches frequently operate in highly competitive environments, even in youth settings, which can make quality coaching practice somewhat esoteric [9] with practitioners reluctant to share ideas with their competitors. Both Mallett, Trudel, Lyle and Rynne, [19] and North [11] suggest this lack of collegiality is inhibiting coach learning. Crucially, further investigation into how pedagogic principles are informing the practice and behaviours of coaches is needed if the industry is to continue to move forward. There is a considerable body of literature which has focussed on investigating these practices and behaviours. For some time, researchers in the field have acknowledged the importance of enhancing the ecological validity of investigations into coaching pedagogies and practice by incorporating methods beyond overly-simplistic dichotic behavioural inventories or systematic observation alone [20-22]. Other methods conducted within research aimed at exploring coaching environments have utilised interviews, focus groups and questionnaires with participants, administrators and coaching staff [see 20-26]. More recently, studies investigating the behaviours and pedagogies of coaches have utilised increasingly sophisticated methodologies which embrace technological developments such as tablet computers and more multifaceted observational instruments [see 27-28]. Nevertheless, Cushion et al., [27: 204] describe models such as theirs (the Coach Analysis and Intervention System [CAIS]) as providing “descriptive baseline data ... [as] the precursor for the use of accompanying methodologies and higher-level research”. Despite the calls to investigate coach behaviours beyond the merely descriptive and to triangulate methods [20-22], research has commonly continued to report single-method investigations [29-31] whilst research examining coach behaviour has rarely made the overt connection to pedagogy. Furthermore, very little research has specifically investigated coach behaviours within non-linear pedagogic approaches.

The aim of this investigation was to examine the contexts, coach behaviours and parental perceptions of non-linear coaching approaches within youth sport. In fulfilling this aim, this investigation sought to answer the following questions: What coach behaviours and instructional strategies are evident in the practice of coaches embracing non-linear pedagogies? How do coaches promoting non-linear approaches seek to construct an effective learning environment? What are the key stakeholders’ perceptions of the instructional strategies and learning environments created for their children?

Contemporary pedagogies and non-linear approaches

Contemporary pedagogic literature steers practitioners away from linear pedagogies which are characterised in this context by the assumption that knowledge is acquired by the participant predominantly, and directly, through the medium of the coach [17]. Linear pedagogies place the coach as the gatekeeper to knowledge – the expert holding the key to the ‘right’ answers. Linear pedagogies reflect assumptions commensurate with, for example, behaviourist learning theories which effectively situate coaching as a form of operant and classical conditioning [32]. Such approaches have been accused of preparing participants for training, rather than for game play due to the overly-simplistic practice settings where skills are taught in uncompetitive and/or unpressurised environments [33]. Such practices are characterised by a lack of opposition, pre-

determined technical outcomes and blocked practice [25]. Light and Dixon [34] suggest that such approaches are out-dated and ineffective.

Contemporary pedagogic discourse tends to direct the sports coach towards adopting a constructivist approach in which participants are active components in the development process and are encouraged to build their own learning through problem solving and engagement with ecologically valid practice environments [13]. Whilst a deep exploration of the principles of constructivism is beyond the scope of this paper, it is important to recognise constructivism as an umbrella term for a range of approaches which draw on a wide range of pedagogic work including, for example, Dewey [35], Piaget [36] and Vygotsky [37]. This construction of participants' learning is founded upon recognising the importance of relations and connectivity, embraces the chaotic nature of 'real' sporting environments whilst also acknowledging the complexity and lack of uniformity within participant development [32]. Learning is seen as a process of interpretation and adaptation [34]; thus problem solving and critical thinking are key components of effective learning environments [38]. The importance of problem solving and critical thinking is underlined by Blomqvist et al.'s [39] work which demonstrated that participants made significantly more tactical decisions than skills executions in an investigation into small sided games in youth soccer. Kidman [40] suggests another key feature of non-linear pedagogies is that participants should be empowered to make decisions as a fundamental part of the learning process. Kirk [41] suggests that empowerment is one of the critical factors in justifying why non-linear pedagogies should represent a crucial component of contemporary youth sport, alongside emancipation and cultural critique. In order to address this aims of this investigation, it is necessary to discuss the extent to which pedagogic coaching research has informed our understanding of coaching behaviours and non-linear pedagogies.

Coaching behaviours, pedagogies and games-based approaches

Research which has investigated coaches' instructional strategies has mostly revealed a disturbing lack of understanding of the pedagogic principles which should underpin any educational endeavour [18]. For example, Light and Evans [18] conducted four case studies with Australian coaches in rugby settings finding that the coaches involved were not even familiar with the basic terminology or principles relating to pedagogy – the same may also be true amongst coach educators [42]. Evans [17] found that coaching practice was much more likely to be informed by sport-related rhetoric than pedagogic principles. Sports coaches commonly demonstrate a relatively weak understanding of contemporary pedagogy [18]. In investigating youth soccer coaches, Ford et al. [25] found that regardless of the age or competency of participants, the majority of practice time was based around 'training form' (i.e. physical conditioning or isolated technique practice) as opposed to game-related contexts which Ford et al. [25] suggest contradicts the predominant thinking underpinning contemporary skill acquisition research. Nevertheless, Light and Evans' [18] investigation revealed a widespread engagement with games-based session content, reflecting Light's [33] earlier work on Game Sense pedagogies which suggested that some coaches engage with contemporary pedagogies long before they have understood the theoretical underpinning. Whilst other games-based models have been proposed in both physical education and coaching (e.g. Play Practice [43] and the Tactical Games Model [44]), Light's [4, 33] work on Game Sense represents one of the most developed bodies of knowledge relating to coaching pedagogy and, therefore, warrants further consideration here.

Game Sense is a constructivist pedagogy requiring the coach to create an environment for learning in which players are encouraged to collaborate with each other to develop understanding and knowledge [45]. Developed for the Australian Sports Commission [46], Game Sense is a derivative of Teaching Games for Understanding [47] and has largely been applied to coaching, as opposed to physical education, environments [48]. Within Game Sense, through the creation of a purposeful game-based environment, players are asked questions relating to their performance with the coach taking a much less interventionist role than in linear pedagogies. Whilst the coach remains one mediator of learning, players' interaction with each other, prior experiences and the broader environment are viewed as being equally valuable to developing athletes' learning and performance [17]. Game Sense involves a devolvement of responsibility from the coach to the players, ensuring that decision making elements are a central part of all learning environments [4]. Commonly, coaches perceive the predominant value of game-play to be a testing ground for technical competencies which have been developed and refined through other mechanisms [18]; however, Game Sense values the game environment as a pivotal component of the learning process at all stages of development [4]. Wright and Forrest [49] have questioned whether games-based approaches are as constructivist as their proponents argue, suggesting that almost all applications of these models feature the teacher or coach as the sole asker of questions and the person with the power to judge whether the responses are 'correct'. Furthermore, rather than beginning from theoretical principles, coaches' ideas are commonly shaped by sustained involvement in sport [17] and through informal apprenticeships with other coaches [12]. Evans [17] found that some coaches' interpretation of games-based approaches represented a misunderstanding of some of the fundamental underpinning pedagogic principles with some practitioners focussing on the use of games merely for testing skills and developing game-specific fitness. Such elements are a valuable part of games-based coaching models, but represent a shallow appreciation of their developmental potential.

The danger in viewing coaching predominantly as being concerned with the delivery of episodes is that we only problematize a part of a very complex process [see 50-52]. Nevertheless, whilst there is considerable discussion in the literature concerning numerous contemporary pedagogic principles, it remains relatively unclear how, or whether, coaches operationalize these concepts within their practice. Noting the concern of viewing coaching as a predominantly episodic process, this paper is delimited to focussing on the delivery of sessions - a crucial component of the broader pedagogic strategy of the coach. Considerable sport pedagogy research has been conducted investigating coach behaviours - a central part of any instructional strategy [27]. Numerous systematic observational instruments have been developed, adapted and widely used, such as the Coach Behaviour Assessment System (CBAS) [53], the Arizona State University Observation Instrument (ASUOI) [54], the System for the Observation of the Teaching of Games in PE (SOTG-PE) [55] and, most recently, CAIS [27]. Findings of studies utilising these instruments in youth settings have tended to report predominant coaching behaviours as instruction [55], praise and silence [26]. Prolonged silence has been reported as both an intentional and strategic component of coaching pedagogy [30] as well as a potentially indicative behaviour of inadequacy and inexperience [20]. Questioning is almost universally acknowledged as a desirable coaching behaviour, particularly when divergent, as opposed to convergent approaches are adopted [27] and has consistently been found to represent a relatively infrequent coach behaviour [25]. Only the more recent systems (SOTG-PE and CAIS) have attempted to capture the complexity of the coaching environment by recording

some aspect of the context of coaching sessions (categories include warm-up, technical skill practice, small-sided game and free play), alongside the coach's behaviour. However, any methodology which does not feature some form of ecological observation is limited in understanding coaching contexts due to the dissonance between coach perception and actuality of their behaviours [29] and/or the inherent difficulty of athletes interpreting their coach's pedagogic intentions. The principle of triangulation of data from as broader perspective as possible is crucial if we are to gain understand these environments to the fullest extent possible [52].

METHOD

Three multi-method case studies were conducted exploring youth sport environments in which the coaches professed to be implementing non-linear approaches. In this context, the term 'case study' is utilised as a data management strategy, rather than an explicit methodology. Each case study comprised mixed methods with a flexible and bespoke research design strategy to suit each environment. Within each environment, the coach behaviours, context, participant activity and a broad range of key stakeholders' perception were investigated to elicit a well rounded understanding of the setting. To identify suitable coaching environments to comprise the cases for this investigation, emailed requests were sent to coach developers across all major National Governing Bodies in the UK asking that they seek expressions of interest for practitioners to get in contact with the research team if they felt their coaching was either innovative or, in any way, markedly different from the norm. This process elicited 20 responses from which the lead researcher, through the exchange of emails and a subsequent telephone conversation, purposefully filtered down to three cases featuring non-linear approaches. The three cases selected represented those environments, in the view of the research team, founded upon explicit, sound, pedagogic rationale and operating solely in a youth sport environment. Sampling selections were not made relating to the activity being coached; this was considered much less important than the strength of the rationale underpinning the pedagogic approach.

INSTRUMENTATION AND PROCEDURE

Each case study drew on a range of data collection techniques featuring systematic and semi-structured qualitative observation of coaching sessions supplemented by semi-structured individual and group interviews. The bespoke strategies and procedures are outlined in the sections that follow. Two systematic observation instruments were utilised within each coaching environment. The first was 14 category version of the ASUOI [54], including the use of first name, silence and uncodable behaviours and utilising the time sampling element. The selection of the ASUOI enabled data concerned with coach behaviour to be collected. The frequency of each behaviour was marked with a tally on the recording sheet, whilst behaviours lasting more than five seconds were marked with a dash to represent a continued, rather than a new behaviour, allowing the time interval to be recorded. Observers operated for 15 minutes at a time and then rested for five minutes before resuming. The second instrument was a modified version of the SOTG-PE [55]. The modifications were purely semantic, altering terms such as 'lesson' to 'session' and 'teacher' to 'coach'. Through a time-series system of 10 second observational scans, followed by a 10 second recording period (audio cues are delivered by a pacing mp3 file), SOTG-PE complements the data which can be collected through use of the ASUOI by allowing the researcher to capture the proportion of the session participants spend in a range of activity types (e.g. motor response, motor-locomotor) and

session contexts (e.g. warm-up, applied skill practice, modified game). SOTG-PE also allows the researcher to distinguish between coach behaviours in terms of whether they are tactical or technical; verbal or non-verbal. Each case was systematically observed for approximately four hours – up to two with each instrument. Observations were conducted by three researchers. The researchers were trained over a three week period featuring a theoretical introduction to the instruments as well as observing two live and one recorded coaching session. Each researcher compiled six hours of practice observation for each instrument. Inter-observer reliability was ensured by all researchers observing one 20 minute coaching episode using each instrument. These episodes were not otherwise part of this investigation. Data from these observations were compiled and kappa >0.90 was calculated across both instruments with agreement above 94%. Minor differences in coding were also discussed by the researchers in order to further minimise any future discrepancies.

Qualitative methods were employed in the form of semi-structured observations featuring six categories comprising context, session delivery, innovation, participant engagement, participant leadership and difficulties/challenges. A further two hours of observation using this qualitative framework was conducted at each case and recorded as field notes. The categories comprising the framework for the qualitative observation also represented the substantive themes within the semi-structured individual and group interviews. The lead coach at each case was individually interviewed. Lead coach interviews ranged in length from 54 to 75 minutes. Further key stakeholders were identified in Cases 1 and 2. In Case 1, the assistant coach, Ali, a relative novice, was interviewed for 36 minutes. In Case 2, three group (n = 2-4) parent interviews were conducted across the three cases; in total 11 parents participated in the study with interviews lasting between 20 and 53 minutes. No additional stakeholders were identified within Case 3. In each case, data were collected several months into the coaches' interactions with the participants and so the relationship between coaches and athletes were well established. Ethical approval for this study was granted by the University of Gloucestershire Research Ethics Committee.

CASE 1:

Case 1 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. Between 20-30 boys attended each week with training sessions lasting approximately 60 minutes. The lead coach, Peter, was a Football Association Level 2 Tutor with 18 years coaching experience and was assisted by Ali, a relative novice. Peter's case was selected for the study due to his stated commitment to a reductionist coaching pedagogy, characterised by a withdrawal of adult intervention to as greater degree as possible. Peter's belief was to 'let the game be the teacher' and stated a strong commitment to games-based approaches. Peter writes blogs and newsletters which he published on his website campaign based around giving young people ownership of their sporting environments. Peter has also written two books outlining his approach to coaching.

CASE 2:

Case 2 was a junior golf academy operating out of a private golf club in the South of England. The lead coach, Nigel, was a professional goal association coach with 15 years experience and had also operated at junior international level. Nigel created, in conjunction with a colleague, a 12 week programme for junior golfers ranging from 4 to 18 years old who paid a fee to attend. Nigel's

approach rejected what he considered the 'normal', technique-led, approach to junior golf coaching was based on a stated commitment to 'mindset, movement and golf skills' – in that order of importance. Nigel also articulated a belief in developing fundamental movement skills and reflection. The observed sessions took place both in a driving range and on a practice hole.

CASE 3:

Case 3 was a 16 member under-11s squad from a professional football league club Centre of Excellence in the West Midlands of England. The squad were considered to have considerable potential and had been selected from the local area. The lead coach, Andrew, held a UEFA B Coaching License, had been coaching for 10 years and held a Master's degree in Sport Development. Andrew articulated a commitment to peer-learning and development of leadership through games-based coaching which had featured as the topic of his Master's dissertation.

DATA ANALYSIS

Data from the systematic observation instruments were collated and cross tabulated. Descriptive statistics in the form of frequencies, means and percentages were calculated to illustrate the coaching behaviours, session contexts and participant activity in each of the cases. Rate per minute (RPM) was calculated with the ASUOI data by dividing the frequency by the length of the session in minutes, although following common precedent within the literature, the 'use of first name' category was considered separately and did not contribute to this calculation. Time interval was calculated by dividing the interval for each category by the total length of the observation. The interviews and were transcribed verbatim. The analysis of qualitative data followed Robson's [56] five stage model; following initial familiarization with the data, initial codes were generated based on the text units from the transcripts and were then grouped to represent prominent themes. Based on the nature of the relationships between them, the themes were then constructed into a thematic network. The thematic network was then integrated and interpreted so that the final thematic structure could form the basis of the discussion of this investigation. Prior to the discussion, the results from each case will be presented separately to scope the uniqueness of each approach.

RESULTS

CASE 1

Peter's coaching practice was characterised by: a minimalistic approach to instruction; an emphasis on positivity through praise; learning through small-sided games and questioning; reinforcing individual contributions. Peter's minimalistic approach to instruction is revealed in Table 1; Peter's most frequent behaviour was silence (RPM = 1.47, 38.48%), whilst the three instruction-related categories amassed just 2.04% of all observed behaviours. The low level of instruction is reinforced by Table 2 which reveals Peter utilised no technical instruction at any time. This is further supported by examination of the qualitative observation which also reveals something of Peter's positivity:

The coach is very reserved, relying on games-based session content. Virtually no formal instruction is offered at any stage and almost all the coach's comments are positive. Occasionally, it seems the children need more guidance as some wander

off-task or aren't sure what to do, but they are happy – laughing and smiling. (Field Notes, Case 1)

The positivity evident within Peter's approach is also supported by the high frequency of praise revealed in Table 1 (RPM = 0.57, 14.87%). The qualitative observation above emphasises Peter's reliance on games-based session content; this is supported by examination of Table 2 which reveals that Peter utilised no technical or applied skill practice, relying solely on modified (50.3%) and small-sided (9.2%) games accompanied by general management (40.5%). All of Peter's developmental input was tactically-based; he demonstrated no technical interventions. Peter's tactical contributions were largely made within group question and answer sessions. Table 1 reveals Peter demonstrated a relatively high rate of questioning (RPM = 0.36, 9.33%). The qualitative observations illustrate the importance Peter placed on developing a collaborative approach to developing knowledge through these group question and answer sessions:

The question, answer and debate elements are carefully constructed by the coach. Participants are guided to communicate with each other in a caring, empathetic and supportive way. Communication is reciprocal with older participants encouraged to mentor the younger participants. (Field Notes, Case 1)

The question and answer sessions accounted for the majority of the time for which the participants were inactive. Overall, Table 2 reveals participants were inactive for approximately 38.7% of the session; 82.9% of the inactive counts were attributed to the general management category which housed the group question and answer episodes. The vast majority of time participants spent within the modified and small-sided games categories were active with locomotor movement (63.2% and 56.3% respectively) more frequent than motor-locomotor (24.1% and 37.5% respectively).

Peter's focus on the individual is evident through his relatively high rate of use of the participants' first names (RPM = 1.19, accompanying 31.20% of all behaviours; see Table 1). Peter also utilised a technique of occasionally commentating on the game-play he was observing:

Peter is utilising a commentary approach. This predominantly facilitates praise and encouragement in a format which the children enjoy – they appear to particularly like their 'moment in the sun' when a successful contribution they have made is recognised. The commentary approach also allows for the occasional embedding of small coaching points which reinforces an aspect of the game which was discussed earlier in the session. (Field Notes, Case 1)

Peter's assistant coach, Ali, revealed how Peter intended to make the coaching environment more authentic through the use of his commentaries:

When they are watching football on TV there is the commentary there, so it maybe brings it to another level for them when they are playing. I remember this from when I was a child, you might commentate yourself ... it might bring out a couple of coaching points or whatever but there's nothing negative in there ... I think Peter knows which players react more and that's the important thing ... it kind of makes it more than just a kick around; the kids are actually in there in the game or a world cup sort of thing and its good. (Ali)

Peter's 'coaching' input into his match commentary was minimal - only four of the 43 scans (9.30% - see Table 2) which featured tactical input were delivered whilst the children were active, whilst the remainder were made during question, answer and debate sessions. Peter sought to summarise his coaching approach within his interview, reinforcing the minimalistic approach to coach-led instruction:

I think my way of coaching is to observe a lot, what I try and do is to give the players the opportunity ... trying to get them to work out the specific task before I step in so really it's about for me, trying to create environments where they can find their own ways and then just chuck in some little nuggets of information. Erm but, yeah, fairly kind of informal approach I guess you would call it. (Peter)

CASE 2

Nigel's coaching practice was characterised by: creating a child-centred environment; questioning; engaging parents to engage in the learning environment; encouraging a developmental mind-set; fundamental movement skills before technical elements. The child-centred aspect of Nigel's coaching practice was best captured through one of the group (parent) interviews:

... it's all for young children so that big difference between this and everything else is that everything is about the child; the atmosphere is right, the teachers are right, the way they teach is right and being good to each other, everything is about the kids, the course is for the kids. Nothing is really telling them it is an adult's game; as far as they are concerned God invented golf for children and the adults tagged along and that's what they believe so they feel that they should be here. (Parent, Case 2)

For Nigel, the child-centred environment was founded on the relationship between coach and participant being open to participant-initiated interactions:

I think the coaches having rapport and relationship with the children so that they can ask a question in a non-threatening environment, so we would always give them the task and say come back to us if you don't understand. (Nigel)

The building of rapport is also supported by the relatively high use of participants' first names (RPM = 0.82, accompanying 34.10% of all behaviours). In the quotation above, Nigel also emphasises the importance of questioning which is further underlined by the high rate of this behaviour (RPM = 0.46, 18.89% - see Table 3) evident within his coaching sessions. Table 3 also reveals Nigel's tendency towards concurrent instruction (RPM = 0.42, 17.51%) with very little pre (RPM = 0.04, 1.84%) or post instruction (RPM = 0.06, 2.30%). Nigel also demonstrated a relatively high rate of silence (RPM = 0.42, 17.51%).

Nigel's coaching approach was based around a combination of general management (33.0% - see Table 4) and technical skill practise (67.0%). Perhaps unsurprisingly for a target sport, Nigel's sessions did not contain any applied skill practices, modified or small-sided games. Nigel's general management contexts featured task setting, movement-based tasks, encouraging reflective writing in personal log-books and group questioning. The balance of these activities is represented by the inactive (65.6%) and locomotor (34.4%) contexts of the general management category within Table 4. Participants were also inactive for the majority of the technical skill practice activities (50.8%),

43.1% spent eliciting motor responses and 6.2% locomotor movement. The inactive time within technical skill practices was spent waiting, observing members of their group or answering questions from the coach as to how their group members were performing the given task.

The most unique aspect of Nigel's coaching practice was the involvement of the parents within the practice environment. One parent illustrated Nigel's approach in this regard:

When they did the first children's programme before Nigel came in, it was a case of dropping them off for the hour and then coming and picking them up, but Nigel said that his programme will be more about getting the parents involved so we are encouraged to stay. We can have a walk down and stand and follow them on the bays and give them encouragement, we can do all of that so we feel more involved in it and that makes me want to go and do more outside. (Parent, Case 2)

Nigel's technical and tactical input is revealed within Table 4. Nigel offered more input during general management activities than technical skill practices with slightly more verbal tactical (31.2%) than verbal technical (21.9%) contributions. Nigel's contributions during technical skill practices were more likely to be verbal technical (21.5%) than verbal tactical (6.2%) or the non-verbal categories. Nonetheless, for the majority of the technical skill practices, Nigel did not offer any technical or tactical input (61.5%). Nigel's explanation of his approach not only outlines his beliefs concerning the relevant movement and golf-related skills, but also to the over-arching principle of his method:

Simply summed up as mind-set of golf skills. We develop the people first; create, develop, enhance the learner in the child so independent, adaptable, self-sufficient learners transferable to other areas of this life; movement-based activities, movement skills, sports skills, understanding our body because golf is a really difficult movement activity - and then add the golf skills. Golf skills to play basic activities to understand the context of golf as a game and then the skills that are needed, possibly some technique in there but it is way down the list. (Nigel)

CASE 3

Andrew's coaching practice was characterised by: an emphasis on fun; use of modified-games; developmental questioning; a focus on holistic development. A range of factors illustrating the emphasis on creating an enjoyable environment were evident through the qualitative and systematic observations:

The enthusiasm of the coach, the supportive encouragement of the parents from the side line and the high levels of engagement from the participants, even at the end of the session, all provide a real sense of a positive, fun, relaxed environment. (Field Notes, Case 3)

The positivity and encouragement of Andrew's practice is also evidenced in Table 1 which reveals Praise (RPM = 0.86, 15.84%) and Hustle (RPM = 0.82, 15.23%) to be the second and third most frequent behaviours respectively. Additionally, Andrew accompanied a large number of his behaviour with use of the participants' first name (RPM = 1.79, accompanying 33.13% of all behaviours). Finally, Andrew demonstrated moderate levels of pre-instruction (RPM = 0.53, 9.88%)

and concurrent instruction (RPM = 0.96, 17.70%). The importance of enjoyment within coaching sessions was also made clear by Andrew in his interview:

Relaxed, fun ... especially with the young ones ... when I was a player, the best coach I had were the ones that made it fun for me and that's where I think I learnt. I had a few of these command coaches that I hated but I still got on with it ... it needs to be fun for children, if you don't make the game fun, they won't want to learn that game. My mentality and all my sessions have got a bit of fun in them. (Andrew)

Andrew's coaching practice largely revolved around the use of applied skill practices (31.9% - see Table 6), modified (15.3%) and small-sided games (15.3%). The remaining time was spent in general management activities (37.5%) which commonly comprised task setting and group questioning. Andrew did not use any technical skill practices. The focus on applied and game-related activities resulted in relatively low levels of inactivity (34.7%) with high volumes of locomotor (30.6%) and motor-locomotor (32.6%) activity.

Andrew's question and answer sessions represent an important part of his coaching approach. This is evidenced by the moderate rate of this behaviour evident within Table 5 (RPM = 0.42, 7.82%), but also within his interview:

The question and answering; chucking things out there and reviewing, I think that tests their knowledge. Tests you as a coach as they come back with stuff and you are like 'Yeah, you are right actually, I didn't think about that!' and you have to adapt. These kids know so much more than you think, it's not about just going in and saying have this, this and this. To be honest, you could start higher in a session than you think because of the knowledge that they have already got, you know you could test their knowledge further without doubt. (Andrew)

Within this quotation, Andrew highlights the reciprocal element of his questioning strategy and emphasises the developmental potential of this approach for participants but also for the coach. Andrew also emphasises the importance of recognising knowledge which is acquired prior to attending the coaching sessions.

Table 6 reveals that Andrew spent more time offering verbal technical input (35.4%) than nonverbal technical (2.1%), verbal tactical (6.3%) or nonverbal tactical (5.6%). Nonetheless, Andrew was keen to stress that he considered his coaching input to feature a much broader perspective than mere technical development:

This new system that has been put in place is all about this four corners model in football from the FA, being physical, tactical/technical, psychological and social. In the past I had just focused on the technical and tactical, but now when I have gone to my sessions, I am trying to improve on hitting the corners, really giving them the confidence to be the best they could be to be honest. Socially allow them to interact ... I try to give them regular breaks and give them 2-3 minutes to talk. The physical - you may be playing four a side games but how many minutes do you play and what are the reasons behind it? From a psychological point of view who do you partner up

people with in a one v one situation, to ensure that people can become more confident. (Andrew)

Andrew's concern with psychosocial perspectives of the learning environment suggests a holistic appreciation of development which impacted his planning as well as the experiences of the participants.

DISCUSSION

The aim of this investigation was to examine the contexts, coach behaviours and parental perceptions of non-linear coaching approaches within youth sport. The results from the individual cases show each coach attempted to reduce the emphasis on technical instruction apparent within more traditional coaching practice and also reduce the importance and centrality of the coach to participant learning. Furthermore, the thematic analysis revealed three core themes which can help to illuminate the outworking of the non-linear pedagogical approaches within the case studies under investigation; creating an environment of participant centredness, holistic development and authentically situated learning. The value and contribution of each element of the analytic framework will be considered throughout this discussion.

CREATING AN ENVIRONMENT OF PARTICIPANT-CENTREDNESS

A number of the quantitative indicators from the systematic observation tools suggest an intention by coaches to put participants at the centre of a coaching environment which was characterised by strong coach-participant relationships and a low volume of autocratic coach behaviour. The three coaches demonstrated between 31.2-34.1% of coach behaviours were accompanied by use of the participant's first name. This is a considerably higher volume than reported in other studies utilising the ASUOI [29, 57]. Furthermore, all three environments featured far fewer behavioural counts in the three instruction categories which have consistently been reported to be the most prevalent actions [26, 29, 57-58]. Nigel's (21.65%) and Andrew's (32.31%) combined instructional behaviours represent a considerably lower volume of autocratic coaching practice than has previously been reported in any ASUOI-based study, although both Nigel's and Andrew's counts are much higher than Peter's (2.04%) who adopted a particularly minimalistic approach to instruction. Perhaps unsurprisingly, therefore, all three coaches exhibited relatively high levels of silence. Peter in particular (RPM = 1.47, 38.48%) reported a far greater rate and overall frequency of behaviour than has been reported in any ASUOI study. The importance of silence has been discussed previously [26] with both positive and negative interpretations of high counts. Peter's use of silence is overtly purposeful and so reflects Smith and Cushion's [30] findings which suggested that coaches may want to give participants an opportunity to learn unencumbered by their voice. The intentional aspect of Peter's silence is reinforced by his intention to let the children 'find their own ways'. What Peter describes as 'informality', Kidman [40] might describe as empowerment; by giving opportunities for athletes to 'work out' specific tasks, the coach is taking a non-prescriptive coaching approach which Kidman [40] and Kirk [41] suggest is a fundamental component of participant centredness. The importance of participant centredness within the coaches' approaches is further supported by Nigel's emphasis on the instrumental value of establishing rapport.

Peter and Nigel both suggest their role involves the construction of a positive learning environment. The ratio of praise to scold (Peter 51:2, Nigel 24:1, Andrew 77:13 – see Tables 1, 3 and 5

respectively) fell within the bounds of that reported in previous research [e.g. 26, 29] and suggests the three coaches within this study considered this aspect an important part of constructing a participant-centred environment and of developing a strong coach-athlete relationship. The emphasis on praise is reinforced by Peter's demonstrable positivity and Andrew's passion for fun coaching sessions. Furthermore, Andrew highlighted the importance of the knowledge children bring to a session which has been accumulated elsewhere and that, in some cases, participants have made contributions which the coach hadn't previously considered. This is an excellent demonstration of the value Andrew placed on the knowledge and contribution of his athletes – an important marker of non-linear approaches and a further indicator of participant centredness. The success of this construction of coach-athlete relationships in Case 2 is reinforced by the testimony of the parent who outlined their perception of the coaching environment being as though 'everything is about the child'. The parent's perception that Nigel's predominant focus was on the development of the child sits comfortably alongside contemporary pedagogic principles of athlete-centeredness [59]. The nature of the developmental focus illuminated through the data was shown to be broader than traditional linear pedagogies and this is evident within the second major theme.

HOLISTIC DEVELOPMENT

The second theme to emerge from the data revealed that the participant-centred environments of the three case studies were founded upon much more than the development of sporting prowess. All three coaches demonstrated a commitment to develop young people from a holistic perspective. The desire to focus on principles other than technical and tactical aspects of game play reflects the pedagogic intentions of contemporary educators [32, 34]. Peter's careful construction of group questioning and problem solving complements some of the elements that Light and Dixon [34] considered are important aspects of educating young people for life in the 21st century. Nigel's emphasis on 'independent, adaptable, self-sufficient learners' is similarly reflective of a desire to educate physically literate participants rather than merely train sports performers. The carefully planned and considered pedagogies of all three coaches investigated here contrasts with the less theoretically-informed approaches reported by Light and Evans [26] and other research [17], although this is mediated by the purposeful selection of the coaches featured in this study. Whilst Peter was keen to stress that his theoretical understanding of pedagogy was developed after his commitment to a reductionist approach had been formed, all three coaches demonstrated an advanced understanding of pedagogical principles and had devoted considerable time to constructing their respective approaches.

Andrew was, perhaps, the most overt in terms of his consideration of the psychosocial factors impacting athlete learning which he illustrated through discussion of the FA's four corners model, whilst Nigel was particularly focussed on mind-set. Nigel translated his focus on mind-set to the development of transferable and movement skills which could be utilised in other disciplines. Andrew's and Nigel's broad appreciation of factors which impact, facilitate and result from coaching environments are illustrative of genuinely constructivist approaches. Peter's willingness to allow participants to come to their own solutions through collaboration are also more genuinely constructivist than those criticised by Wright and Forrest [49] and also strongly reflect Game Sense pedagogy which highlights collaborative evaluation as one of its central pedagogic tenants [4].

Nigel's foci on movement skills which are not overtly golf-related along with developing an understanding of the whole body, also underline the holistic pedigree of his approach. The focus on movement skills and whole body function echo the key aspects of fundamental motor skills [60] which Vinson and Lloyd [61] suggest should form the foundation of all young people's sporting experiences. Côté, Baker and Abernethy [62] contend that such a focus on a broad spectrum of activities and fundamental motor skills, rather than one a single sporting discipline, will yield a reduction in participatory attrition. The theme of a broader holistic development was particularly evident in Case 2 in which the impact of the participants beyond the golf course was frequently mentioned by parents and coaches. Whilst there are many elements in all three cases in which the practice environments are manipulated to enhance participant learning, Nigel's commitment to practice time on-course, as well as Peter and Andrew's focus on game play, suggest all three coaches recognised the importance of authentic learning environments.

AUTHENTICALLY SITUATED LEARNING

The coaches' commitment to non-linear pedagogies was evidenced throughout the entire range of data collection procedures, illustrating some commonalities between cases, but also some stark operational differences. The results from the case studies have illustrated that all of the coaches sought to situate the participants in environments which were more game-like, or authentic, than traditional skill-drill practices. Furthermore, all three of the coaches sought to withdraw from the traditional position of the coach as gatekeeper of knowledge [32] to enable participants to solve the problems they will encounter in 'real' sporting situations. The withdrawal of the coach as gatekeeper of knowledge heightens the responsibility of the participants to generate solutions to problems themselves. The withdrawal of the coaches is evident in the relatively low RPM of overall coach behaviours, but also in the comparatively high levels of questioning than has been reported in previous coach behaviour investigations. Cushion and Jones [29] reported an overall coach behaviour RPM of 13.39 in their investigation of professional youth soccer coaches. The two soccer coaches in this investigation yielded an RPM of just 7.19 (Andrew) and 5.00 (Peter); Nigel's RPM was even lower at 3.23. Furthermore, in all cases, positive modelling was sparse averaging just 1.61% of coach behaviours which is broadly similar to previous observational research. Conversely, previous research [26, 57] reported levels of questioning between 2-5% of overall coach behaviours. Questioning in all three cases involved in this study was considerably higher with Andrew demonstrating 7.82%, Peter 9.33% and Nigel 18.89% of overall behaviours dedicated to this approach. The importance and process of questioning is highlighted by Peter when asked what he thought the most important facilitator of learning was in the coaching environment. The importance placed within all three cases on the value of questioning is reflective of the emphasis discussed within the literature [27] and highlights the value of 'real' or 'game-like' activities to facilitate learning. Emphasising questioning to generate dialogue is a central tenant of Game Sense pedagogy [4]. The three coaches' use of questioning reflects the principles outlined within Game Sense, further supporting the credibility and suitability of their non-linear practice. Peter's recognition of the contribution the participants can make to the learning process is reflective of Evans' [17] discussion surrounding the importance of utilising participants' experiences.

Peter's minimalistic technical input was, partly, founded on his desire to make the coaching environment more authentic. This was illustrated by Ali's assertion that Peter's match commentary approach was designed to make the children feel as though there were playing in a real

environment. Enhancing the perceived reality of a learning environment sits comfortably alongside notions within contemporary learning theory such as situatedness, although even Peter's coaching sessions are less authentic than the learning environments proposed by Lave and Wenger [63]. Furthermore, no theoretical pedagogic approach was overtly cited by Peter or Ali, mirroring Light's [33] findings which suggested that educational principles are sometimes understood by coaches pragmatically long before they can articulate a relevant theoretical underpinning.

The authenticity of the learning environments is further illustrated by consideration of the game-related involvement data from Cases 1 and 3. Case 1 and 3 both demonstrated considerably higher volumes of game-related involvement by the young people than has previously been reported [28] – although the recent development of the SOTG-PE tool naturally limits the extent of the comparable data. Nevertheless, the young people in Case 1 were involved in motor-locomotor (the most game-like category) activity for 15.6% of the session with participants in Case 3 engaged in more than double that amount (32.6%). These findings support the enhanced authenticity of the learning environments over static skill-drill practice and also underline the appropriateness of the non-linear approaches created by the coaches.

This investigation reports, to our knowledge, the first target game observed using the SOTG-PE. The findings in Table 4 revealed Nigel utilised just two of the contextual categories – general management (33.0%) and technical skill practice (67.0%). Perhaps inevitably because of the nature of golf, the vast majority of the game-specific practice categories featured either inactive or motor response-based tasks, despite Nigel's stated intention to develop movement-based activity and fundamental movement skills. The use of SOTG-PE may, therefore, require some consideration and/or development within target game sessions; however, the overall value of a systematic tool to capture the context and technical/tactical focus of coaching environments has been greatly helpful in illuminating the authenticity of the situations.

CONCLUSIONS AND RECOMMENDATIONS

The aim of this investigation was to examine the contexts, coach behaviours and key stakeholder perceptions of non-linear coaching approaches within youth sport. The three case studies discussed within this investigation contribute to our understanding of the strategies employed by youth sports coaches in attempting to employ a non-linear pedagogic approach. In terms of behaviours, all three coaches displayed a lower rate overall than has previously been reported, particularly in the instructional categories. The coaches did, however, ask more questions which represented a key instructional strategy in each of the three cases. The asking of questions was often structured within a collaborative setting commensurate with Game Sense pedagogy.

In terms of constructing an effective learning environment, the key themes of participant centredness, holistic development and authentically situated learning represent the common strategies within the featured coaches' practice. These strategies were shown to be largely theoretically-informed and genuinely constructivist in nature. Parental perceptions of the coaches' instructional strategies in Case 2 paid testament to the participant centredness of Nigel's approach. Each of the coaches also demonstrated some strategies which were unique to their approach and which were allied to their fundamental belief of what constitutes quality coaching.

Whilst we have only been able to scratch the surface on the merit and complexity of the non-linear coaching approaches described here, it is evident that the various methods that have been utilised have a substantial contribution to make in the exploration and understanding of the richness and complexity of coaching environments. The systematic observation data enables direct and objective comparison with the extensive body of research concerning coach behaviours published over the last 30 years, whilst also enabling some degree of contextual and content-related exploration to be undertaken. Nevertheless, without the qualitative components utilised within this study, the systematic observations tools alone would have again fallen short of capturing the richness and complexity of these coaching environments. The capacity of qualitative observations to capture further context, but also illuminate some aspects of the participants' emotional engagement with the environments is an important aspect of understanding the construction of the coaching setting. Similarly, without the interview-based data from coaches, assistants and parents, important aspects of the coaching environments such as the pedagogic rationale and the broader impact on the young people, would not have been captured. Future research investigating coaching pedagogies should ensure the use of triangulated methods with data captured from as wider band of stakeholders as possible. Future research should also be applied to other coaching environments, most obviously in performance settings, but other situations such as those relating to individual sports as well as for special populations.

Table 1: ASUOI Coach Behaviour Frequency, RPM and Percentage for Case 1 - Peter

Categories	Frequency	RPM	Percentage
Use of first name	107	1.19	31.20
Pre-instruction	3	0.03	0.87
Concurrent instruction	4	0.04	1.17
Post instruction	0	0.00	0.00
Praise	51	0.57	14.87
Scold	2	0.02	0.58
Hustle	12	0.13	3.50
Model +ive	2	0.02	0.58
Model -ve	0	0.00	0.00
Questioning	32	0.36	9.33
Management	76	0.84	22.16
Physical assistance	8	0.09	2.33
Uncodable	21	0.23	6.12
Silence	132	1.47	38.48
TOTAL	450	5.00	

Table 2: Crosstabulation of session context by participant activity and coach interactions for Case 1 - Peter

Categories		I	M	L	ML	MLO	None	VTe	NVTe	VTa	NVTa	Total
General management	Count	58	-	4	-	8	31	-	-	39	-	70
	Percentage	82.9		5.7		11.4	44.3			55.7		40.5 [^]
Technical skill practice	Count	-	-	-	-	-	-	-	-	-	-	-
	Percentage											
Applied skill practice	Count	-	-	-	-	-	-	-	-	-	-	-
	Percentage											
Modified game	Count	9	-	55	21	2	84	-	-	3	-	87
	Percentage	10.3		63.2	24.1	2.3	96.6			3.4		50.3 [^]
Small sided game	Count	-	-	9	6	1	15	-	-	1	-	16
	Percentage			56.3	37.5	6.3	93.8			6.2		9.2 [^]
TOTAL	Count	67	-	68	27	11	130	-	-	43	-	173
	Percentage	38.7 [†]		39.3 [†]	15.6 [†]	6.4 [†]	75.1 ^α			24.9 ^α		

N.B. Movement categories are: I (Inactive), M (Motor response), L (Locomotor), ML (Motor-locomotor), MLO (Motor-locomotor off-task)
 Coach interaction categories are: VTE (verbal technical), NVTe (non-verbal technical), VTa (verbal tactical), NVTa (non-verbal tactical)

[†] Denotes percentages of counts for each activity category of the overall session

[^] Denotes percentage of counts for each context category of the overall session

^α Denotes percentages of counts for each coach interaction category of the overall session

Table 3: ASUOI Coach Behaviour Frequency, RPM and Percentage for Case 2 - Nigel

Categories	Frequency	RPM	Percentage
Use of first name	74	0.82	34.10
Pre-instruction	4	0.04	1.84
Concurrent instruction	38	0.42	17.51
Post instruction	5	0.06	2.30
Praise	24	0.27	11.06
Scold	1	0.01	0.46
Hustle	0	0.00	0.00
Model +ive	7	0.08	3.23
Model -ve	0	0.00	0.00
Questioning	41	0.46	18.89
Management	22	0.24	10.14
Physical assistance	3	0.03	1.38
Uncodable	34	0.38	15.67
Silence	38	0.42	17.51
TOTAL	291	3.23	

Table 4: Crosstabulation of session context by participant activity and coach interactions for Case 2 - Nigel

Categories		I	M	L	ML	MLO	None	VTe	NVTe	VTa	NVTa	Total
General management	Count	21	-	11	-	-	13	7	-	10	2	32
	Percentage	65.6		34.4			40.6	21.9		31.2	6.2	33.0 [^]
Technical skill practice	Count	33	28	4	-	-	40	14	6	4	1	65
	Percentage	50.8	43.1	6.2			61.5	21.5	9.2	6.2	1.5	67.0 [^]
Applied skill practice	Count	-	-	-	-	-	-	-	-	-	-	-
	Percentage											
Modified game	Count	-	-	-	-	-	-	-	-	-	-	-
	Percentage											
Small sided game	Count	-	-	-	-	-	-	-	-	-	-	-
	Percentage											
TOTAL	Count	54	28	15	-	-	53	21	-	14	3	97
	Percentage	55.7 [†]	28.9 [†]	15.5 [†]			54.6 ^α	21.6 ^α		14.4 ^α	3.1 ^α	

N.B. Movement categories are: I (Inactive), M (Motor response), L (Locomotor), ML (Motor-locomotor), MLO (Motor-locomotor off-task)
 Coach interaction categories are: VTE (verbal technical), NVTe (non-verbal technical), VTa (verbal tactical), NVTa (non-verbal tactical)

[†] Denotes percentages of counts for each activity category of the overall session

[^] Denotes percentage of counts for each context category of the overall session

^α Denotes percentages of counts for each coach interaction category of the overall session

Table 5: ASUOI Coach Behaviour Frequency, RPM and Percentage for Case 3 - Andrew

Categories	Frequency	RPM	Percentage
Use of first name	161	1.79	33.13
Pre-instruction	48	0.53	9.88
Concurrent instruction	86	0.96	17.70
Post instruction	23	0.26	4.73
Praise	77	0.86	15.84
Scold	13	0.14	2.67
Hustle	74	0.82	15.23
Model +ive	5	0.06	1.03
Model -ve	0	0.00	0.00
Questioning	38	0.42	7.82
Management	56	0.62	11.52
Physical assistance	0	0.00	0.00
Uncodable	13	0.14	2.67
Silence	53	0.59	10.91
TOTAL	647	7.19	

Table 6: Crosstabulation of session context by participant activity and coach interactions for Case 3 – Andrew

Categories		I	M	L	ML	MLO	None	VTe	NVTe	VTa	NVTa	Total
General management	Count	43	-	9	-	2	17	24	3	7	3	54
	Percentage	79.6		16.7		3.7	31.5	44.4	5.6	13.0	5.6	37.5 [^]
Technical skill practice	Count	-	-	-	-	-	-	-	-	-	-	-
	Percentage											
Applied skill practice	Count	2	-	13	30	1	22	22	-	2	-	46
	Percentage	4.3		28.3	65.2	2.2	47.8	47.8		4.3		31.9 [^]
Modified game	Count	4	-	12	6	-	15	3	-	-	4	22
	Percentage	18.2		54.5	27.3		16.8	13.6			18.2	15.3 [^]
Small sided game	Count	1	-	10	11	-	19	2	-	-	1	22
	Percentage	4.5		45.5	50.0		86.4	9.1			4.5	15.3 [^]
TOTAL	Count	50	-	44	47	3	73	51	3	9	8	144
	Percentage	34.7 [†]		30.6 [†]	32.6 [†]	2.1 [†]	50.7 ^α	35.4 ^α	2.1 ^α	6.3 ^α	5.6 ^α	

N.B. Movement categories are: I (Inactive), M (Motor response), L (Locomotor), ML (Motor-locomotor), MLO (Motor-locomotor off-task)
 Coach interaction categories are: VTE (verbal technical), NVTe (non-verbal technical), VTa (verbal tactical), NVTa (non-verbal tactical)

[†] Denotes percentages of counts for each activity category of the overall session

[^] Denotes percentage of counts for each context category of the overall session

^α Denotes percentages of counts for each coach interaction category of the overall session

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