Central Lancashire Online Knowledge (CLoK)

Title	The epistemological chain in action: coaching in high level golf
Type	Article
URL	https://clok.uclan.ac.uk/31155/
DOI	
Date	2013
Citation	Grecic, David, Macnamara, Aine and Collins, David John (2013) The epistemological chain in action: coaching in high level golf. Journal of Qualitative Research in Sports Studies, 7 (1). pp. 103-126. ISSN 1754-2375
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The epistemological chain in action: coaching in high level golf

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Abstract

An epistemological chain, as it relates to sport, may be understood as the sequencing of tacit coaching knowledge that a coach may adopt or impart to a given performer in a given sport. It is a make-up of beliefs and actions that constitutes how they go about coaching. The aim of the study was to explore the nature and application of the epistemological chain (EC) construct in the decision making of high level golf coaches. In particular we were interested in determining whether the EC was evident and operationalized in a coherent manner. Five male high level golf coaches interviewed in an earlier study were observed delivering a coaching session. These observations provided the basis of subsequent semi-structured interviews which explored general behaviours in order to determine the overall implementation of the EC. Data were analysed to identify themes aligned to the core elements of the EC. Results indicate that the EC is indeed present in a coherent fashion and highlights its utility as a guide and framework for coach reflection and learning.

Key words: *philosophy, professional practice, sports coaching, coach education*

Introduction

The issue of how a coach's philosophy impacts, both directly and indirectly, upon their coaching practice is an area of growing interest (Partington and Cushion, 2011; Cassidy, Jones and Potrac, 2009; Jones, Armour and Potrac, 2004; Nash, Sproule and Horton, 2008; Lyle, 1999, 2002; Martens, 2004; Vealy, 2005). Research has shown that the values, experiences and beliefs of the coach can directly affect the actions taken (Camiré, Trudel and Forneris, 2012; Collins, Gould, Lauer and Chung, 2009; McCallister, Blinde and Weiss, 2000; Wilcox and Trudel, 1998). Furthermore, the coach's philosophy can also impact upon their reflection on these actions, and therefore indirectly influences future behaviour through potentially asystematic reinforcement. In short, the coach's philosophy is an important component in understanding and, potentially, refining his/her coaching behaviour.

One area of philosophy which plays a major part in the relationship between thought and action is that of one's personal epistemology. In this regard, epistemology is seen as 'the nature of knowledge, both how it is constructed and

how it is presented' (Culver, Gilbert and Sparkes, 2012:262). Although research into the epistemology of sports coaches is an under-researched area, evidence from other fields highlights a direct link to behaviour and practice (Bachikirova *et al.* 2011; Friensen and Orlick, 2011; Poczwardski, Sherman and Ravizza, 2004; Tickle, Brownlee and Nailon, 2005). Indeed in education, which is a closely associated domain to sports coaching, research has identified how teachers' epistemological stances directly impacts upon their behaviour (Buehl and Fives, 2009; Chan and Elliot, 2004; Kang and Wallace, 2005). Despite the lack of a parallel research base in sport coaching, authors have identified the philosophy – knowledge – behaviour coupling which gives gravitas to this line of exploration (Abraham and Collins, 1998; Cote *et al*., 1995; Glbert and Trudel, 2001; Jones, Wallace and Potrac, 2003; Wright, Trudel and Culver, 2007). Responding to this particular research void and indeed the relative dearth of research on coaching philosophy (Cushion, 2006), Grecic and Collins (2013) provided a conceptual overview of how a coach's epistemology in practice could be identified and implemented. They employed an approach from educational research, the Epistemological Chain (EC), whereby the coaches' deeply held beliefs about teaching and learning would exert influence upon the methods, goal setting, player-coach relationship, and reviewing/assessment procedures adopted. Examples of how this would be operationalized by golf coaches with opposing epistemologies were provided, as was a discussion of how such epistemologies could direct various elements of the coaching process. In subsequent empirical studies of high-level coaches across different sports (Collins, Collins and Grecic, 2013; Grecic and Collins, 2012), this EC was articulated as being both present and aligned in a coherent manner throughout the decision making process.

Of course, there are a number of issues which occur in such 'self-report' investigations which can seriously limit the validity of results; not least the potential for inaccurate recall (Hayman, Polman and Taylor (2012), faked/true responses (Morgan, 1980), impression management and self-presentation (Leary and Kowalski, 1990), and the particular risk of participants manipulating their answers due to societal expectations (Williams and Krane, 1989). In order to counter these limitations, the natural progression was therefore to observe the coaches in action and determine whether indeed the EC influence was evident in their professional practice. Notably, this line of investigation has been given merit by Partington and Cushion (2011) in their study of elite football coaches who found an 'epistemological gap' between the verbal recollections of these coaches when compared with observations of their actual behaviour. Indeed in their review of qualitative sport psychology research Culver, Gilbert and Sparkes (2012) highlighted the relative lack of studies which provide multiple data sources to triangulate their findings. Recognising this issue, and supporting the sentiments of Sparkes and Smith (2008) that interviews are only one of a number of possible

techniques through which to gather rich information, we considered it important to investigate these issues using data on the coaches' EC, observations of actual coaching behaviour, and follow up interviews.

Accordingly, the present study's aim was to identify the EC in practice and determine its coherence (or lack of) by observing the physical coaching practices of elite golf coaches, seeking further insights, and then comparing these with the same coaches' philosophies and methodological decision making as self-reported 12 months previously. A positive result for this coherence would support previous research findings and the EC's wider application as a tool to support coach education and development (Grecic and Collins, 2013; Grecic and Collins 2012). A negative result, however, would open the debate to exploring potential limiting factors such as the coaches' perceived knowledge base (Abraham, Collins and Martindale, 2006, Cote, Samela and Russel, 1995, Cushion *et al*., 2003; Jones, Armour and Potrac, 2003; Saury and Durand, 1998), competence (Cote and Salmela, 1996; Cote and Sedgwick, 2003; Demers, Woodburn and Savard, 2006; Lyle, 2002; Santos *et al*., 2010), motivation (Jowett, 2008) cognitive dissonance (Festinger, 1957), and the coach – player dyad (Jowett and Cockerill, 2003; Jowett, 2007; Mageau and Vallerand, 2003; Poczwardowski, Barott and Henschen, 2002; Wyllerman, 2000).

What the paper is not

Recognising some of the limitations of previous qualitative research (Culver, Gilbert and Sparkes (2012), we made a conscious decision not to collate a recollection of single and specific, 'date stamped' events to explore generic behaviours. Nor was the intention to offer a systematic observation of coaching (Cushion and Jones, 2001; Ford, Yates and Williams, 2010; Mesquita *et al*., 2008; Schempp *et al*., 2004; Zetou *et al*., 2011) using tools such as the Coaching Behavioral Assessment System (CBAS; Smith *et al*., 1977), Arizona State University Observational Instrument (ASUOI; Lacy and Darst, 1984, 1985), or the Coach Analysis and Intervention System (CAIS; Cushion *et al*., 2012) to provide quantitative data on the frequency of such behaviours, especially since the relevance of 'mere observation' without exploration of the underpinning logic has been long (and consistently) questioned (Abraham and Collins, 1998; 2011). Instead the intention of the observation was to provide an assessment of general behaviours to stimulate debate about how these were rationalised within the coaches' own philosophies and in turn how this impacted upon their players. In this regard, McAllister, Blinde and Weiss (2000:36) note that 'the extent to which coaches can articulate their philosophies and the degree to which their behaviour parallels those philosophies are important in determining the nature of the participant's experience'.

Methods

Participants: Five golf coaches of high level players were purposely selected. The coaches were selected based on their experience working with elite golfers, their high status within the golf coaching industry (each was in the Golf Digest list of the Top 50 golf coaches), and the fact that they had previously been interviewed in a study which had exposed their deep held coaching beliefs (Grecic and Collins, 2012). The coaches' mean age was 57 years (SD=5) and each had over 20 years coaching experience (M=27) (SD=7). Each coach had over 15 years' experience coaching high level players (golfers with a 0 handicap or better i.e. plus handicap golfers) including international amateur and or professional players on the PGA European Tour.

Procedure: Each coach was contacted and agreed to participate in this follow up study. Data collection took place in two stages. Firstly, the coaches were observed delivering a coaching session to an individual or group of high level golfers (Professional or International Amateur players with handicaps of 0 or better). As the second step, the coaches were interviewed directly after this observation session in order to provide greater detail and context to the observed session. A semi-structured interview guide was developed based on the Epistemological Chain categories identified in Grecic and Collins' study of elite golf coaches (2012). i.e. how coaching philosophy underpins one's epistemology which in turn directly impacts upon the environment a coach creates, the relationships built with players and parents, goal and target setting protocols, the coaching methods used, judgements and assessments made, and ultimately the future direction of their work. In addition, coaching session field notes were utilised to guide the questioning and focus on critical incidents. The interview started with an introductory section outlining the purpose of the study and allowed a re-exploration of the coaches' golf coaching philosophy. The interview then focussed the coach's attention on the various elements of the session aligned to the EC elements. For example, in the section relating to 'methods' the coaches were asked questions such as 'describe what you were doing with (X) today? 'why did you choose to work on that?' and 'what other types of drills, games, practices, activities, do you use in similar situations?' In addition prompts and probes were used such as 'do you also focus on the (technical, management, mental, physiological) areas of golf?' and 'why/why not?' as well as reference to critical incidents observed during the session to solicit richer and fuller accounts of the coaches professional practice.

The interviewer (first author) was a high level golfer, a qualified golf coach and PE teacher. He has worked extensively in the golf coaching industry for 10 years and had been conducting golf related research for the past five years. As such he brought a level of insight and understanding which greatly enhanced the data

collection process. The second and third authors had completed various projects with high level golfers and were experienced qualitative researchers. The interview was presented as a follow up study into golf coaching philosophy and practice. Each interview took place at the coach's home club or coaching venue. Permission to record and transcribe the interviews was granted from each participant. Interviews lasted between 30-50 minutes and were transcribed verbatim. To ensure anonymity any details relating to the coaches' methods or players that may identify them have been removed and they were assigned the letter C (for Coach) and numbers 1-5 in the results.

Bias and trustworthiness

In recognition of the potential for researcher bias in all self-report studies (Cote, Ericsson and Law, 2005) several measures were adopted to establish the validity of results. Firstly the interview questions were based directly on action and incidents observed during the lesson thus assuming a more accurate and reliable recall (Ericsson and Simon, 1993). Indeed within previous golf research Hayman, Polman and Taylor (2012:10) highlighted the need to mitigate against the subjects recalling information that was 'systematically biased'. As such the interviews took place directly after the lesson to ensure that the participants did not forget and / or over-report (Stone *et al*., 1998), add effort after meaning (Brown and Harris, 1978), or change their account based on their knowledge of results (Brewer *et al*., 1991). Secondly we were keenly aware of the potential for response distortion within golf (Williams and Krane, 1989) and the ease with which such self-report tools could be faked (Morgan, 1980). This was especially important as we were operating within the domain of professional golf coaching where impression management can be vital for one's livelihood (see Leary and Kowalski (1990) for a comprehensive review of the motivation and application of self-presentation behaviours). In response the first author invested great time and effort in developing trust and a rapport with both coaches and players over many years by attending coaching conferences, workshops, training camps, meetings, International matches, Tour events and amateur competitions. In addition the coach subjects had been interviewed by the first author on numerous occasions as part of various research projects thus enhancing the subject – interviewer relationship (Sparkes and Smith (2008). Finally, whilst reflecting Culver, Gilbert and Sparkes' (2012) sentiment that interviews are not the sole method of collecting quantitative data, the study engaged in both coach observations and follow up interviews in order to triangulate the findings.

Data analysis

Qualitative content analysis was undertaken utilising the EC categories to guide the process. Here the raw data units of coach responses were initially considered to be part of the a priori EC domains, whilst a number of sub themes then also emerged

following this inductive / deductive content analysis. Yardley (2009:235) noted that 'the validity of research corresponds to the degree to which it is accepted as sound, legitimate and authoritative by people with an interest in research findings'. As such a number of validity measures were adopted during the data analysis phase based on the criteria offered by Lincoln and Guba (2000) and Patton (2002) This included data being triangulated to enrich understanding, followed by research team discussions to ensure reflexivity and highlight the potential influences of the first author on the data collection and interpretive process, and finally the search for dis-conforming cases that did not correspond to the emerging hypothesis of the EC in action (Creswell, 1998).

Results

To ease the comparison of self reported and actual application or otherwise of the EC the results are presented in a cluster around each individual coach.

Overview: All of the coaches interviewed as part of the study had promoted a holistic philosophy built on their responsiveness to player needs. They espoused the aim of empowering their players' self-learning. They described themselves as guides and facilitators, helping enable their players to self-evaluate and then problem solve their own games. Knowledge was claimed to be created and developed together on a learning journey where the coach would set challenges and help the player reassess their needs and plan their future direction. What follows therefore is a brief resume of the each coach's statements followed by observational notes and their answers to the follow up questions, which may be seen to qualify or contradict their self report data.

Coach (C1) self report data

C1 stated that his 'philosophy is all about self coaching about ownership and about skill development. It is about developing skills beyond just what the ball does, beyond can you hit a fade or a draw. It's also about creating an understanding, about developing the players' core knowledge'. He previously spoke of it being 'about how the players can actually become self taught and independent'. Of coaching practices where 'I present them with a lot of questions but it is that conversation and eventually how they go about answering those questions and how they think about the questions that show me whether we are being successful'. Also of how he gauges success 'by the attitude and the player's beliefs in what we are doing' and the 'need to give them something tangible, the games, the scores, the skills tests so that they and I can see the improvement'. In this way he developed the trust, the rapport and the 'buy-in' that was crucial to the player's development.

Observation of players: Coach 1 (notes made by David Grecic)

England Squad session - aim – getting them to experiment and try a variety of different shots to different targets eg. Hitting shots whilst being aware of the various positions of the club face at address, take away, top of backswing and at contact to create different ball fights and outcomes. Coach led warm up, physical and dynamic on the range. This was followed by a clear explanation of the session's aim. Good eye contact, clear instructions, area prepared in advance with target poles and hitting areas. Players were quiet and respectful at the start of the session and the coach tried hard to get their input constantly asking questions about the task, about the players' awareness of the club face and about how the players felt during the task. Lots of encouragement was evident but some of the players, two in particular, seemed to find the concept difficult to grasp. The coach modified the task constantly (changing start position, interim swing positions, required ball flight, and targets) to try and facilitate learning and develop the players' understanding. There was a constant checking for learning and the use of lots of examples (Tour Players, England players, local Professionals, game situations, course positions etc.) to contextualise the task or the problem which he had created for the players to solve.

The coach displayed a high level of knowledge about each player – evidenced by reference to recent performances, practice outcomes, shot preferences, swing characteristics, social life etc. He demonstrated a caring and supportive attitude in how he reassured his players when they exhibited self-doubt, offered praise and encouragement, and sympathised with one player who was feeling ill and thus modified the task and altered his expectations.

The coach sought constant feedback from the players but not about the outcome of the shots hit, rather about the process, about the players' decision making process, their problem solving rationale, and their subsequent level of commitment to the shot they had decided upon.

The coach imparted a lot of swing knowledge especially regarding the club's swing path, club face alignment, and shaft angles. He did this however through a process of guided discovery, questioning and challenging his players to experiment and find their own answers.

The session concluded with the coach summarising the session's aims and asking the players whether they felt they had achieved them and if so how personally they had experienced the process. He then encouraged them to remember the feelings from the session and the mental effort required and embed these within their individual practice regimes.

Follow up questions (interview between David Grecic and Coach 1)

How did what you were doing today link to your philosophy of coaching?

> …I was working on the awareness of the club, lots of mental effort. Hitting to targets, hitting different shapes, but trying to feel the face and shaft angle into contact. Lots of questioning to try to develop understanding, lots of reinforcement, lots of checking of understanding. I want the player to experience the feeling, to understand how they can control and apply the tool.

When questioned on the epistemological base within the session C1 explained,

> …It is about developing a clarity and understanding - this is a very slow process. It's about being creative having the competition skills - testing them, making it fun, creating and facilitating learning, creating the environment and an appreciation of the level of commitment that is needed to get to the top level. That's why those tasks today are so good. They require great mental effort. Great feedback.

When asked particularly about his coaching methods C1explained that for him,

> …The first point of call with each player today out on the range is first trying to find out what they know and understand about the game. To try and get them to play different shots. Swinging from out to in, from in to out, swinging down the line, changing the club face at impact, all the time trying to find what their core knowledge is about path, flight, contact, impact and loft. And just trying to get them to feel different types of shot. Giving them targets, different tasks, very task orientated, and also the task is to try and break down some of the barriers about how they think. Ultimately it is about getting them that core knowledge about the actual tool, the club works and what impact it has on the ball. The players do want to see something tangible and we do an awful lot of skills tests so that it is fine for me to say that they are developing knowledge, they are learning but they need to see something straight away something concrete that it is making a difference to their swing.

Pressed further on his methods he elaborated,

> …We do a lot of other things. This afternoon we will have our skills tests on the range and greens, and then it is onto the Par 3 course to play competitive golf and put our skills under pressure.

When describing his relationship with the players he again linked this back to his philosophy of coaching and the methods he employs,

> …The critical factor is the buying in of the players. What I do is a very different experience than their previous interventions in previous work therefore it's about trust. Sometimes the player trusts in the other coaches. They're going away and buying out the system so I'm conscious it needs to be non-confrontational. I use video clips from people they respect for example Ken Ferry (Local Tour Pro), Jack Nicholas etc. people that they know, to show them that skills matter.

When questioned about how the players are assessed and how they plan their future work together C1 noted that,

…The players are measured by the numbers but it's what's behind the numbers. It is about, what is the intention, did the players stay in the process, how was the process, did the intention link with the outcome, we need to come up with the system that is simple but we need a process that shows how close was the outcome to intention and how good the players are about doing something about it that's something that we need to come up with.

Coach (C2) self report data
When asked to restate his coaching philosophy C2 declared:

…It is about empowering the golfer. I am not a coach who gives you lists to take away – do this, do that. I want you to understand your swing and be able to use it and work things out for yourself. I want you to understand the underlying concept and then apply it to you.

He had spoken previously about his desire to get to the root of a problem explaining,

…I have a board in the teaching room with a quote about cause and effect. There can be many effects and I don't want to treat them. I want to get you to understand the underlying cause and then help you understand the cause and learn how to manage your swing. If you understand the cause and know how to rectify it then you will starve the swing errors and remove all the effects.

This approach espoused a teaching epistemology where he would educate and share the knowledge with his players so that eventually they could problem solve and self coach themselves.

C2 explained his aims,

…Well it would be all about empowering (the player) again. It would be about letting them decide what to do with their swing. When they understand the basics they can manipulate it as they like. Hopefully they will see the benefits and trust their swing'. He also described his coaching methods and his use of stories to get his points across. 'People think I am mad and I know it is a bit silly but I use the story of a conquer on a string. Everyone understands and can think of this. Small boys to Tour players they all can visualise and understand this concept.

On the issue of measurement and reviewing processes he stated,

…Well really it is about results. My players have won a lot of money on Tour but it is about players understanding their own concept and being able to work with it, and trust it.

Observed lesson: Coach 2 (notes made by David Grecic)
South African Tour player. C2 very relaxed and has a calming manner. Friendly introduction. Witnessed lots of questions about the player's recent rounds and scores, about his perceived problems with his game that had been evident at the recent Tour event in Morocco. He then sought to gain his own evidence about the individual from tasks he set out on the range – hitting a range of very 'pure' shots from a grass tee – 3 iron, then 3 wood and then driver from the deck, observing ball

flight, impact position and swing mechanics. He then went inside to his swing room where he asked the player to hit a range of shots into a net. The coach videoed the player and continued to ask questions about the player's personal background; home, health, education, family, hobbies etc. and about his game, goals, aspirations, perceived limitations etc. He asked what the player wanted from this first session. He then explained his way of working, to get to the route of the problem, to understand the cause and effect. The player wanted a cleaner strike and felt he was leaking it out to the right at crucial moments in championships. The coach diagnosed the cause as being an ineffective impact position where the player sometime became trapped behind the ball. The coach used analogies and examples from tennis in particular (the player had been a semi-professional player in his youth) to highlight weight transfer and create a more dynamic impact position. Trial and error experimentation followed in the net using video feedback to positively reinforce the correct 'move'. They then went back to the range and hit numerous shots focussing on the impact position and the ball flight outcome. The coach set a number of tasks / shots to hit and gave positive encouragement throughout, 'almost there', 'much better', 'great impact' etc. He then explained one of his particular favourite practice drills and asked the player to try it thus creating a benchmark by which he would gauge his future improvements. The coach and player finished by going back inside to the bar area and discussing their future schedules and work program.

Follow up questions (interview between David Grecic and Coach 2)

What is your coaching philosophy?

>…It is based on delivering a lesson that is realistic and achievable, and at the right time. For each lesson I try to set realistic and achievable targets. For each person these are different but no matter what I am working on the person needs to understand where this fits in for them. The why? How the small part fits into the whole so they are realistic and achievable for that player. It is based on a 'personal inclination'. It is realistic and achievable for each person. I use what works for them, what they understand at that time.

C2 went on to explain,

>…I use a lot of stories. I find most people, especially athletes, respond to a concept or a picture or an idea, for example the impact target today, it is better to tell a story about what the player knows rather than give him a list of components that when you put them together they will make up a swing'. I highlight his use of the video analysis as well. 'Video helps me provide the evidence. It helps get concepts across. I may use it for the player or we may get the evidence another way on the range, or the course.

Referring to the topic of relationships he explained,

>…I also see that Psychology is inherent in every golf lesson. I am trying to build confidence. That was my confidence drill you saw at the end- the 40 ball drill. The player hits first 10 balls focussing on only the strike. If he hits 8/10 well then he

moves onto the height. If he hits 8/10 same height / shape / airspace, then he moves onto 5 high, 5 low (8/10) if not then he goes back and tries again. This drives the question to the coach. It provides the evidence base. It develops confidence and trust is what we are doing.

When asked about the environment utilised for the lesson and my observation that his teaching room had no pictures or models on the wall to refer to he responded,

…No, you can't just point to X and say do it like that. Everyone is different. You don't live inside someone else's body! I need to work on the person how they are. Sure they can go to the gym and change their shape but I work with what is in front of me now. I'm not saying I don't show you pictures of others. I have loads on here (computer) but only if it is right for you.

Finally when challenged on how he measures success and links this into his future planned C2 explained,

…It is simply on results, on scores. You can be the best at the skills tests but you can't get it around a course. It's just what happens on the golf course. I don't use stats but I do look at Tour stats though for my players and then that determines what they want to do when they see me.

Coach (C3) self report data

…The real simple philosophy is engineering the opportunity for me to coach and for them to learn. Engineer that opportunity, try to give them some sort of appraisal, some sort of information, motivate them to work hard, continually appraise them, get your information right... and work hard'.

…What I am trying to do is to open the player up and create the opportunity to coach'. On the methods employed, 'I have a wallet that thick of challenges… So we do an appraisal / challenge… the way I work is appraisal – information – hard work then appraisal, more information, hard work etc. Appraisal will be different things for different players. For a normal player it may be hit some shots on the range and we'll look at dispersal. For someone else it might be more specific'.

With regards to reviewing progress and target setting he explains,

…It is on an individual basis but I do have a number of note books that I use. I keep notes on where each individual player is. I encourage the players to take notes. The players will have... do have their own individual video file within their area. They will have slow motion shots of each department of their game.... it is split into each area. It is well documented where they were, where they are now, how they are doing, and what they need to improve'.

He explained the competitive environment that he has built over many years where players constantly strive to be the best,

…If another player beat the score and was better than Dan, Paul, David, it makes the better players stand up and challenge themselves to try to get better. I'm down here with the Tour players in a few weeks and they come along to challenge themselves. It is part of their upbringing. They need to challenge themselves to see where they are and to plan on what they need to do.

Observed session (notes made by David Grecic)

England Elite Player session – Polite but very business-like introduction with the player. Already knew a great deal about the player's recent performances – knew all the stats relating to scoring parts of the game. Meticulous preparation. He had already set out numerous targets with identified scoring zones, in pre-planned, pre-determined positions at set yardages from the hitting area, all in accordance with a player's skills booklet that he had shown me. Huge performance focus of the session– skills tests to check progress, challenges set up for player to work through and record scores in order to identify their own priority areas. Few prompts, just observations and then later some pointers to help player improve scoring in identified area. These directions were always accompanied with a physical demonstration by the coach – always a perfect demonstration of how to play the shot. The coach was very demanding of the player's focus and effort, challenging him to perform. His extremely high standards were very evident in his own appearance, his equipment, and in his interaction with the player. He did not praise the player during the session although at the end during the review he noted the player's performance and improvement from his previous attempt. There was not a feeling of success or achievement, rather that of a work in progress. The player had improved but had not yet reached the standards that the coach or himself were striving for. The coach and player reviewed the session and reflected on what the 'numbers' (the player's score in the various skills tests) meant to them. The process was led by the coach but the conclusions and future areas of focus were all determined by the player. The coach reminded him of the coaching points that had been introduced through the demonstrations which he needed to work on. They agreed a plan of action and both made copious notes in their own handbooks.

Follow up questions (interview between David Grecic and Coach 3)

What is your coaching philosophy?

> …Creating the opportunity to coach! That is my overall philosophy. You do that by appraisal. Appraisal for a handicap player it would be to hit a number of iron shots down the range. For a good player it may be an appraisal of any area of their game. It may be an appraisal of their, putting, chipping, pitching, lofted shots, bunker play, driving. You appraise their course management, mental skills. When you have appraised their game then you know where you are going to go with them….When you give a lesson it is easy to be seen as criticising the player so you need a system of getting the opportunity to coach, so I have a system of appraisal.
>
> My aim today was to create the opportunity to coach. It had a performance focus, breaking down the short game into components. It was all about scoring, it's about scoring and winning.

When asked about the lesson and his use of demonstrations C3 explained,

> I'll read things see if it works that's when I'll try it on the player only when I've tried it myself and seen if it worked. That's why I demonstrate to show them that I trust what I'm telling them and that it works for me.

When asked about the players learning and how they develop their knowledge C3 explained,

> …We need to empower the player to know what they need to do. If we take the players out of that (process) then the coaches will know it but the players won't. The players get swamped with information. We need to get players to realise what they need to improve on to improve, not just throw knowledge at them - they may have more knowledge but they may not be a better player.

On the methods he employed during the lesson and in general C3 explained,

> …I created challenges, the books I've written, the skills challenge booklet. I feel that really the goal is to do everything to engineer the opportunity to coach to get players to realise they need to learn getting them to realise they may be good in their own environment, but against the best players we make them realise that they need to develop. If you have those challenges and the statistics on who is doing what, if you do an order of merit on all areas then the players realise they need to develop.

He went on to say,

> …What you saw today is me giving them the winning habits, the course scoring skills relative to the game of golf. If not players may be better at thinking, better at the swing but not better players - it's all about improving. I set up training in such a way that they appreciate what they're doing going back into components again- it allows the players to see where they rank it gets them to sit up and try and improve. I don't mind if they feel uncomfortable being compared to one another if it gives them the feeling they need to improve.

Finally when asked about his appraisal and planning with the player observed C3 explained,

> …Our goals are about winning. You can take other things in such as progress …. but it's a results business….In sports you just win or lose - it can be about performing, at being seen to try to improve things….you need to prepare to win that's the main thing. My goal, the goal is to develop the skills of the player so he can go on and achieve what he wants to be.

Coach (C4) self report data

> …I think ultimately you have to listen to the individual and listen to the individual's needs, you have to be flexible so for me my values, you know, I have to listen, I have to learn from each individual and adapt to each individual.

> …There is no blueprint for coaching but if there was one the blueprint would be to simply listen, to be adaptable, …everyone's is an individual. You have to move with what the individual requirements and needs are.

With respect to player learning, C4 reported that,

> …It is trial and error as everyone learns indifferent ways, some are kinaesthetic, visual etc so we all learn in completely different ways. Yeah sometimes coaching is trial and error, and finding out how an individual learns and giving them a good learning environment and you may have ten keys and nine of them don't work so it is finding that right key for the individual.

Observed session: Coach 4 (notes made by David Grecic)

A Swedish international amateur player, with whom the coach had worked for 7 years. The lesson was at the coach's club, in the coach's swing room. The focus of the lesson was a continuation on trying to get the player to have a flatter plane to the swing, to take the club away more on the inside, creating a lower and more rounded position on the top of the back swing, coiling up energy to create a more powerful, penetrating ball fight.

The coach knew a great deal about recent results and feedback from the player at events about their progress with the swing change. Initially he got the player to hit a number of shots to warm up as he activated the video analysis software. He recorded a number of shots in order to review progress. He constantly referred to the player's swing positions, using technical terminology, and highlighting various body and club positions on the computer screen. He asked a lot of questions about how the various swings felt to the player – but again focussed on individual aspects of the swing rather than referring to a holistic feeling. He directed the player's attention to the screen and to various aspects of technique. He explained minor alterations that were needed and physically manipulated the player into the desired positions. He then recorded more swings and used these and previous stored images of the player as comparisons on split screens and then superimposed to reinforce the difference achieved or required. Finally when the player felt confident of making the refined movements they went out onto the practice area and hit a variety of shots concentrating hard on testing the 'new' swing. At the end of the session the coach set a number of tasks and challenges for the player to complete whilst away from him and they agreed a method of feeding back the results.

Follow up questions (interview between David Grecic and Coach 4)
You speak about being a holistic coach and coaching the person but the session today seemed very technical to me almost with a pre-determined focus – a blueprint of a planned session. Was this intentional?

> …I suppose it may have looked like that but I have been with X for a long time now and I know what she wants. She is very technical and wants to learn and be coached in a certain way. You know you have to create that environment where (the players) feel completely trustworthy with you. And it is a skill that you have to learn. You have to be a good listener; you have to listen to them at all times. As I keep saying

you have to listen to what they the individual wants. Over the years I have listened to X and we have created this relationship and this way of working.

It does seem a very impersonal way of working though?

…Well - yeah, it can look that way, but it is down to the statistics but, it is down to results as well. I'll use X again. She's been the most successful one (of my players) this year. Top 10 already. She focusses on the stats so we look at all the stats throughout the season. We keep stats for the full season, fairways, greens, up and downs, sand saves, so we can look and we target areas that we feel that we need to really improve on. That is how we try to look at how to improve and that helps us set our goals at the beginning of the year.

Coach (C5) pre report data

…My philosophy, it's all about absorbing information and going and experimenting. I'm a bit of a pervert, I read a huge amount of things I'm very self driven I explore everything that can make a play better. My aim is to create self-sufficient players, warriors with a great desire, players that can drive well have great wedges and putt great.

Observed session: Coach 5 (notes made by David Grecic)

Very experienced Tour player. Focus on distance control for the short game scoring zone shots. Polite, friendly introduction. The pair had obviously agreed the focus of the session in advance and the coach had set targets and technical equipment up in advance. First the player hit a number of shots to various targets on the range to warm up. Then the coach activated the Trackman 3 Analyser (the most advanced IT launch monitor currently on the market). He then asked the player to hit a number of shots to a single target line in the distance but at different yardages. After each shot the analysis software gave a read out on a plasma screen of the exact distance achieved, static and dynamic loft, spin rates, trajectory etc. The coach used this information to deduct that the player's swing was de-lofting the club, imparting too much side spin, thus gaining additional unwanted distance, relative to the perceived 'feel' and effort exerted. The coach constantly fed back information to the player after each attempt, asking each time for the player's perception of distance and feel. Armed with this new information he sat and explained the data with the player. Together they problem solved the swing characteristics that may have created the outcome. The coach then videoed the player from both the side and behind, and together they analysed the footage to see if their hypothesis had been correct. The results showed that although the player's swing plane had indeed been slightly skewed, he had not been aware that he was also hooding the club at take-away and moving his swing arc forwards at impact. Together they experimented with modified set up positions and swing feelings to try and rectify the problem. Each time they utilised the video analysis, the Trackman swing and ball flight data, and their 'feelings' to triangulate the results of their alterations. When finally the pair had reflected on their experimentation, negotiated and agreed on the best option

the coach challenged the player again to hit a number of pre-determined yardages. The results were much improved in terms of accuracy and spin rate.

Follow up questions (interview between David Grecic and Coach 5)
Could you explain what you were doing with X today?
> …I'm big into measurements with the players, so with X we measure everything on all the data is available, real life data not just from skill tests. We try to get X and players to appreciate why they use data what impact the data can make and then the players are happy to use it. We aim to analyse the data on each player we need to measure performance, if anything is not directly improving the players' performance then we don't do it.

So how does this link with creating better decision makers and your philosophy of coaching self-sufficient players?
> …It is about using their stats to see what they need to work on. We sit down... you haven't hit many fairways so is the driver right. So we analyse certain small areas. If a person's pitching isn't right first we look at it. Is it the alignment, is it the club. But we are trying to get them to do that themselves, to be their own coach, because we don't see them that often. I see them at tournaments [etc.] but we just try to get them to look and analyse their weaknesses and see where they can improve.

So this then links into the future direction you take?
> …Yes, basically it is what suits the player. It is using the player's key stats to be taken into consideration for the planning stage. It could be all about the players' feedback - ultimately they're the only people that matter. We're doing this for the players. If we have these measures, we need to develop a program against what is agreed with the player.

Discussion
From the data collected it was apparent that the EC categories identified in Grecic and Collins (2013), and reported by professional coaches (Grecic and Collins, 2012; Collins, Collins and Grecic, 2013) were becoming evident during observations of practical coaching sessions. Indeed the probing of philosophy to practice and of critical incidents observed directly, illustrated the EC elements of epistemology, environment, relationships, goal setting, coaching methods, judgements made, and the future direction of the coaches' work. For example with respect to coach C1, the data revealed his passion to create a positive learning environment. He demonstrated an epistemology based on actions that tried to help the players experiment, create and develop their knowledge. He used a whole array of questioning techniques to ensure each player could explore their own games and appreciate their own role and control of their learning. C2's data reinforced this epistemology with guided explanations of 'cause and effect' with his methods and use of stories encouraging players to understand their game, self-diagnose and then cure themselves.

In C3's data the coach illustrated the EC linkages by focusing on 'appraisals' and challenges to enable players to make informed judgements, set their own future goals, and start the conversation of the methods required to achieve them. C4 meanwhile spoke a lot about the importance of his relationship with his players and the EC link to the methods he employed. Taken at face value his data first seemed at odds with his stated coaching philosophy and epistemology. It was only following further probing that the player's individual learning preferences came to light and we recognise these have previously been fully discussed and embedding into the coach's practical delivery. Finally C5's data referring to his use of technology offers a guide to how a coach can use new mediums to create knowledge and provide information to underpin his and his player's judgements. Here we see the EC in action as the coach using his state of the art IT equipment to support his coaching epistemology and feed forward into his negotiations with the player about of the future direction of their work.

Within this data we notice that in most instances the practical demonstrations of the EC in action appear a totally positive occurrence. However with C4's data in particular there seemed a mismatch of the coach's and player's EC. On investigation however this epistemological gap was explained through the relationship that had been built over many years working together. Indeed the apparent cognitive dissonance (Festinger, 1957) was a coaching compromise on the part of C4 which may have become manifest due to the sporting discourse of Professional golfer and Professional coach.

Limiting factors of the study

As is to be expected in a study of individual high level coaches, all were very different in their practical application of the EC categories. The results clearly show however that each coach articulated, demonstrated and reflected upon a very 'sophisticated' epistemology (Schommer, 1998) and did not exhibit an 'epistemological gap' such as that found in Partington and Cushion's work with professional football coaches (2012). Indeed all coaches were working towards a common aim of creating players as self-sufficient decision makers who can create, understand, challenge and then assimilate their own knowledge in order to improve performance. Of course some of the coaches' responses and behaviours may have been influenced by them wishing to convey a particular image (Leary and Kowalski, 1990), by the socialisation of the sport and the expectations of how a PGA Golf Professional (golf coach/instructor) acts (Williams and Krane, 1989) or by the degree to which the coaches wished to respond and gain credibility with the researcher (Morgan, 1980). Nevertheless each coach genuinely appeared to value the autonomy of the individual, and presented a coherent EC's in terms of the coaches' professional practice.

Conclusion

To conclude therefore the data collected in this study strongly validates and consolidates the self-reported coaching philosophies previously collected (Grecic and Collins, 2012), whilst the EC construct provides a valuable lens through which to assess these coaches' professional practice. As such these finding add more weight for the EC to be included in coach education and CPD training as theoretical concept, and a valuable planning and reflection tool.

Future research

The EC's impact to support the learning process and underpin reflection-on-action still needs to be explored further. The EC could also be expected to have an equally important impact within the related field of Physical Education teacher training. This would be a valuable new domain in which to test the EC's existence and influence on professional practice.

Although the study has validated the EC construct in action and provided some rich and interesting data the research the EC is articulated and experienced very much from the provider's perspective. Future studies would benefit from attaining the players' individual experiences of being coached by this study's sample of coaches. Only by collecting personal data from these elite golfers could the researcher truly to uncover the impact of these coaches' behaviours and their ECs upon performance i.e. as manifested by those who they coach.

Another aspect to be considered is the potential bias of the players observed being coached. Within the data there were great variance from the younger national squad members to experienced tournament professionals now achieving success on international seniors' tours. One could argue that these subjects' stage of development as elite athletes and their own epistemological stance could have moderated the coaches' behaviour and therefore affected the EC's application. Future studies would benefit therefore from homogenous samples, not just of the coaches themselves, but also for the participants taking part in the coaching episode. Insights into how these players' own epistemologies and how this complimented or contradicted that of the coaches would also be of great benefit.

Finally, reflecting on the research process itself, the nature of the data presented and mode of its analysis must also be considered. Despite a closer representation of the coaching event being expressed through the field observations and follow up questioning, the qualitative data itself were still analysed in a very positivist manner. Content analysis proved to be of great support to the researcher in analysing the data against pre-determined categories but this inevitable 'shaping' of the data may have lost some of the natural inferences of the coaches' comments and behaviour. A further evolution of the research would involve data relating to the players, and this

being presented in a more humanistic, less positivist way allowing the reader to gain a fuller insight into the true feelings and experiences of the users.

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JQRSS: Acknowledgement Footnote

1. *Author's reflective comment:* Following the feedback from my previous study I made a conscious effort to try to validate the coaches' self report data and uncover the true Epistemological Chain of coaching behaviour in action. The data observed and subsequent triangulation through the follow up interviews proved extremely valuable in this respect. What has been just as valuable however has been the impact this study process has had on my own thinking. In order to 'prove' my theory I adopted a very positivist philosophy to the data collection and analysis. Reflecting on the study however I realise that the process has acted as a gateway into a personal debate regarding the nature, utility and presentation of research data. Indeed this study has acted as a catalyst encouraging me to experiment with new forms of writing in order to offer the reader a deeper and richer insight of coach / player interactions, perceptions and cognitions. In this way the study has been instrumental in my research journey. It has helped me appreciate that there are many ways to present qualitative data not just those methods which I have used previously up to and included in this study.

2. *Author profile:* David Grecic has a background in sports coaching and sports management, and has a Master's degree, MBA and PGCE. He is currently in the final year of his PhD in Elite Golf Coaching Philosophy under the mentorship of Professor Dave Collins. David is the Director of the International Institute for Golf Education and has undertaken a review of England Golf's Talent Pool as part of his related studies. He is currently using his research with the England and Scotland U16 junior squads where he is acting as a consultant to develop their talent pathways.

3. *Dear reader*, if this article has stimulated your thoughts and you wish to find out more about this topic the authors can be contacted on: David Grecic DGrecic1@uclan.ac.uk, Aine MacNamara amacnamara1@uclan.ac.uk and Dave Collins DJCollins@uclan.ac.uk.

Reviewer (1) comments:

This is a paper of two halves in its structure and presentation; between the preceding theoretical content and the supporting 'live' data. There are pro's and cons to this approach which in this case leaves the data somewhat divorced from the theory which informs it. Both entities appear here as 'next door neighbours' when perhaps they should be married. There is a heavy emphasis given to vast areas of methodological understanding about knowledge creation and epistemology in the context of golf coaching. This seems to justify the collection of rich data rather than explain it, or delve into it, to reveal its 'hidden' meanings. It seems to be left to the reader to make connections to the bulky theoretical pre-text which in many cases was not immediately obvious. This divide could reflect how the researchers are developing and refining their thoughts about qualitative data and field research. At a basic level, the extent; depth and breadth of theoretical discussion offered, seems to be out of pace with what was, or might be, elicited from interviews as a sole method of data collection, i.e. staged interviews with coaches who are relying on their frail recall and idealistic rationalisations about their actions and beliefs, which may be a limiting factor in this research. However, the paper demonstrates a strong bias for the inclusion of data which indicates where the researchers' main interests may lie, this is good. There are some very interesting leads in the interviewee comments which point to some exciting research to come. This paper seems to represent a developmental phase in the life of an ethnographic field researcher, which in the pedagogical context of this journal may be a valuable jigsaw piece, not only for the authors but any reader who may be treading a similar research path.

Reviewer (2) comments:

As a golf enthusiast I have found this paper very interesting, more so the data as it gives some insight into a coach's thoughts as they interpret them. The difference between what a coach says he does and what he actually does seems to be the 'EC' epistemological gap that that is sought to be bridged in this study. However, I wonder what the real issue at hand is. If it is the product of that coaching knowledge; what the player does that may be of primary interest, regardless of how it may evolve or be delivered by the coach in question, then a knowledge 'gap' may be of no consequence – if the results are good. From reading the transcript notes these coaches might not concede to having gaps in their knowledge! Part of this study was to compare data from 12 months previously when presumably similar data collection methods were applied? Observing coaches in action and interviewing them again may yield no greater depth of insight to EC gaps than is exhibited here. Consider, within ethnography there may be ways for the researcher to get nearer to the actions of these coaches rather than observing and questioning them from a relatively detached field position.