Coaching quality and coach education: the impact of the internet.

A case study for archery.

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Abbreviations

AGB	Archery GB
BANC	British Association of National Coaches
BERA	British Educational Research Association
BPS	British Psychological Society
BS	Bullshit
CCO	County Coaching Organiser
CCPR	Central Council for Physical Recreation
CIMSPA	Chartered Institute for the Management of Sport and Physical Activity
CPD	Continuous Professional Development
CPSU	Child Protection in Sport Unit
FITA	Fédération Internationale de Tir à l'Arc
LTA	Lawn Tennis Association
MOOC	Massive Open Online Courses
NCF	National Coach Foundation
NGB	National Governing Body
NSPCC	National Society for the Prevention of Cruelty to Children
ONS	Office for National Statistics
RCO	Regional Coaching Officer
RSS	Really Simple Syndication
SPOC	Small Private Online Courses
UK	United Kingdom
URL	Unique Resource Locator
WA	World Archery

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Abstract

National governance of sports policy has developed internet-based platforms to promote, deliver and inform all sports at all levels. Such practice has been commonplace since about 2017 and has been increasingly relied upon since this time. Archery GB, the National Governing Body for Archery in the United Kingdom, alongside other sport governing bodies, adopted and supported this approach seeking to place elements of its coach qualification courses and most of its coach education, knowledge, learning and support online. With the emergence of Covid-19 and the restrictions placed on sport, the move to put the coach education content and delivery online hastened the urgency of hosting and transferring all their coaching programmes onto internet platforms to be rapidly deployed. This strategy is evaluated in this research using a mixed method research design through interviews and questionnaires with Archery GB coaches at all levels. The data were generated between 2020 and 2022 and analysed using the Realistic Evaluation framework of Pawson and Tilley (1997). The findings show that archery coaches used and consulted the internet and its various platforms for coaching related information and that for many coaches this may not be the ideal platform through which to provide the level of learning or knowledge that is required to enable a coach to be the best that they can be. Other outcomes explored in this thesis concern the levels of connection through the internet, how the internet is used by archery coaches, their preferred way of learning and suggestions for future research in this area.

Background and introduction to thesis

Sport England produced their strategy for sport coaching in 2017. It was titled*, "Coaching in an active Nation: The Coaching Plan for England 2017-21" (*Sport England, 2017). This has recently been updated and incorporated into a new plan "Uniting the movement" (Sport England, 2021). Both documents contain frameworks and direction for the use of digital platforms to improve access and interfacing with sport.

The Sport England plan (2017) highlighted possible barriers to coach education and qualification for example, the cost of qualifications and inaccessible or infrequent courses and outlined new tactics and factors on how to overcome these. The plan included suggestions to develop new ways to deliver sports coaching, regardless of the sport and to research new pathways to change how coaching qualifications can be achieved, making them more accessible using advanced technology. Applying coach learning into frontline practice and developing a culture of coach improvement through reflection, mentoring, communities of practice and providing access to high quality and online digital learning would have the potential to reduce barriers to coach education (Sport England, 2017). Building on this "Uniting the movement" (Sport England, 2021:38) notes that '…the Covid-19 pandemic has also accelerated progress, with sport and physical activity offers rapidly adapting and moving online to support thousands of people to stay active safely'. It further states the intention is to continue advancements in the area of digital and online development.

In the wake of the Sport England, 2017, strategy Archery GB released their "Coaching Plan 2017-2021" highlighting the need to create a culture of learning '…coaches can enhance their knowledge, skills and experience' (Archery GB, 2017:9). They also consider providing effective digital learning platforms as a priority.

Clearly, the desire to go online and digitally was, and still is, a frontline policy of sport administrators, bodies and financiers, yet there would appear to be little, if any, comprehensive research to suggest that this is a positive, necessary or required direction.

There has been some research undertaken to evaluate online learning. Investigations and studies by Lemyre, Trudel and Durand-Bush (2007), Hrastinski (2009), Stoszkowski and Collins (2016) and Koh, Lee and Lim (2018) have contributed to what little is known about coach education and the internet. However, there would appear to be little, if any research regarding whether sports coaches engage with the internet and online information, whether they find it useful, whether it is used to plan for basic, complex or adaptive coaching sessions; problem solving or as a motivator for creativity and innovation.

There would appear to be a lack of research to establish the extents to which the internet contributes to coach education and learning or how coaches use, if indeed they use, any of the information or knowledge available or gained from using internet platforms. Therefore, one of the objectives of this research project is to try and establish some baseline data and understanding regarding the use and interaction of sports coaches with the internet.

It will do this by using an interpretivist design (Carter, 2021) and a critical realist framework (Pawson and Tilley, 1997) to help '… test…' and generate theories (Pawson and Tilley, 1997 page 77) around the impact of the internet on coach education. It will also test and generate theories that explain the impact of the internet and online platforms for coach education. A mixed-method approach (Robson, 2011) will be employed in this study in which both quantitative and qualitative methods are used to triangulate (Carter, 2021) multiple perspectives from a range of stakeholder groups involved with coaching and coach education in archery.

Key Research Questions

- To what extent do sport coaches access and interact with the internet and its various online platforms and what motivates them to do this?
- How does providing learning and sports coaching information through the internet, online and digital platforms lead to increased learning and creative and innovative practice?
- If digital and online presentations cannot be challenged or queried at source, how is their effectiveness assessed for their positive contribution to increasing and developing coach learning and practice?

- How should quality control be made available for online and digital resources and what can be done to challenge and change content if it is found to be of questionable quality?

Outline of the thesis

The initial chapter provides a detailed and critical review of the literature around coach education and development, including the development of the internet, online platforms and social media. The relationships between learning theory and archery are also examined.

The approach to the research design is described in the next chapter presenting the methodological background to this thesis and the complexity of the strategy and the desire for robust research. The chapter explains the choice for a mixed method design under a Realistic Evaluation framework (Pawson and Tilley, 1997) explaining the 'context, mechanism, outcome' constructs upon which the framework is based.

Chapter three gives a detailed analysis of the data collected from the questionnaire section of the research project and also a detailed analysis of the semi structured interviews from the qualitative section. These are presented under the general heading of findings and considers the themes originating from the interviews.

Chapter four presents the conclusions drawn from the overall discussion of the findings through both the qualitative and quantitative results and also considers the fulfilment of the research aims and questions acknowledged earlier in this background and introduction.

Literature Review

Coach education, its development and its place in Archery GB

Introduction

This chapter explores in detail the development of British coach education within the wider context of sport and culture. The section begins by demonstrating how and why coach education commenced and developed, how it was, and still is, influenced by the principles of amateurism and establishes how the early involvement of the National Governing bodies of sport control coach quality. It also examines different forms of coach learning, and what research has reported on formal coach education and the challenges associated with this. The development of the internet and what we know about online learning.

The process of development

Prior to the Second World War and up to the mid 1960's there had been no discernible government policy on sport in the United Kingdom. The organisation most concerned with delivery and participation of sport, at that time was the Central Council for Physical Recreation (CCPR), who in 1957 appointed a committee to examine the current extent of sport provision and facilities throughout the country and what should be done by all existing voluntary and statutory sporting bodies to facilitate the promotion of games, sport and outdoor activities to enhance the welfare of the community (Carver, 2020). The remit for the Committee was wide ranging and the concluding report demonstrated the extensive range of topics considered and discussed. One of the factors reflected on, as influencing the progress of games, sport and outdoor activities was coaching (Wolfenden et al., 1960). The Wolfenden report commented on known historical and current coaching programmes, noting that athletics had a team of five fulltime coaches partly funded by a government grant and supported by a number of volunteer coaches. Although under the control of the National Governing Body (NGB) for athletics, it was not reported on how these coaches were selected and developed. The Lawn Tennis

Association (LTA) had a very similar scheme, but it was identified that there was a specific training programme for new coaches and a development programme for existing, qualified coaches as did Swimming (Wolfenden et al., 1960). Association Football also had a specific training programme for new coaches and a development programme for existing qualified coaches but did not receive any government funding for these. Other sports were noted as having coach training schemes aided by government funding included fencing, cricket, table tennis and judo. Finally, the Committee mentioned hockey, which although recently employing a full-time coach, had no specific coach training or development schemes. The coaches were noted as working within a number of different environments from international performance through to schools, colleges and universities and in such diverse settings as youth clubs, evening institutes and sports clubs (Wolfenden et al., 1960). Carpenter (2012) in her project on sport coaching traditions in the United Kingdom (UK) reveals that the amateur status of sports coaches and the lack of cross communication between sports resulted in this lack of homogeneity, appreciable variance and absence of logical structure and pathways, for both coach and participant.

The committees report, attempted to explain what they considered coaching to consist of, suggesting that the term coaching encompassed '….all forms of technical instruction related to a particular game or sport' (Wolfenden et al., 1960:40), enhancing their interpretation by describing the difference between coaching and instruction. Instruction, often interchanged with coaching, was placed under an all-encompassing title of leadership with a narrow description that related to outdoor activities and other physical pursuits as opposed to organised sports. The leadership title would also apply to teachers of sport in educational institutions and outside of organised sport under a specific NGB (Wolfenden et al., 1960). Today the relationship between coaching and instruction is more recognised as being similar in several ways. Both tend to carry the tag of professionalism as they are competent and experienced in their chosen physical activities or sport, they have the necessary skills and techniques to pass that knowledge to others. Differences between the two are the skill levels at which they tend to operate. For example, instructors usually work with beginners or novices or those populations who lack adequate levels or ability. Sport coaches tend to work with already skilled sports performers (Knudson and Brusseau, 2021).

Wolfenden et al., (1960) added that the word coaching was commonly used to describe a variety of functions; at the very pinnacle for champions to the very base of beginners, but that the word coaching encompassed all skill levels and compared this to a good coaching scheme which they believed '…should itself be comprehensive in scope' (Wolfenden et al., 1960:40).

In comparison, and to bring the definition of the role of a coach up to date, the Chartered Institute for the Management of Sport and Physical Activity (CIMSPA) currently define the role of a coach as, '…a coach will improve a participant's experience of sport and physical activity by providing specialised support and guidance aligned to their individual needs' (CIMSPA, 2020:Online). This infers that the scope of a coach is that they can have an inspirational influence on people and specific populations; they plan, prepare, provide and constantly assess and appraise sporting or physical pursuit activities; ensuring the participants needs are the central pillar of the sessions by taking an inclusive attitude, including ensuring the environment and culture aids them to develop to meet or exceed their aims and objectives; and by ensuring the experience is optimal by involving any additional supporting personnel as required (CIMSPA, 2020). This definition and associated behaviours are also those adopted by Sport England in their Coaching Plan for England 2017-2021 (Sport England, 2016).

The Wolfenden report clarified their position on what makes a good a coaching programme and that it should consist of two outlining characteristics. The first of these was availability; recognising adequate coaching, like sports facilities, were often deficient (Wolfenden et al., 1960).

The second concerned quality and was further broken down into four contributory features,

1. an aptitude to choose and plainly describe the rudimentary fundamentals of an activity.
2. a comprehensive understanding of the human body and its muscular functions.

3. possess good awareness of the technical aspects of the pastime or sport and,
4. possess a recognition of the wider context in which a sporting activity has in an individual's life.

With sport injuries now becoming a very litigious area, Wolfenden's characteristics were rather prophetic. Negligence on the part of an instructor or coach is becoming a part of the compensation culture evolving in our current climate (James, 2017). The characteristic steps outlined by Wolfenden, particularly quality, would ensure, if followed correctly, that the duty of care owed by the instructor or sports coach to the athlete would be comprehensively fulfilled. The instructor or coach would possess the knowledge to transfer the skills necessary to safely participate in the game, pastime or sport. They would also be able to recognise the physical and biological capability and capacity of the participant to prevent injury. Knowing the technicality of the sport or pastime would also assist in keeping the participant or player from injury or accident and in knowing the wider reasons for sports participation would enable the instructor or coach to deliver their duty of care and prevent negligence in the widest context (James, 2017).

Sport coaching was still in its early stages, so much of the content of a good coaching programme was based on previous experience and history. According to Carpenter (2012), many sports coaches had backgrounds in Physical Education teaching and post World War Two, there were those who had been physical instructors in the armed forces who were also willing to continue as amateur sports coaches. These individuals would have or should have possessed the learning to understand the basic elements of biology and behaviours to enable participants to steadily improve and develop. As most athletes and participants were of an amateur status with sources of income outside of the sport in which they were involved with no support after their sport career, at this time, there may have been a disconnect in understanding between coach and athlete in terms of athlete welfare. Physical Education teachers had their profession to rely on during and post coaching sports activities, however, participants would need to factor in considerations of availability of time to participate, injury and life, work, home balance and therefore an understanding of these impacts would need to be a consideration for a good coaching programme (Carpenter, 2012)

The committee further hypothesised that the four features noted above would manifest themselves through a coaching scheme that emerged as a result of collaboration between physical education experts, education experts and those possessing exceptional pragmatic qualities of their sport or activity (Wolfenden et al., 1960). Wolfenden envisaged a coach education framework that was consistent with the needs and competence of the coach, insisting that access to greater technical knowledge would be absolutely necessary to ensure that ability and competence did not become second to amateurish keenness and that coach education should attract sufficient candidates to ensure participants could be coached from school level through to adulthood (Wolfenden et al., 1960). The committee further discussed matters and offered advice on the founding basis of national coaching schemes which they perceived had to be under the control of a sports NGB to be successful. It was seen as necessary that an NGB had to have complete control over the coach education scheme. An imposed scheme, possibly by an outside body, was perceived as undesirable and therefore likely to be unsuccessful (Wolfenden et al., 1960). They advised that when a NGB launched a coach education scheme that they should appoint high level coaches to administer the scheme and that these coaches should have, at least, international high level competition experience and possess some form of professional training usually in physical education (Wolfenden et al., 1960). This would appear to contradict the committee's earlier definition of coaching; however, the committee had an expectation that those wanting to become the coaches of elite performers should receive the highest levels of coach education and development possible, which is consistent with the latter definition of the difference between a coach and an instructor (Knudson and Brusseau, 2021).

Carpenter (2012) highlights the amateur status of both sports coaches and participant with high level performers arising from the amateur milieu rather than planned pathways. At this stage in the development of sports coaches there was no recognised need to use differently experienced and qualified coaches to coach athletes and participants at different levels of performance. This development really started post Wolfenden with the emergence of Sport Science (Carpenter, 2012).

To avoid coaches and coaching becoming stale and banal the committee advised that re-examination for renewal of qualifications should be supported by coaches achieving minimally agreed coaching hours. Although this may lead to a high turnover of qualified coaches, this they argued, coupled with the majority of coaches being volunteers or part-time should lead to a stream of coach candidates bringing with them new suggestions, energy and keenness (Wolfenden et al., 1960). In some ways this policy was both prophetic and destructive. Suggesting that coaches needed to achieve a minimally agreed number of hours whether paid or volunteer has been demonstrated to be a reason for coaches leaving their positions (O'Conner and Bennie, 2006). Destructive in so far as there is no evidence that this policy leads to more coaches bringing new suggestions and elevated numbers of coach renewals could hinder the ability of a sport to continue its comprehensive athlete development (O'Conner and Bennie, 2006). Research would suggest that the more experienced and assured the coach is, the more they are likely to change routines and established methods and work towards different frameworks and methods by being innovative (Trudel et al., 2016). This suggests that the new suggestions desired, and welcomed, would not be found with the constant introduction of new keen, inexperienced coaches (Trudel et al., 2013).

There was also discussion regarding the needs of the beginner and the experienced performer; high level coaching and playing for fun; and for competent coaching at beginner level to ensure the conflicting attitudes of enthusiasm and ability is understood and developed and could be achieved by well educated, qualified and suitably experienced coaches (Wolfenden et al., 1960).

Following the Wolfenden Committee Report on Sport and the Community (Wolfenden et al., 1960) and for the next couple of decades, coaching continued very much as before, mainly occurring at grass roots by volunteers and laypersons with government involvement being distant but supportive (Taylor and Garratt, 2008). Eventually, following a number of government reports and papers in the 1970's there was a change in political positioning away from regarding sports and their coaches being largely the specialist authorities of their disciplines and being left to their own devices, to observing sport, and by implication its coaches, to be a potential social or welfare tool (Taylor and Garratt, 2008). Additionally, there was an aspiration to continually

progress norms, by establishing standards that would enable sports coaches to support and develop able athletic performers to achieve their goals (Taylor and Garratt, 2008).

According to Lyle (2002) sport coaching has its roots in physical education and instruction. The teaching profession and indeed the government's Ministry of Education were quite involved in early sports coach development, as stated earlier. However, following the altered and increased interest in sport coaching in the seventies there was a rapid progression from state support to independent governance of coach education resulting in the formation of the British Association of National Coaches (BANC) in 1965 (Lyle, 2002). Eventually BANC became the National Coach Foundation (NCF) and now exists as UK Coaching. The organisations objectives, as published in their Company Memoranda and Articles (NCF, 2018:1), are,

> '… specifically restricted to promote for the public benefit the education of all those who use coaching to deliver and/or encourage sport and physical activity.'

This was a proactive and positive response to the added government aspirations of promoting a more professional approach to sport coach qualifications and practice suggesting a framework benchmarked by National Occupational Standards, or National Vocational Qualifications' (Lyle, 2002).

There have been many research studies investigating the process of sports coach education, development and the specific learning processes involved. Studies by Cushion et al., (2003), Erickson et al., (2008), Mallett, et al., (2009) and Nelson , et al., (2013) all suggest that there needs to be a mixture of formal and informal learning. Furthermore, Sfard (1998) discussed the potentially, negative consequences of uneven learning in respect of only learning through experience and equally, only learning through a structured progressive system; for example, acquiring knowledge in a structured classroom setting may result in knowledge, however in the absence of participatory knowledge, applying classroom learning in a wider context may prove difficult (David et al., 2006).

Nelson et al., (2006) discussed several avenues for coach learning and offered that sports coaches did this in a number of situations, formal, nonformal and informal. Formal learning is regarded as learning that takes place in a structured system similar

to conventionally recognised educational organisations, for example NGB coach education programmes (Nelson et al., 2006). Nonformal learning is characterised by situations that are outside a formal process, and not within a formal framework (Nelson et al., 2006). Informal learning can occur in a variety of settings, usually informal, and is derived from experience and being on the job rather than through any formal process. It has also been described as self-directed learning as the individual decides what they are going to learn, when they are going to learn and how they are going to learn (Nelson et al., 2006).

In research by Trudel et al., (2016) it is suggested that there are other learning situations of mediated, unmediated and internal. They suggest that mediated learning is where the learning situation is directed by an organisation or other individual who is not the learner, unmediated learning is where the individual takes responsibility for what they are going to learn, when they are going to learn and how they are going to learn (Trudel et al., 2016). It is suggested that internal learning is where the learner does not actively learn anything new but takes time to reflect, either personally or with others, on what they already know (Trudel et al., 2016).

Other recent studies investigating personal learning and development and the use of the internet indicate that although the use of internet and particularly social media platforms are being increasingly used to support personal learning there has been very little research undertaken to support the effectiveness of this platform. There is, however, a recognition that social media may be used as a support system rather than as a purely educational process (Harvey et al., 2020). Much of the research being conducted is mainly related to Physical Education professionals rather than sport coaches. Research by Carpenter and Harvey (2020) established that the use of social media had produced evidence that users were able to identify opportunities for personal learning from these platforms, however, establishing the quality and validity of information along with navigating the platforms remained a challenge. The same researchers also investigated the connection between this style of learning and self-determination theory (Harvey and Carpenter, 2020) which is examined in the next section of this chapter. The use of a specific social network, Twitter, was examined by Richards et al., (2020) who found that once users had overcome initial intrepidation, Twitter was used as a source of learning and cpd, reduced isolation and aided the sharing of ideas and professional growth, although the researchers acknowledged

some challenges around quality, validity and male domination of the platform. Harvey et al., (2020) channelled their research specifically toward sports coaches' use of Twitter and arrived at similar conclusions.

Academics have generated theories and suggested frameworks for sports coach learning, leading to different pathways to successfully, or otherwise, become a sports coach with a recognised qualification. Researchers have discussed the advantages and disadvantages of learning through content specific NGB led courses through to coach's learning by observing or by being a coach, qualified or unqualified. None have been able to identify a utopian framework, direction or pathway of learning that will result in the perfectly knowledgeable coach. Sfard (1998) warned of the risks involved if a balanced programme of learning was not used. There has been recent research on whether internet and online platforms can create an effective learning platform for sports coaches to develop their practice and knowledge. Research by Koh et al., (2018) Werthner and Trudel (2006) and by Lemyre et al., (2007) has demonstrated that online learning can be effective in increased opportunities for sports coaches to learn. Although Wright et al., (2007) queried whether coaches actually used the internet for educational or learning purposes and Crawford-Ferre and Wiest (2012), Moustakas and Robrade, (2022) and Juliano et al., (2021) questioned whether the necessary learning could be adequately presented on the internet and its online platforms. They also queried whether a long-distance learner had the necessary equipment, environment, motivations and study skills to be able to use, and process, the information presented on the internet.

There has been much debate and research into the effectiveness of this structured and confined approach with reference to learning and continued personal development. For example, Pankhurst and Collins (2013) suggested that although many NGB's control policies and systems of coach education, and may have obligatory coach education and licensing systems, there is little evidence that taught coaches are provided with sufficient information on developmentally appropriate physio-mechanical and psycho-social skills of young athletes and that this knowledge needs to be integrated into coach education systems. A large number of coaches see their role as delivering outcomes rather than process, for example, that training for successful competition is more important than the welfare of the athlete, and that this may be due to the quality of coaching being judged on success rather than the creation

of a positive environment for athletes (Pankhurst and Collins, 2013; Kondos-Field, 2019; Whyte, 2022). This has the potential for coaches to evaluate their coaching practice against a gold standard rather than a realistic reflection against real situations, which may be interpreted as a negative action for both coaches and athletes (Nelson and Cushion, 2006).

It has also been suggested that due to gaps in coach education offered by NGB's of sport that much practice and acquired knowledge used by sports coaches is not derived from formal coach education but derived from individual constructs of previous understandings. It is therefore unsurprising that "reflection" has been suggested as a process that may bridge the various education and learning processes for sports coaches (Nelson and Cushion, 2006). Not only in post reflection on a planned activity or activities but also reflection during the activity, where a planned process or session may need to be changed because unconsidered or different factors occur to those anticipated and planned (Knowles et al., 2001).

If the coach education and development processes have not been found to be as comprehensive as they are required to be, what could be added to fill the gap and support the promotion of a sports coach as a professional discipline? Continuous Professional Development or CPD has also been suggested as a necessary component of a sports coach's education, learning and development (Nash et al., 2017). With the volume of research conducted and published on sports coach education and learning, and with the introduction of National Vocational Qualification standards, it is surprising that a comprehensive framework or model for NGB coach certification is extremely rare (Nelson and Cushion, 2006).

As stated earlier, the effectiveness of formal coach education processes has been much debated and frequently criticised with particular regard to the correct or good coaching process. It has been suggested that informal or non-formal learning may be as efficient at supporting emerging contexts within sports coaching, with specific reference to what is and is not perceived to be acceptable coaching practice (Stoszkowski and Collins, 2015), (Cushion et al,.2010). Further research and consideration of the failures of sports education and development led to a new strategy from Sport England (2017), "Coaching in an Active Nation: The Coaching Plan for England 2017-21". The plan highlighted possible barriers to coach education and

qualification for example - the cost of qualifications and inaccessible or infrequent courses - and outlined new tactics and factors on how to overcome these.

Developing ways to commence a sports coaching career, regardless of the sport, should change how coaching qualifications can be achieved and make them more accessible. Although largely untried this new initiative on applying coach learning into frontline practice and developing a culture of coach improvement through reflection, mentoring and communities of practice has been promoted. A further aspiration stated in the Coaching Plan for England 2017-21, is that it is hoped that by providing access to high quality and online digital learning it will have the potential to reduce barriers to coach education (Sport England, 2017) although no academic support is given to justify this position, nor an explanation provided of what barriers may be reduced. This could involve a move away from formal learning structures, pathways, and frameworks toward more informal and non-formal learning. The development of online collaboration has been evident over the recent past with the University of Central Lancashire evaluating its impact in their studies of “Using shared online blogs to structure and support informal coach learning” (Stoszkowski and Collins, 2017:247; Stoszkowski, Collins and Olsson, 2017). Online communication platforms, for example blogs, may be the way forward in providing resources for enhancing and increasing sports coach development and learning. These could exist in a formal situation or a structured framework that is tested in an educational environment. Or as an Informal situation where learning takes place in everyday experience, or in a non-formal environment where although the learning could be through a structured framework it is not usually undertaken in a formal environment. (Nelson et al, 2006).

Similarly it has been suggested that reflective practice may have a more beneficial effect on coach learning and development than more formal educational processes (Nelson and Cushion, 2006). Equally, there has been recent research on mentoring as a process of sports coach learning, where the traditional expert/learner mentoring roles are being replaced by learner/learner mentoring roles (Leeder et al., 2022).
Further research in mentoring in sports coaching has been undertaken as there are many different relationship and types of mentoring styles (Jones et al., 2009). It is suggested that just having the expert/learner relationship could promote socialisation with reproduction of current coaching customs and practice rather than a developing

and advancing culture. Indeed, it has been suggested that coaches experience different styles of mentoring in different contexts at different points in their coaching career and that no one size fits all (Jones et al., 2009). A recent study in online mentoring has suggested that mentoring may not be the informal and reflective learning process it was considered to be (Stoszkowski et al., 2017) and that for mentoring to be effective it may have to be more structured with different approaches and structures available at different stages of the sports coach's career styles (Jones et al., 2009).

Other research would support a more clearly defined route for CPD as a potential way forward, to the extent that several NGBs of sport use CPD as part of their sports coach re-accreditation process (Nash et al., 2017). Although suggested in the UK Action Plan for England (Sports England, 2016) that a framework for sports coach CPD should be created, this has never materialised. Nash et al., (2017) suggest that this may be because a one size fits all programme may not support the needs and skills gaps of sports coaches due the part time nature of most sports coaches and that different coaches may require different input at different stages in their sports coach careers. However, it was postulated that CPD for coaches was a positive contribution in their skill development (Nash et al., 2017).

Archery GB and coach education: embracing change?

Archery GB, formally the Grand National Archery Society, has followed a similar path of development in its coach education process to that identified by the Wolfenden Committee report (Wolfenden et al., 1960) and the study into the professionalisation of sports coaching produced by Taylor and Garratt (2008). However, there are some notable differences and deviations from these documents which require identification and explanation. Archery GB as the National Governing Body for the Olympic Sport of Archery placed the responsibility for its coach education and development programme into the hands of a small group of qualified archery coaches elected from its membership and known as the National Coaching Committee (NCC). They devised the content of the coach education and continuous professional development

programs and their roll out into the community of the sport interested in becoming and advancing in archery coaching (Archery GB, 2010). Although the archery coach levels have had different titles over the years, they have broadly fitted into four identifiable strata, beginner level, proficient level, skilled level and expert level, the latter being termed Senior Coach. The different grades were also promoted as hierarchical with each band having tacit authority over the lower qualified coaches (Archery GB, 2012). World Archery (WA), formally the Fédération Internationale de Tir à l'Arc (FITA), the world governing body for archery have a similar archery coach structure. It is not known if WA has followed Archery GB in the development of this structure or the other way around, what is noticeable is that they have very similar course content and objectives to the Archery GB scheme for coach education and development (World Archery, 2021).

In contrast, WA have a registration and qualification scheme for accrediting coach educators and developers (World Archery, 2021), which is where the World Archery and Archery GB programmes significantly diverge. The delivery of the coach education courses was made solely by those that fulfilled closely defined criteria, of which the main qualification was that they were qualified as a Senior Archery Coach and remained qualified at that level. The assessment of learning and whether to award a prospective coach a basic or advanced coach grade was completed by the Senior Coaches. Therefore, a Senior Coach could deliver a coach education course one week and assess participant candidate's competence, or otherwise, the next. It could be argued that, over the years, as very few coaches advanced from beginner to senior coach this might make the coach education and verification programme an institutionally, self-perpetuating oligarchy (Woodcock, 2018). Under recent research scrutiny, it was observed that the Archery GB coach education process was completely hierarchical and did not recognise prior learning or professional qualifications (Woodcock, 2018). This latter issue is quite remarkable as it appears to be contradictory to the Archery GB Coach License Renewal System – Continuous Professional Development Matrix which classes "working towards sports related degree" as carrying the second highest level of CPD points (Archery GB, 2015:1).

It is also noteworthy that in the same 2018 study there appeared to be a conflict between the Archery GB Coach Education syllabuses and the requirements of the sport. The study suggested that the sports talent pathway managers believed that the

archers engaging with the talent pathway did not arrive adequately prepared to the required standards of performance and technique. This they argued was entirely the fault of the mainstream archery sports coaches. The study concluded that due to the oligarchic nature of the coach education system that the institutionalisation, socialisation and philosophy of the coach educators it caused a defiance to change and could be a cause of this conflicting deficiency (Woodcock, 2018).

With the introduction of the promoted National Vocational Qualifications (NVQ) to the National Governing Body Coach Education processes (Lyle, 2002), Archery GB gained recognition initially for their Level One qualification and then eventually for their Level Two. It is not known why the County and Senior coach qualification did not achieve NVQ status, however, as the Level Two qualification at NVQ level was short lived it may be that the conflicts between the National Governing Body requirements and that of the NVQs could not be resolved.

Following the release of Sport England's coaching strategy (Sport England, 2016) Archery GB reviewed its coach education and coach development strategy. Recently releasing its "Coaching Plan 2017-2021" highlighting the need to create a culture of learning '…where coaches can enhance their knowledge, skills and experience '(Archery GB, 2017:9). The administration of coach education has been transferred from the National Coaching Committee to professionally employed experts working directly for Archery GB which should bridge and remove the disconnect between the performance requirements and front-line club coaches. Other headline changes include two new coaching grades, session and development categories, to replace the Level One and Two awards. The creation of a registered and qualified coach developer workforce, formerly the coach educators, which is open to any Archery Coach who possesses a Level Two or above award and has the necessary background and qualities as defined by the new lead team. Much of the course content has been moved online with the technical content of archery now being clearly and absolutely defined, although face to face classroom based learning is still a requisite component in achieving certification (Archery GB, 2020).

With Archery GB making many of its coach education resources web based through a number of different platforms including its website, YouTube and its recently launched "Learning Curve" web-based app, which has recently been placed under

review. It is not yet clear what the intention of the review is, although it is possible that it will become an additional accessible resource, which may assist in the break down in contradictions between the needs of athletes at the top echelons of performance and the needs of beginners to the sport to be the best that they can be by using a “one size fits all“ structure without allowances for age, gender, ability and physicality (Woodcock, 2018).

All these changes were due to be initiated in the middle of 2020, however, with the effects of the Covid-19 pandemic on participation in Archery and the sports educational courses, these changes were temporarily placed on hold until the control of the pandemic allows coaching practices to resume.

There would appear to be little, if any research regarding whether sports coaches engage with internet and online information; whether they find it useful; whether it is used to plan for basic, complex, or adaptive coaching sessions; problem solving or as a motivator for creativity and innovation. Could it be that Sport’s National Governing Body’s online presence could be used to limit or control coach learning rather than expand and progress it?

Getting online: a game changer?

Introduction

The process of additional development

Two years before the Wolfenden Committee released their report on Sport and the Community (1960), an unrelated but nevertheless significantly influential event occurred. The Soviet Union launched the world’s first artificial satellite on 4 October 1957 (Editors, 2019). In itself this event did not contribute to the start of the internet but due to its successful launch and operation it altered the American perception of potential susceptibility in their military and wider communications ability (Editors, 2019). Again, approximately two years after the publication of the Wolfenden report, an American scientist suggested a network of computers that could communicate with each other may offer a solution to this communication vulnerability issue (Editors, 2019). In 1965 another scientist discovered a system and protocol for sending information from one computer to another and in 1969 the first message from one

computer was successfully delivered to another computer (Editors, 2019). In the same year there were just four computers, two being the size of a modest dwelling, connected into a network, however, the network grew steadily throughout the next decade (Editors, 2019). The internet was born.

The sharing of data and files was initially completed from a fundamental, anchored source which could be accessed from remote terminals. The process of transmitting emails was developed in the seventies, from an antecedent of the internet using the @ symbol to allow messages to be addressed to identified users on identified computers and so the process of information and data exchange began (Gibbs, 2016).

By the early nineties, the technologies required to link many different computers together that were able to share and store information and data in single language that could be easily accessed from any computer were developed. This enlarged into the World Wide Web and was the basis of the formation of what we now have as an internationally available information access platform (Foundation, 2021). Alongside the development of the world wide web and email, computer technology also developed rapidly and through the development of the silicon chip and processor technology the computer became smaller, more affordable and transportable (Britannica, 2020).

Similarly, operating systems of these personal computers which permitted the development of software and internet gateway portals were also being developed (Britannica, 2020) ensuring the interconnectivity, availability, multi function and multi purpose platforms, software and hardware was fully utilised and integrated. As previously discussed, development of the internet has been harnessed from its early days as a simple, but global data processing protocol between computers (BBC, 2012) to the introduction and development of the World Wide Web by Tim Berners-Lee in the early 1990's and the deployment of the World Wide Web 1.0 in 1996 (Tambe and Vora, 2016). This early stage in development of the World Wide Web enabled the user to read pages of information. There was no ability to add, correct or comment on the information presented. It was not until the development of Web 2.0 technologies that interaction between users and those providing information became a reality. Through

the development of Web 2.0 technologies the creation of interactive groups and communities became possible (Tambe and Vora, 2016).

Tambe and Vora (2016:1111) state that 'social networks and blogs…' were established based on '…common attributes…' enabling the expression of '…views…' and obtaining replies from other participants, enabling '…online help facilities'. A good example of this is the Archery Interchange Blog (which has now developed into a website and social media platform). This is a user generated content community for all those interested in the sport of Archery (Interchange, 2021) It also established Really Simple Syndication (RSS) feeds, Wikis and Mashups (Tambe and Vora, 2016). RSS feeds are a process by which if a website, online blog or media offers it, whenever the site is updated, a notification is sent to you. Wikis, which means fast in Hawaiian, is a collaborative web-based platform that enables users to store, modify and create content in an ordered form. Similarly, a Mashup is a web application that can link several webpages into a single web page giving an integrated platform, it is quick and needs no new knowledge, hardware or software.

Stoszkowski et al., (2017: 407) highlighted how the development of the Web 2.0 protocols was facilitating and enhancing '…learning environments in a number of educational fields and learning environments, including teacher training, medical education and higher education'. They added that '…collaborative learning and reflective conversation' were proposed to be …a key potential outcome of such tools'. Stoszkowski et al., (2017:1) research into the use of '…using shared online blogs to structure and support informal coach learning', concluded that online group blogs had the potential to successfully aid collective sports coach learning and progression provided that it was suitably controlled and organised. However, Stoszkowski et al., (2017) drew attention to the fact that their results were obtained from a small sample and was that it was conducted over a short time scale. They also added three other caveats to their conclusion that this was'…enabling technology…' (Stoszkowski, et al., 2017:420) and that blogs were not a vehicle for learning individual skills or knowledge; that the content of the blogs were supported and appreciably enriched by structured and recognised learning; finally, that the number of individuals subscribing to the blog may have a bearing on its effectiveness. Too many, and the learning may become varied, too few and the learning may become too closed. Stoszkowski et al., (2017)

commented that further study was needed to establish potential optimum sizes of groups.

In the late 1990's there was an entrepreneurial recognition that organising the loose social networks and blogs into more organised platforms could result in commercial success while satiating a social desire (Dijck, 2013). Platforms such as Blogger, Wikipedia, Myspace, Facebook, Flickr, YouTube and Twitter emerged offering webtools that ignited online communications enabling both new and old forms of social interactions (Dijck, 2013). These platforms, far from being finished products, are dynamic so that they can be adjusted to respond to their users demands and their owners aims and also the threats from rival platforms that could challenge their popularity and market share. (Dijck, 2013).

There are different groups of social media accessible through the World Wide Web, which encourage loyalty through their social provision. For example, there are social network sites, such as Facebook, Twitter, LinkedIn and Google+ which encourage interpersonal contact between individuals or groups, examples of this would be the Archery GB Facebook and Twitter pages. User-generated content sites, for example, YouTube, Flickr, Myspace and Wikipedia which encourage the exchange of nonprofessional and professional creative and cultural content, again the Archery GB YouTube channel would be an example of this. There are also trading and marketing sites, such as Amazon, eBay and Groupon, targeting swopping, trading or selling goods and finally the play and gaming sites where users can indulge in competing with other users online, the above is far from an exhaustive list and should be seen as an attempt to demonstrate the wide variety of social media platforms and their appeal (Dijck, 2013).

Over the previous ten years there has been an explosion of social media platforms and although some have succeeded others have suffered from competition, for example, Flickr and Myspace, and some have disappeared completely, Xanger for example (Dijck, 2013). To give context to the scale of usage of the social network sites, worldwide, Facebook has approximately 2740 million users, with 50.36 million users registered in the United Kingdom. In a recent BBC report it was suggested that there are more than 7 billion people living on our planet with almost 3 billion of them

estimated to be regularly using Facebook accounts (BBC, 2021b). YouTube having 2291 million users world wide, it is not known how many in the UK, and Twitter having a mere 353 million registered users worldwide with 16.45 million registered users in the United Kingdom (Statista, 2021).

Social media platforms and sites are extremely popular with average connection time of over 1.5 hours per adult in Europe (Statista, 2021) and with 70% of all United Kingdom adults, over 16, using social media (Statista, 2021). However, the internet should not be viewed as just a vehicle for social media, it is also rapidly becoming the repository of accumulated knowledge and information accessible from anywhere provided you have either a computer, tablet, smartphone or gaming console and an internet connection.

Of note the internet has become a vehicle for learning. MOOCs or Massive Open Online Courses are an example of this. They offer a vast range of free online courses, open to anyone with a computer and internet access. Participation is voluntary and testing is usually automated (Race, 2014; Wheeler, 2015). The Open University is an example of a MOOC with their Open Learn courses. A further development of MOOCs is Small Private Online Courses or SPOC's. These differ from MOOCs in that participants usually need to fulfil some entry conditions and therefore not open to everyone and the number of participants on the courses may be limited. They may also involve a cost (Race, 2014). Examples of this would be the UK Coaching online learning courses and the Open University. There are now several "apps" which have been developed for specific organisations either to promote their products or to promote specific learning programmes within organisations, an example of this is Hive Learning.

Words of caution.

There is little, if any, research into the long term benefits or disadvantages the internet holds for its countless daily users, however, in relation to sport and sport coaching, the Chartered Institute for the Management of Sport and Physical Activity, (CIMSPA) the National Society for the Prevention of Cruelty to Children (NSPCC) and their Child

Protection in Sport Unit (CPSU) have all advised a degree of caution in its use. Recognising that the delivery of physical activity and sport online could be unsafe, CIMSPA, published their Policy and Guidance for the safe delivery online of sport and physical activity in late 2020 (CIMSPA, 2020a). It may be the first sports body to recognise the challenges of delivering sport related content online and provided some useful definitions for their perspectives. For example, they breakdown their interpretation of online delivery to include, live presentations and pre-recorded performances, delivered privately and also delivered openly. They also noted the most popular platforms over which online sport and physical activity may be broadcast. These included, but were not limited to, Facebook, Instagram, Zoom, Teams, YouTube, and Twitch (CIMSPA, 2020a). Categories of participants are noted along with user types. Unsurprisingly they strongly suggest that any person delivering online sessions must be appropriately qualified not only in the activity they are delivering but also to their participant audience, particularly if the content is aimed at specialist populations. It is also strongly advised that the deliverer must be appropriately insured (CIMSPA, 2020a). Also noteworthy is the insistence that a disclaimer is used both with live and pre recorded sessions, regardless of when the content is consumed and whether the sessions are private or open and that a verbal disclaimer reminder should be given at the start of the online session. The wording of the disclaimer is specified for all instances and an example is given within the guidance (CIMSPA, 2020a). Additionally, it is suggested that the sessions are recorded and that these recordings remain available for 3 years. CIMSPA state that not complying with the policy or guidance may affect the insurance cover the deliverer has in place. However, the policy and guidance only covers online sessions emanating from the United Kingdom (CIMSPA, 2020).

Currently, there are no international agreements in place, that would prevent sports coaches from outside the UK and its territories from providing coaching sessions online that may be of questionable content (CIMSPA, 2020). Although there are no references to any academic research that supports the CIMSPA policy there has been some academic research post Covid-19 pandemic that would support the policy document contents. For example, Moustakas and Robrade (2012) highlighted challenges of both technical and health related issues, particularly focussed on increased anxiety and stress when learning online. The need for a different approach

and training to be given to online presenters is also highlighted by Fish and Wickersham (2009), Crawford-Ferre and West (2012) and Ritter and Lemke (2000) all give indirect support to the contents of the CIMSPA policy and guidance to protect both learner and presenter for the safe delivery online of sport and physical activity.

On a more general but wider note there are several organisations that warn of the dangers of using the internet and social media sites particularly. The NSPCC, the CPSU, NetAware and Childline, amongst others all publish specific guidance and advice about the safe use of using online media as well as advice on potential dangers, how to spot them and what to do if you suspect abuse is taking place or has taken place. Sport's NGBs should also have specific policies regarding safeguarding and using online information or social media sites. These can vary substantially from the simplistic, "Online Safety and Social Media Policy", published by Archery GB to the extensive and detailed "Social Networking Guidelines", issued by British Gymnastics. Although these do not appear to contradict the policy and guidance on "Delivering Sport and Physical Activity Online" by CIMSPA, there are clearly issues raised by them. For example, the difference between sessions delivered as pre-recorded or live; invited, private or open audiences, that clearly need to be incorporated into the NGB policies. It is not known how many, if any, complaints are received by NGB's regarding online and social media activity or whether this is a real or perceived issue. As noted above research by Moustakas and Robrade (2012), Fish and Wickersham (2009), Crawford-Ferre and West (2012) and Ritter and Lemke (2000) in this area may assist in developing future policy and practice.

Although greater use of technology and online platforms are evident within sports and sport coaching, there is no research evaluating whether any issues such as cyber bullying or grooming will have an effect on sport participation or sport coaching. For example, would a negative cyberbullying incident create a barrier to future online education, including sport coaching and sport coach education? Although sharenting, a relatively modern word which is meant to describe a parent or guardian who shares images, information or videos about their child or children, is now a reported concern (Meakin, 2013) what, if any, will be the effects on those individuals who may have had their young lives exposed on internet and social media platforms without their permission on future online interaction?

There are other recognised hazards when using online information or data, for example, confirmation bias or the known human process of seeking evidence to confirm a held belief as opposed to seeking contradictory evidence to that belief (Klayman and Ha, 1987; Jones and Sugden, 2001). These are also known as echo chambers, with the added context that as online users tend to search or consult for like minded social media or other sites they refine their contact to those with which they have broad agreement (Flaxman et al., 2016). Filter bubbles, it is suggested have been effectively used, online, to influence user's opinions (Flaxman et al., 2016; DiFranzo and Gloria-Garcia, 2017). It is further suggested that algorithms used by social media and search engines, may, inadvertently, possibly deliberately, recommend user agreeable content (Garrett, 2009; Pariser, 2011; Manchester Metropolitan University, 2020). Fake news can be seen to be a reflection of filter bubbles. It has variously been defined as dubious information issued as news reporting (Collins, 2021). Dubious stories paraded as news disseminated through online platforms to try and persuade or as a jest (Cambridge, 2021) or post-truth.

Frankfurt (2005) is credited with condensing the statements that are given without concern for honesty or validation from individuals seeking to establish themselves as well informed on just about any topic, as Bullshit (BS). Frankfurt (2005) also examines the difference between liars and persons who make statements in the belief that they are true and suggests that these are empirically different from those who deliberately make false statements. A recent study emphasises the effect of BS on sport coaches and sport coach education, arguing that in the current vibrant and multifaceted coaching environment, exposure to this open online free for all, sports coaches may be more vulnerable to online BS. They continue with a proposal and framework for assisting sports coaches in evaluating the information that they may be presented with online and through social media (Stoszkowski et al., 2020). However, the framework is rather long and complex and may not be easily useable for many sports coaches. If the arguments bear fruit and sports coaches focus solely on online information for their development and education, is it possible that the quality and creativity of sports coaching may stagnate or be negatively affected?

The digital divide may also be storing problems and issues for future online use and education. The phrase digital divide was first used in America in the mid 1990's to describe the unequal access to online information and was used to outline the issue as technical rather than social. However, more recently the term has been redefined to encompass a broader range of inequalities, for example, financial ability to access online platforms, online literacy, access to quality internet connections and digital skills (Cullen, 2001; Light, 2021; BBC, 2021a; Servon, 2002; Warschauer, 2003). The Office for National Statistics (ONS) has produced some data allowing a closer examination of these inequalities. They focus on age, sex, time spent on access and to online literacy or digital skills. The ONS report suggests that 1 in 8 children aged 11 to 18 years has no domestic internet access from a computer or tablet. Of the children in this age group who had internet access they stated that they would find completing schoolwork difficult if they couldn't access it. There is a tendency for younger generations to be frequent internet users as adults over age 65 have, since 2011, been the largest group of non-internet users. It is reported that this divide is narrowing but with women trailing men. This pattern, by age group and sex is virtually the same when analysing digital skills, the over 65 age group showing that 76% had zero digital skills.

The way in which adults in the UK access the internet may also vary. Over three quarters of adults under 55 indicated that they accessed the internet from mobile devices, this form of access declined with age (ONS, 2019). The ONS comments further that although it is important to record that internet usage is increasing in older age population groups it is difficult to use this as a predictor for digital engagement. The report suggests that a longitudinal study of aging populations is important. The study also indicates that as young online literate generations age it is not clear that they will remain engaged as they grow older. Health issues, particularly cognitive health issues, together with advances in technology that may devalue or diminish learnt online skills are cited as possible reasons for age related decline. However, there is the possibility that development of online or internet technology could enable those same older age groups to engage more readily. The example given being the development of voice activated interfaces or digital assistants that can access online services without the need for a tablet or computer, removing the requirement for some digital skills. The ONS report suggests that future challenges in digital and online development will include ensuring any developments are age friendly (ONS, 2019).

It has been suggested that although the world wide web and internet offer us this knowledge resource, it is yet to find its place in education (Wheeler, 2015). It has been argued that although society in general has been positively responding to these new technologies, education has been particularly slow to transform its practises and procedures and adopt new educational practises. That although changes may be seen to be occurring now, and accelerated by the Covid-19 pandemic, in early changes the use of the new global technologies was reduced to the acquisition of hardware rather than incorporation of and access to the new reservoir of information (Wheeler, 2015).

Challenging this are the arguments surrounding creating adequate learning environments and assessment. Current educational practises are designed to ensure that both learning environments and assessments are designed to meet the needs of a society that probably no longer exists (Wheeler, 2015).

However, the recent Covid – 19 pandemic and the closure of schools and education establishments may have accelerated a change in education culture, process and content (Moustakas and Robrade, 2012). Fish and Wickersham (2009) highlight the potential dangers of simply moving classroom delivered content online without evaluating its effectiveness and with using teachers or instructors who have not received adequate training in how to deliver content online. Crawford-Ferre and Wiest (2012) also agree with the issues of using existing course design and deliverers without implementing an examination of content and training of instructors.

Ritter and Lemke (2000) in their survey of 236 geography students concluded that although the students tended to accept that learning via online platforms may have added to their learning, there was still research to be conducted to prove this, that the speed on moving learning onto online classrooms has yet to be proved as acceptable, therefore there may be potential for sports coach education to facilitate education, at least in part, online and digitally. However, there would appear to be little research into the desirability of this, the potential restrictions and constrictions of this approach and whether it has any negative or positive effective on sports coaches. Some sports coaches may already be embracing or rejecting these new technologies and educational approaches.

Archery, the digital age and learning theory.

Anyone with a desire to learn the Olympic Sport of Archery usually enters the sport by completing a Beginners session or “Start” Archery course. The course usually consists of a series of sessions to teach the learner participant how to shoot safely both for themselves and others, correct shooting technique, the rules of shooting and archery etiquette. It is usually delivered by an Archery GB qualified Coach in a Community Sports club facility and although it can be delivered as a one to one session, it is usually delivered to a group of participants. Each course can differ slightly both in content and from club to club as the delivery will depend on the participant group and the equipment and facilities available (Archery GB, 2021).

All coaching for the new participant to archery takes place in a face to face context, as coaches use practical demonstrations and a variety of learning techniques, for example, visual, auditory, verbal and kinaesthetic (Marcy, 2001) to assist the new participant in learning the new skills required to safely and accurately shoot an arrow. New participants to Archery used to be taught to a very specific programme due to the quite prescriptive NGB accredited Coach Education programme which promoted and taught new coaches to deliver a standardised programme to new athletes (Archery GB, 2010). However, recent changes to the Archery GB Coach education programmes are attempting to change the introductory course content and delivery from an instructive and formal process to a more empowering voyage of discovery, with greater emphasis on drills, technique, discovery and progress at the speed and discretion of the participant (Archery GB, 2021). As this is a newly introduced programme it remains to be seen if it is delivered in the predicted and anticipated way and whether it is a positive development for the sport.

The changes in Archery GB Coach Education are to move away from the previous prescriptive process of delivering a standard programme to a more empowering, reflective and experience-based qualification. They are also intent on moving away from a face to face Coach education programme to an internet based modularised learning platform (Archery GB, 2020). This has implications for those wanting to start on their Archery Coach journey, not least that although Archery GB continue to

advocate learning the sport in a social context, they now appear to support learning how to coach the sport in a totally contradictory none social setting, where, although the novice coach can learn from digitalised modules at their own speed and at a time convenient to them, there is no process to check what has been learned or even if it has been learned or any opportunity to interact informally with other learners.

There have been various research studies investigating the process of sports coach education and the learning process. Studies by Cushion et al. (2003), Erickson et al. (2008), Mallett et al. (2009) and Nelson et al. (2013) all suggest that there needs to be a mixture of formal and informal learning. Furthermore Sfard (1998) discussed the potential negative consequences of uneven learning in respect of only learning through experience and only learning through a structured progressive system; for example, acquiring knowledge in a structured classroom setting may result in knowledge however without participatory knowledge applying classroom learning in a wider context may prove difficult.

In this section I shall be considering several prominent learning theories and examining these in relation to Archery Coaching, Archery Coach Education and Online Learning. It would have been desirable to examine all learning theories, however, there are quite a large number of learning theories and space and time have dictated condensing this section into prominent learning theories only.

Behaviourism - Learning in the context of behaviourism can be defined as the acquisition of a new behaviour or the modification of behaviour as a result of teaching, training or tutoring. Learning is demonstrated by the behaviour of the learner in their actions or reactions to further stimulus (Woollard, 2010). This is usually achieved by developing previously learned information with the role of the teacher building the learning through modest straightforward steps or tasks. These tasks should be repeatedly practiced with the teacher offering positive encouragement that confirms the required behaviour and provides motivation for further learner development (Cushion et al., 2010; Nelson et al., 2016).

For a participant to start their archery journey they need to acquire the skills, knowledge and etiquette to be able to shoot arrows accurately and safely, for themselves and other participants. Therefore, most participants enter the sport

through a Beginners course portal. Although no two beginners' courses are identical, they contain elements of technical skill, range safety and personal safety that are consistent across the sport. beginners' courses are usually delivered by qualified archery coaches and are structured in such a way as to ensure the participant learns the new skill in bite size sections, from basic skills and drills, through to fundamental shooting technique, range safety and commands, typically over a 12 hour or 6 session period.

Applying Behaviourist theory to this process shows a compatible fit. The skill acquisition is learnt through building on a number of small straightforward steps with the coach offering encouragement and reinforcement of achievement leading to motivation to continue the learning. The health and safety aspects are developed by using previously learned knowledge of potential harm to be avoided to both self and others. Archery coaches should be able to apply Behaviourist theory, when appropriate to the learning of basic archery skills.

Is behaviourist theory applicable when considering the archery coach education process? There may be some opportunities to build knowledge on previously learned knowledge and skills however there are a number of teaching, leading and learning skills that are required to educate a diverse participant base that Behaviourist theory may not support or be an appropriate for. With the move by Archery GB to an online coach education structure this becomes a more evident issue. With progress being solely at the discretion of the learner and with little feedback, good, bad or indifferent, it is difficult to rationalise that the underpinning theory of Behaviourist learning can be achieved. There would appear to be limited opportunity for building the learning through modest straightforward steps or tasks, repeating, or practising these tasks repeatedly and with a teacher offering any positive feedback or encouragement that confirms the required behaviour.

Cognitivism – The theory of learning framed in this theory, is equated with separate changes between conditions of knowledge rather than with alterations in the likelihood of reaction. Cognitivism centres on the conceptualization of the learning processes and tackles the issues of how information is received, organized, stored, and retrieved

by the mind. Learning is concerned with what individuals know and how they come to acquire it. Knowledge acquisition is proposed as a mental activity that uses internal coding and structuring by the recipient. The learner is viewed as an active participant in this learning process (Ertmer and Newby, 2008)

Similar to behaviourism, cognitivism, highlights the role that external conditions play in facilitating learning. Instructional dialogues, demonstrations, illustrative models, and matched non-examples are all considered to be instrumental in guiding student learning. Similarly, emphasis is placed on the role of practice with corrective feedback. Up to this point, little difference can be detected between these two theories. However, the cognitive approach focuses on the mental processes of the learner that lead to a response and recognises the processes of mental planning, goal-setting, and organizational strategies (Ertmer and Newby, 2008). Cognitive theory challenges that environmental prompts and instructional components alone cannot account for all the learning that results. The focus of the cognitive approach is on changing the learner by supporting them to use appropriate learning strategies.

Although Cognitivist theory may be applied to some participants starting their archery careers it would appear more appropriate to those participants who already possess a degree of archery shooting knowledge and experience. There are elements of Cognitivism Learning theory that would point to individual experimentation, which is essential for the archery performer in their long-term skill development.

There may be more scope in applying cognitivist learning theory in archery coach education. Archery coaches will coach a number of different diverse, ethnic, sex, ability and age ranges of participants. They may specialise in a particular group as they gain experience, but on starting a participants journey in the sport, they will encounter many different individuals. Cognitivist theory will allow archery coaches to adapt their coach teaching style in recognition of individual needs. However, as with Behaviourist learning theory there may be archery coaches who lack the basic skills and experience on which to be adaptive and for this group, it may not be possible to instruct in adaptive styles. With Archery coach education programmes being moved to online modules, with progress being solely at the discretion of the learner and with little feedback, good, bad or indifferent, it is difficult to rationalise that the underpinning theory of Cognitivist

learning can be achieved (Fish and Wickersham, 2009; Crawford-Ferre and West, 2012; Ritter and Lemke 2000). There would appear to be limited opportunity for building learning by repeating or practising tasks, goal setting and corrective feedback outlined by this learning theory.

Social Learning – From a theory originally proposed by Abert Bandura in 1977, in its basic form, Social Learning theory proports to connect the learning process to and with social behaviours and suggests that new behaviours can be learnt by watching and copying others.

When applying this theory to learning the fundamentals of the sport of archery it can be observed that there may be parallels which could demonstrate the appropriateness of the theory. For example, in the introductory stages of participant involvement in Archery, technical instruction of the arrow shot sequence is usually visually demonstrated by the archery coach and observed by the participant to mimic, however, observation alone of the sequence may not be sufficient to transfer the skill knowledge to the participant. The angle at which the sequence is observed or demonstrated can lead to misinterpretation of the movement, for example, the draw back of the bow string. If observed from above or at a level angle from the side the movement can be interpreted as a simple pull back, however, the actual movement involves a rotation of the shoulder joint which usually needs breaking down the action into smaller sections and accompanied with some verbal instruction, demonstrated at the correct level and angles for the participant to observe. Similarly, the release of the bow string from the fingers of the bow hand could be open to interpretation if observation alone is used it might appear that the string is released by simply opening the fingers, however, to prevent the fingers disrupting the string on its release (and thereby affecting the flight of the arrow), the release of the string is part of an overall movement which again involves shoulder rotation. There are also issues around physical ability and injury sustained through the individual's life journey which may lead to injury if shot execution is not properly adapted to the individual. Social Learning of the basic archery shot may be adequate for some participants but completely disastrous for others.

With archery coach education Social Learning Theory corresponds with the informal learning as noted by Cushion et al., (2003), Erickson et al., (2008), Mallett et al., (2009) and Nelson et al., (2013), however there may be negative aspects to this type of learning alone. If archery coaches only learn in a single environment, they may be susceptible to only that which can be observed in that environment. This could limit the wider knowledge archery coaches clearly require when coaching such a wide and diverse participant range. There may also be issues around the socialisation of archery coaches. Learning a particular aspect, for example an updated technical model of shooting, and then returning to an established archery club might cause the updated archery coach to abandon the new knowledge they have acquired in favour of the traditional cultures of coaching within their club. Clearly, although Social Learning theory may be favoured by those who regard informal learning as an important dimension of overall archery coach education it may not transfer well to actual archery coaching situations. As stated previously with the NGB moving their coach education programme to being delivered online only, will remove many of the positives of social learning, as novice coaches will have no opportunities to discuss imparted information and clarify their meanings. Also as stated before this approach of online only for coach education would appear contradictory when the archery coach is expected to teach the sport in a Social Learning context.

Constructivism – According to Cushion et al., (2010) Constructivism is not a theory in its truest sense but more an encompassing narrative on a range of styles of learning. Simply, Constructivism is grounded on the notion that people actively construct or make their own knowledge, and that reality is determined by your experiences as a learner and interaction with your environment (Cushion et al., 2010).

There is a degree of conflict when applying constructivist learning theory to participant involvement in early archery instruction. Clearly, if participants construct their understanding of the sport from individual interpretation of the initial instruction, they may develop their shooting routine in a style and manner which may not be an optimal technique in either skill ability or injury prevention. However, there are contradictory considerations here, if the participant is sufficiently young and has little or limited life experiences, then they may be able to receive the instruction and construct a shot routine by listening, watching, engaging, and copying others. Through experimentation

they may be able to achieve an optimal shot routine and execution. The older the participant starts their archery journey the longer and more cluttered their personal life histories may become, which may inhibit their potential ability to optimise their shooting routine and shot execution through constructing or making their own knowledge. That is not to state that it would not or could not happen, but from the simple explanation of Constructivist Learning Theory, it carries a probability that it is less likely to occur.

With archery coach education it is quite difficult to understand where Constructivist Learning Theory would be appropriate. Again, the diverse range of participant, in every respect, with which the archery coach would be involved would require the archery coach to have an extensive knowledge and experience of coaching different participant populations, ability and age ranges. If the reality of your archery coaching is solely gained through the constructs of your own interpretations and experiences the coach's philosophy and coaching style may not be that which is required to ensure the participant develops to be the best that they can be. However, as stated above a coach that uses Constructivist Learning theory with young participants may find that by creating the correct learning environment and leading the young participant on a voyage of discovery that it may be a correct method to use. Given that there is evidence of potential confirmation bias when viewing information online, it would appear difficult for a coach education programme to be delivered comprehensively. If the student fails to interpret the information being provided in the manner intended simply because of their life experience and journey. Clearly, more input and clarification may be needed if placing coach education online if Constructivist Learning theory is the predominant knowledge acquisition route for the learner.

Experiential - Experiential learning is based on the philosophy of John Dewey, the essence of the theory being that the process of learning is achieved through experience and reflection on that experience (Nelson et al., 2016).

The obvious application to the archery participant and Experiential Learning theory could be that the two are incompatible. When the participant starts their archery journey, they usually have no or very little experience of the sport. However, instruction would give them that experience, whether they would be able to reflect on that

experience and learn through that reflection without the continued support of an archery coach is a separate discussion. The probability would be that an experienced sports participant who is taking up the sport in later life would have that potential whereas a young beginner may not posses those necessary life skills that would enable them to acquire sufficient experience and reflect on that skill and understanding to allow progress.

Archery coach education, however, is very much concerned with accumulating experience and using this in the many unique situation's archery coaches find themselves with diverse populations. Reflection would assist both the educator and the archery coach as this may aid the transfer of knowledge in the correct environment and with the correct delivery (Nelson and Cushion, 2006).

It can be reasonably concluded from the above that there are many different Learning Theories that can be applied to learning a skill whether this be in the sport of archery or in the archery coach education process. That there are many different learning styles, and each individual learner may have other characteristics which may mean that the learning style has to be adapted to meet their individual needs.

There is also the notion of andragogy, the concept that children and adults learn differently (Knowles et al., 2015). This again has implications for the archery coach and the archery coach educator, with very diverse age ranges in archery where participants can start their archery journey as young as 8 years old, although many choose to start at much later ages, and with archery coaches, who can start their careers at age 16, although many, again, choosing to start at much later stages in their life journey. A single faceted module delivery that is required to convey the same learning across many diverse populations and ages would not appear to be possible. In attempting this, without the proper research, which as yet does not exist, it may be seen as a gamble, based on factors unconnected with adequate learning opportunities.

Given the above is it possible that by placing instruction on the internet or in digital form that a single presentation can pass on the skills required to learn to execute the

shot safely and consistently as required by the sport of archery? Given the same platforms can archery coach education be delivered in a way that will give prospective coaches the tools to coach the vast myriad of diverse individuals the archery coach may meet on their journey, effectively and safely? To reconsider Sfard (1998) commentary on the potential consequences of unbalanced learning from a single source or aspect and that a balanced intake of formal, informal and nonformal learning may be more productive.

It may be possible that online and digital learning can be successfully achieved. However, without proper, consistent and longitudinal research to prove that these platforms are sustainable in achieving the required standards for participant and coach alike, it would appear that the rush to get everything digital may not be as effective or as productive as current face to face learning opportunities.

Because there is little evidence, if any, to suggest that internet and digital platforms contribute to the knowledge or learning of sports coaches despite the clamour and rush to involve these digital and internet platforms into coaching practice and coach education, data of the most basic type and scope needs to be accumulated. There was no information available to establish the extent of sport coaches' access and interaction with various digital or internet online platforms or the possible reasons that would motivate a sports coach to access them. Of equal, if not greater importance, there was no available evidence or data that would enable sports bodies to develop coach learning and development or communication policies for internet and digital platforms.

Method

Introduction

In this chapter, the aim is to guide the reader toward an understanding of the methodological approach and data collection techniques employed within the research. Initially the approach taken to develop and guide the research design is described. This should provide insight into the complex, developing and little understood area of research into digital and online sports coach education and learning and its potential influence on innovative and creative sports coaching knowledge acquisition. These poorly understood areas have had a major influence on the development of the research design. Other influencing areas are the theories and perspectives raised in the previous chapters.

The approach taken is roughly divided according to whether numerical, quantitative, data is collected or not. Quantitative data relates to volumes or quantities (values) and collecting this is often the approach used in research that uses questionnaires and experiments that need numerical scoring. Comparatively qualitative research attempts to capture and collect data that is not quantifiable, for example, thoughts, feelings, and experiences (Clark et al., 2021), with data involving words, statements, and other non-number components. The collected data is interpreted by the researcher in an attempt to reveal meanings, values, and potential explanations. It should be noted that the use of quantitative and qualitative methods is not mutually exclusive, some researchers use a mixed method approach to their research.

A rationale for a ‘pragmatist’ perspective of research will enable the utilisation of a mixed method approach and, according to Demant and Frank (2011:5) encourage research ‘…to break with mono-methodological perspectives’ to social research. Habitually, research using mixed methods evolved from a disjointed domain of assorted mixtures of methods to a more combined method which can define, explain and consider its merits and limitations (Demant and Frank, 2011).

Finally, this chapter will outline the participant recruitment approach and chosen methods and interpretation techniques employed for data collection and analysis.

The research methodology in context

At the time of writing there have been very few evaluations or published research into the influence or content of online or digital platforms designed to target their content at sports coach education or development, although many such platforms exist. For example, Pope et al. (2015) measured sports coaches' use of online sports psychology resources and how they utilised their data using a qualitative strategy. Hrastinski (2009) examined whether frequency of online participation would increase the levels of online learning and how increasing online participation could be developed, using a purely theory driven approach. Moreover, Carpenter and Krutka (2014) employed a quantitative approach in their study of the wider use of the internet social platform, Twitter, by educators and their use of the platform for education and learning.

As it is estimated that there are in excess of 110,000 sports coaches in the UK (Clark, 2022) a case study approach Clark et al., (2021), Robson and McCarten, (2016), will be adopted in this research. Attempting to research this entire sports coach population would be beyond the capabilities and capacities of this individual researcher so selecting a representative population that is familiar to the researcher and is of manageable size and diversity was selected. Koh et al. (2018) used a qualitative study approach to examine the degree to which young football coaches used internet resources to develop their coaching knowledge. While research by Stoszkowski et al. (2021), examined how sports coaches may critically assess the abundance of information that can now be found on the internet, however a literature review was used as the basis for this research. Given these brief, but important examples, it may be concluded that using larger populations as a basis for research could prove extremely problematic, so a case study approach was used in the present study.

Previous chapters have looked at the development of sports coaching and the main learning theories attaching themselves to sports coach development, learning and knowledge. There have been various research studies investigating the process of sports coach education and the learning process. Studies by Cushion et al. (2011), Erickson et al. (2008), Mallett et al. (2009) and Nelson et al. (2006) all suggest that there needs to be a mixture of formal and informal learning. Furthermore Sfard (1998)

discussed the potential negative consequences of uneven learning in respect of only learning through experience and only learning through a structured progressive system; for example, acquiring knowledge in a structured classroom setting may result in knowledge, however, without participatory knowledge and data, applying classroom learning in a wider context may prove difficult, as it could also be for online and digital learning.

Much less is known about whether archery coaches use, consult, or adopt information provided by online and internet platforms, which is of particular concern as it is not known whether sports coaches simply use these learning platforms to reinforce their own coaching philosophes and practises or whether they are used to improve, innovate, or expand coaching knowledge.

Research positioning.

The epistemological, ontological and interpretivist positions on social research methods have been debated and discussed for many years (Atkinson, 2012). In establishing an evaluation process there are a number of suggested theories and approaches from which to select an appropriate method. For example, formative, functional, tailored, naturalistic and responsive and realistic (Pawson and Tilley, 1997). Realist evaluation is grounded on the notion that the same intervention will be different for everyone, everywhere. The focal point rests with which circumstances with the how and what, works for all (Mercer and Lacey, 2021). It is appropriate to use such an approach for evaluating intricate interventions such as community innovations and programmes that involve a wider learning environment. Programme theories can identify the potential for how programme events cause outcomes (Mercer and Lacey, 2021). The purpose of a realist evaluation is to challenge and improve programme theory rather than determining outcomes in particular contexts. This approach would appear an appropriate approach where the use of the internet and online platforms to promote a specific field of sport education to a varied population. It also presents an opportunity to potentially identify any changes to everyone, everywhere when a similar large scale, unplanned intervention occurs, such as the response to the Covid- 19 pandemic.

Although ontological and epistemological positions have been mentioned it is fitting to describe the ontological and epistemological positions of this thesis in greater detail and as a reasoning for the research design. Succinctly, ontology is the ‘reality’ that the researcher investigates (Healy and Perry, 2000). It is the study of ‘being’ (Crotty, 1998). In this research the ontological positions that would rationalise the research design included.

- other people will experience interactions with the internet and online platforms differently from each other, so multiple perspectives are important to the research.
- the world of archery coaching, and coach development extends and exists beyond the researcher’s own knowledge and experiences.
- our experiences (in sport and physical activity) change the way the world is viewed, therefore a design that will capture this change is important to the research design.
- no single reality would highlight a research question immersed in a community or ‘real world’ background.

Having a pragmatic and subjective view of the world allows the researcher to reach beyond their own understanding of the nature of the world and how it should be studied (Moss and Knutson, 2007). This gave an appreciation that individuals react to the world differently. From an ontological perspective, this helped determine ‘value’ from the many perspectives and realities of those involved in the strategic activities. Additionally, this position recognises that these realities would change because of that involvement. Bhaskar (1975) suggests that this position will not allow us to know everything as our knowledge will always contain unexplored depths. Nichols (2005) however, suggests that it allows the researcher to approach the realities of programme experiences because of the systematic approach to knowledge.

The relationship between ontology and the research design (epistemology) is an important part of the research process. Carter and Little (2007) explain that how we ‘know’ about these realities or what we learn about them inevitably affects the methods chosen to study social phenomena and justifies the knowledge produced. Evaluation research allows for a number of epistemological paradigms to be considered depending on the context and setting for the research (Guba and Lincoln, 1994).

Therefore, the epistemological approach taken in this study was influenced by the work of Bhaskar (1975). Unlike positivism which separates itself from the real world and constructivism which is based on realities built on beliefs and ideals (Clark, 2021); this approach recognises that all observation is fallible and has error (Trochim, 2006) and accepts reality is 'real' but only imperfectly (the findings are probably true) and probabilistically apprehensible (Healy and Perry, 2000). This supports evaluation theory, which is also less concerned with truth, certainty, and more with determining the realities of delivering a series of complex social programmes in order to determine their worth (Clarke and Dawson, 1999). In taking a realistic epistemology, this research developed a 'family of answers' based on the 'CMO' model offered by Pawson and Tilley (1997) and consequently covered several contingent contexts and different reflective participants, albeit imperfectly (Pawson and Tilley, 1997). These answers, later described as outcome patterns, described the broad, generative mechanisms that operate in the real world and helped chart the journey from programme implementation to the extent to which the programmes contributed to the Strategy outcomes.

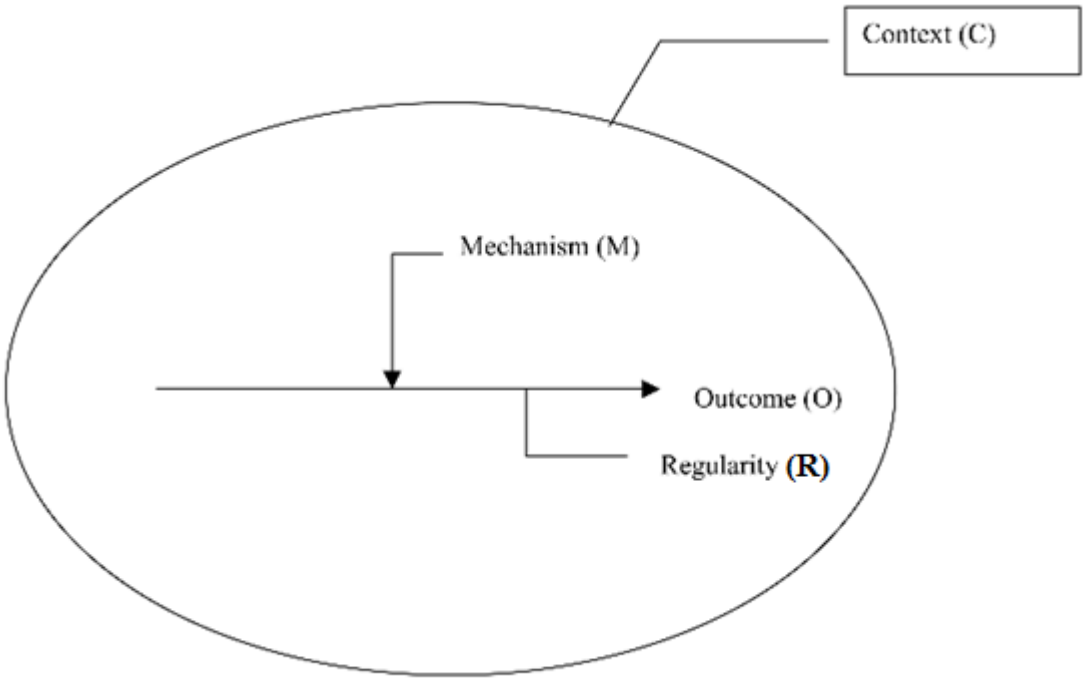

Figure 1 The 'ingredients' of a realistic evaluation (Pawson and Tilley, 1997: 72).

The goal is to position the interpretations of research data into a framework of social-scientific understanding. This will involve the researcher giving their interpretation of other participants interpretations, a double interpretation, often referred to as a double hermeneutic. This is significant for the research as it demonstrates that the researcher is utilising the interpretivist tradition and the need to scrutinise predeterminations with regard to research design, the collection of data and how the data is interpreted. Any implicit preferences of decisions should become explicit to enable greater examination for critical awareness (Clark et al, 2021).

A critical realist framework (Pawson and Tilley, 1997) will be employed in this study, to help test and generate theories around the impact of the internet on coach education. A mixed-method approach (Robson and McCartan, 2016) and (Clark et al., 2021) will also be employed in which both quantitative and qualitative methods are used to triangulate (Clark et al., 2021) multiple perspectives from a range of stakeholder groups involved with coaching and coach education in archery.

It is recognised that with an interpretivist epistemology using quantitative and qualitative methods may be problematic, however, despite the potential academic arguments and debates on the rights and wrongs of this approach the decision to use these methods was a practical one. The survey should not be viewed solely as quantitative as the survey questions are designed to collect both structured, quantitative data and insights or qualitative data. The use of data should then be seen as complimentary and not in conflict (Clark et al., 2012)

The mixed method design used is a qualitative data set which plays a supportive, secondary role in a study based primarily on a different quantitative data. The way the qualitative and quantitative approaches are combined through the entire evaluation framework is comprehensively detailed.

It should be noted that this research project was conceived and started before the Covid-19 pandemic. The Covid-19 pandemic caused many educational and commercial establishments to close for varying lengths of time during the early phases of the virus being established and prior to vaccine's being rolled out into the population. Given the research design considered and noted above, this would inevitably impact on the context for developing theories using Pawson and Tilley's framework. Due to the closures of educational establishments, businesses, and sports facilities many of

the operators of these environments sought to engage their pupils, clients, and customers online and digitally wherever and whenever possible. Consequently, the opportunity to examine if usage of the internet and digital platforms changed from before the pandemic to during the initial stages of the virus particularly during lockdown and curfew periods has been added into the research. An opportunity to discover whether any change in frequency of use of the internet and digital platforms has occurred due to the isolating effects of the Covid-19 pandemic will be included in the data collection phase of the research.

The Covid 19 pandemic had a significant impact on all sports across the UK and archery was not alone in having to respond to this. Throughout 2020 many sporting events were either cancelled, postponed, or shortened and this had a significant economic impact across sport (Skinner and Smith, 2021). Sport organisations, particularly those based locally or in amateur sports were impacted in their capacity to train, support and gather their members, as opportunities to participate and compete or volunteer in coaching, managing, or supporting sport were restricted (Manoli et al., 2022).

The 'evaluation research' approach

Realist Evaluation: A Framework for Evaluation

The approach taken is fundamentally driven by the research aims and questions, which are designed to establish knowledge to create evidence based, policy and operational change within Archery GB.

As previously noted, the relationship between ontology and the research design (epistemology) is an important part of the research process. Carter and Little (2007) explain that how we 'know' about these realities or what we learn about them inevitably affects the methods chosen to study social phenomena and justifies the knowledge produced. Evaluation research allows for a number of epistemological paradigms to be considered depending on the context and setting for the research (Guba and Lincoln, 1994).

On the one hand an approach was required that established the research on an academic level so that we may better understand which scientific principles are best applied in this research setting. According to Rossi et al. (2004), this is referred to as evaluation research and is according to some theorists a method driven approach (Patton, 2002; Rogers and Weiss, 2007) where there is less impetus on evaluative intent or utility and more focus on causality, application of methods and research credibility. On the other hand, this research was guided by the principles of evaluation upon which most authors agree, that evaluation must determine the merit of a programme or intervention and inform those who have a vested interest in that intervention. To some evaluation theorists, this is simply recognised as evaluation. Cordray and Lipsey (1987) described utility and practice as drivers of such evaluations. This framework develops theories through which informed decisions can be made at an operational level by suggesting a number of answers or insights to the issue of internet usage and as driver for coach education and development.

Pawson and Tilley's epistemological position is that '…it is not programmes that 'work', but the generative mechanisms that they release by way of providing reasons and resources to change behaviour' (1997:79). This process is termed generative causality. Rather than a programme having an impact on a person, Realistic Evaluation tries to understand the relationship between the participant and the programme (or between structure and agency). The ontological positions of Realistic Evaluation are based on Bhaskar's (1975) critical realism philosophy. That is, the world has to be understood at different human levels of nature that look beyond biology or physics and focus on human activity. Pawson and Tilley (1997) explain that social reality is stratified, and different social actors will perceive their own situations and circumstances differently.

The ingredients of a Realistic Evaluation are context, mechanism, and outcome. Rather than offer definitions for each component, the following explanation will describe the key characteristics of each ingredient using examples from the setting of this research. The logic behind realistic thinking is that social enquiry should act to explain significant *regularities* (R) or *outcomes* (O) such as changes in learning sources for the sports coach. Explanation may take the form of proposing some underlying *mechanisms* (M). Contexts (C) describe the circumstances that trigger the mechanism and outcomes. For example, the positioning of archery coach education

on an online platform alone are thereby reducing learning opportunities in a social community context. The *outcome* (O) may take the form of observable changes in coach behaviour, standards, and understandings.

The idea is to determine:

> …which individuals, subgroups and locations might benefit most readily from the programme, and which social and cultural resources are necessary to sustain the changes (Pawson and Tilley, 1997:85).

This explanation, through theory, is significant in evaluation research as it allows for the identification of relevant questions and appropriate methodological choices. As context shifts or changes, so too will the relevant theories, and so the questions can be adapted in terms of their appropriateness at a given point in time. Method driven evaluations would not accommodate for changes in context that are so apparent in the lifespan of an emerging sport and physical activity strategy.

A realistic evaluation perspective treats programmes not as targeted social systems but as an embedded and integrated social construct where the interplay of stakeholders, location, history and future prospects are key to explaining less about if the programme worked but what it was about the programme that may best explain why it worked. Indeed, central to Realistic Evaluation is its ability to acknowledge the context within which methodological decisions are made or as Pawson and Tilley (1997:159) noted '…only when we know what precisely it is we are studying can we reach into the toolkit for the appropriate instrument'. Consequently, Realistic Evaluation can be 'exploratory' (Pommier et al. 2010:3) in that '...the results of the first method (qualitative) help to develop and inform the basis of the second method (quantitative)'.

The latter perspective is important in a study of this nature where study design will change, and the change is brought about by the evaluation itself. Strategies are guides towards an agreed vision or set of goals. As with all good plans, those with the ability to adapt to new environments and cope with change may be more successful. Rather than be treated as a set of instructions, they are delivered dynamically, and are responsive to a change in direction when there is evidence that change is required.

Consequently, Realistic Evaluation, is the approach used in this study. Challenging the evaluator to understand the social world as perceived by the programme participants. This will include their view of the programme, which is embedded in their individual level of social reality.

Participant Recruitment

Due to social research in this area being in its infancy and with a lack of previous research on this subject a case study approach (Robson and McCarten, 2016; Clark et al., 2021), was employed. As discussed earlier, attempting to research the entire sports coach population would be beyond the capabilities and capacities of this individual researcher so selecting an information rich sample using a purposive sampling (Clark et al., 2021) population that is familiar to the researcher and is of manageable size and diversity was selected. Sub-groups were identified across the case study population, and these were identified as,

Level 1 – Volunteer Coaches: representing all coaching levels in Archery GB (Level1, Level 2, County, Senior). This group included Bernie, Phil, Martin and John.

Level 2 - Coach developers: representing those who deliver archery coach education courses and develop archery coaches at all Archery GB levels. This group included Harriet and Dave.

Level 3 - Archery GB coaching staff: including the Director of Sport, Head of Archery GB Coach development, Coaching and systems manager, Archery Performance coaches.

Subsequently and primarily due to reorganisation within Archery GB, those identified in Level 3 above became harder to identify within current job roles. Also due to a number of those in Level 3 being involved in coach education and development and also being responsible for placing the Archery GB coach education process to online only, a review of the level 3 participants was undertaken in an attempt to remove bias.

The parameters of inclusion were that the participants had to be over the age of eighteen, of any gender and a current licenced Archery GB coach or coach developer at any level of qualification. Any other sport coach or unqualified or unlicenced coach was excluded from participating in the study.

Participants were recruited from established Archery GB coaching internet and social media platforms, supported by direct emails to Regional and County coaching officers to encourage participation in the study by using their communication channels to the coaches within their respective areas.

Data Collection

The quantitative data approach.

A driver for this research approach was that due to the lack of basic data on the use of internet and digital information sites, it would be impossible to answer the primary research question, to what extent do sport coaches' access and interact with the internet and its various online platforms and what motivates them to do this?

According to Jones (2014) the type of information gathering tool most likely to be used in a quantitative research design for collecting data is the respondent completion questionnaire. Although questionnaires can be used to accumulate data for qualitative research, they are mainly used in quantitative studies where comparatively simple, largely general quantitative data is required from a sizeable sample group (Jones, 2014). The advantages of using a questionnaire to accumulate substantial amounts of data lay in their ease of access.

Due to the lack of any data on usage of the internet and online platforms by sports coaches the research method required a preliminary level of data to be initially explored. If there was no interaction between the focus population and the internet the study would be largely useless. The research design therefore needed this opening data before it could proceed to answer the key research questions. A questionnaire would also allow between methods triangulation to be achieved when analysing the completed data (Clark et al., 2021).

To acquire data relating to this question a validated (Carpenter and Krutka, 2014) questionnaire was considered as the primary collection method, this would be an appropriate use of questionnaires as a research tool and should achieve a satisfactory volume of interactive data because a high-volume mass of quantitative responses would be gathered. However, although questionnaires can be easily and widely distributed there is no guarantee that they will be completed and returned and a low response rate may have a negative effect on the validity of the research being undertaken (Jones, 2014). Questionnaires can be completed at the convenience of the recipient, who may also return to the questions following further thought and consideration before submitting the completed document (Jones, 2014) which may not reflect the current relationship circumstances. Due to their potential to be completed anonymously there is opportunity for them to be completed in an honest and truthful manner, without pressure or bias from others. Similarly, a thoroughly thought out and considered questionnaire can reduce bias, although a poorly constructed questionnaire can have the reverse effect (Jones, 2014; Clark et al., 2021). This is also the situation where a question may be vague, complex, or not clear; the respondent will not have the chance to clarify the meaning or content of the question and therefore the response may not be fully accurate.

As previously discussed, it is recognised that Quantitative research, as a research strategy may have a number of flaws (Clark et al., 2021). However, these flaws are normally associated with concepts where the difference between the natural world and the human world are not recognised.

Prior to commencing data collection, the study was submitted to the University's research ethics committee and received ethical approval. Difficulty was experienced in finding a validated questionnaire due to the lack of conducted prior research in the area of using digital and online platforms. However, a validated questionnaire, "Educators and Twitter", was eventually found in an associated research project conducted by Carpenter and Krutka (2014) where they researched the use of twitter by educators. Their survey was validated by four educators who were known to the authors (Carpenter and Krutka, 2014).

The format of the Carpenter and Krutka (2014) questionnaire was the same as the questionnaire used in this study. Three parts, an informed consent section, a

demographic section and ten items relating to internet use information. Eight survey items involved selecting options by checking a box. Only the question phrasing was changed to elicit the required responses for our data collection purposes.

By adapting their questionnaire, it was possible to publish an internet-based series of questions to establish internet and online use. All questions were structured for responses to be simple yes or no answers, simple selection of a single answer or, where multiple answers could be given were based on the Likert scale to ensure consistency of results processing. Where appropriate the addition of “write in” boxes were provided, should a respondent wish to give additional information, if relevant.

To establish whether the Covid-19 pandemic had any effect on internet usage the questions were divided into two main groups of pre-covid and during-covid, referring to the periods before and during lockdowns. The questions asked were the same and covered:

- Using the internet
- Which online platforms were visited?
- Frequency of use
- If any information from the online sites were used in their coaching
- How useful was the internet in supporting the coach.

Essential baseline information on those that completed the questionnaire was the final group of questions to be answered,

- Gender
- Age
- Coach qualification.
- Coaching experience
- Assessed ability to use technology.

A copy of the questionnaire can be found in appendix one. The methodical protocol that illustrates the instruments and phases of this research can be found in figure 2

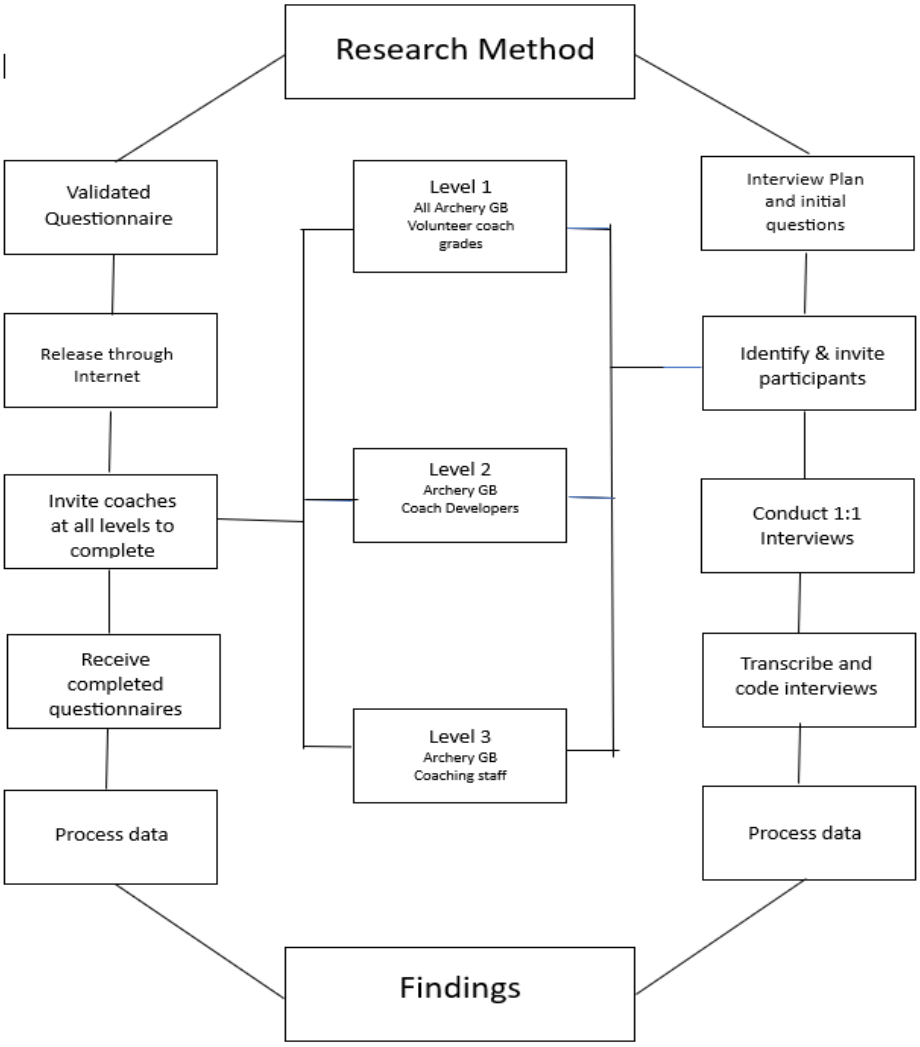

Figure 2 Methods protocol.

The decision on where to publicise the questionnaire was an important aspect of the research design. It was recognised that as the central theme to this research project was the internet and online platforms that this was where the questionnaire should be placed. Known issues with publicising and completing a survey questionnaire through this medium alone was recognised. It is known that internet and online surveys and questionnaires may result in low responses, may not be completed by the intended target population or may be delegated to others and the questions asked may be mis-

interpreted or not answered at all as clarification is not available (Clark et al., 2021). However, the decision was made that the questionnaire would be made available through the internet using a Qualtrics based, web address or Unique Resource Locator (URL). Publication of the URL would be through archery specific websites, archery specific social media groups, through archery specific online forums and distributed through the Archery GB network of County coaching officers (CCO), the latter group being alerted to the URL through direct email and asked to distribute the URL to their group of coaches.

By carefully selecting the platforms on which the questionnaire was published it was targeted at those most associated with archery coaches (see appendix 2 for the list of platforms used) although nobody could be identified from the responses given. It was anticipated that the number of responses from non-profiled respondents would be largely eliminated. Similarly, although the questionnaire was being published purely online, without a paper copy being made available. Paper copies were eliminated because using this medium to answer the survey questions may result in bias replies skewing toward being against online and digital activity. It was therefore decided to disseminate the questionnaire purely in a digital form.

Given that there was little, if any, available data on how archery sports coaches interface with the internet and its online platforms, it is important to try and capture this information as it could influence the qualitative data phase questions. This would also enable the research to understand and evaluate the contexts and mechanisms that may affect the outcomes of the research project. It is not known how many Archery GB coaches received or saw a copy of the questionnaire, however the distribution of the questionnaire elicited 73 responses.

The questionnaire was initially released at the beginning of February 2022 on to the AGB archery coach specific groups and learning curve platforms. In March 2022, it was publicised via the social media platforms of Facebook and Twitter. A further and final distribution pathway through CCO's was made in April 2022. Following the initial release there was a preliminary spike in the number of completed questionnaires being submitted. The timing of the second release was scheduled when the initial spike had reduced to no new replies for five days. The third release was timed in exactly the

same way, as the completed questionnaires ceased being submitted the publicity for the questionnaire was released on another platform.

The process of releasing details of the availability of the questionnaire over a period of time was to evaluate which of the platforms used to distribute the questionnaire were the most successful. Although this process was not scientifically controlled it is identifiable from the dates of replies and the dates when the questionnaire was released on an identifiable platform, which of these platforms proved the most responsive. This would enable a comparison, although unempirical, to be made between which internet communication sites coaches admitted using in their replies to the questionnaire against those that had the most effect. The direct comparison result demonstrated that the declared second highest frequently visited internet platform did not produce the most connections. Responses demonstrated that social media, for example Facebook and Twitter, provoked the greatest number of responses, followed by direct emailing to County and Regional Coaching Officers. The least number of responses generated were from Archery GB's own digital learning platform, Learning Curve. The survey was closed after several weeks once the rate of responses had slowed, and no new responses were received for 14 days. There are a number of possibilities for why this unexpected result occurred, for example, coaches may see the Archery GB platforms as informative rather than for communication purposes and perceive social media platforms to be communication based. However, this data was collected using a very unscientific method and may not be highly accurate, potentially, further research in this area would assist in clarifying why this pattern of distribution occurred.

The qualitative data approach.

Although collecting purely numerical data should answer at least one of the research questions of this project, quantitative responses alone will not enable the main focus of the research to be answered. Therefore, a qualitative study needs to be conducted alongside the numerical data collection to enable a broader set of values to be accumulated. This will enable the triangulation of the perspectives given in the

numerical data collection phase of the research project by having the ability to cross check the data as is will be collected from a number of sources (Clark et al., 2021).

Of all the different methods used to collect qualitative data the individual interview would appear to be the most appropriate in this instance. Culver et al., (2003) noted in their review of sport psychology research that the interview was the most common method for qualitative data collection, by far, in this subject area.

It is also expected that the information given will vary from individual to individual and may be quite complex in their responses and therefore difficult to measure using other data collection methods (Jones, 2014; Atkinson, 2012; Carter et al., 2021). Also, the research required a level of explanation rather than purely description and as such interviews, where the interviewer has the opportunity to further question in depth, are a good medium for obtaining this information.

Further consideration was given to the type of interview structure to be adopted for the present research that would give the most appropriate data to the study. In this situation the decision was made to use a semi-structured interview approach.

Semi Structured Interview

A semi-structured interview is a data collection method that combines elements of both structured and unstructured interview questions. The interviewer uses a predetermined thematic framework which means they have a general concept of the topics and issues they want to cover. Unlike structured interviews, where questions are strictly predetermined in both topic and order, semi structured interviews allow for flexibility in phrasing or order of the questions, which are not fixed. Semi structured interview questions are usually open ended to encourage participants to elaborate and share their perspectives. This flexibility allows for deeper exploration of topics and issues. Semi structured interviews allow researchers to identify patterns while still making meaningful comparisons (Clark et al., 2021)

This would allow the lead researcher to use a standard set of questions contained within a predesigned interview schedule while allowing the researcher to be more flexible in the way the questions are sequenced and potentially probing for additional,

more in depth information with subsidiary questions (Jones, 2014; Atkinson, 2012; Carter et al., 2021).

In this research study the use of a semi structures framework would be particularly useful as it would allow the researcher to elicit deeper understanding of the use and of internet platforms used by coaches, the content they provided and how this was used in each circumstance and to identify any possible patterns in use of platforms, use of information and develop and understanding of search or research techniques.

Data from the questionnaire phase of the research study gave some baseline intelligence that could be used to formulate some initial questions and framework for the semi-structured interviews. As the interviews were to be conducted to a realist framework the questions were constructed to ensure the interviews were focused on context, using the internet as the mechanism and therefore deliver rich outcome data.

The interview schedule was developed in consultation with the research team and initially focused on the use of the internet, if any, and the various platforms that may have been consulted. The reasons behind using the internet and any particular platform formed the next set of set questions with how the participant validated the information given and what was their overall satisfaction of using the internet. Throughout this phase of questions, the interviewer was able to use unstructured questioning to refine the answers given, if required.

The second phase of structured questions concerned how any information gained from using the internet and its various platforms was used, if, it was. Again, the interviewer could use unstructured questions to follow up and gain insight into the replies to the structured questions.

The third and final section of structured questions was on the participants preferred source of gaining information or knowledge. Again, the interviewer had scope to ask unstructured questions to gain further insight into the given replies.

The participants for interview were invited by the lead researcher. They were either known to the lead researcher or had offered to take part in further research following completion of the research questionnaire. Not all invited participants accepted the invitation to take part. Those that did are shown in the table 1 below.

Table 2 Archery coaches who took part in the qualitative study.

Participant identifier	Gender	Age	AGB Coach Grade	Other Coach Qualification
Bernie	F	30	L2	M. Prof in Performance Coaching
Harriet	F	65	L3	L4 & M.Prof in Performance Coaching / AGB Coach Developer
Dave	M	54	L3	Regional Coaching Officer / AGB Coach Developer
John	M	46	L2	
Martin	M	39	L1	
Phil	M	61	L2	

The interviews lasted on average 25 minutes with the shortest being just 14 mins in length and the longest 40 minutes in length.

Naturally, as with all person to person interviews it is the skill of the interviewer that will enable the most useful of responses to be elicited. For example, it is not without precedent that unconscious bias may be introduced by the interviewer on their verbal and non-verbal reactions which may, inadvertently lead the interviewee to answer in the way they perceive the interviewer wants their response rather than what they actually think or feel (Jones, 2014; Atkinson, 2012; Carter et al., 2021).

The location of the interview is also regarded as important to keep the interviewee at ease. It is planned that all the semi-structured interviews will take place over the internet via Microsoft Teams. This interface has been specifically chosen for a number of reasons, including the restrictions on meetings driven by the Covid-19 pandemic lockdowns. Although the lockdowns may not be in place at the time of the interviews there is no certainty in this nor is there any clarity on whether restrictions on meetings may still be in place. There are environmental factors to consider, it is anticipated that the interviewees will cover a substantial geographical area and the negative effects on the environment through extensive travel will be substantially reduced if the interviews can be conducted through an environmentally friendly medium. It is hoped that the

interviews will proceed in surroundings that are familiar and relaxing to the interviewee and held at a convenient time to minimise any heightened levels of anxiety or fatigue. Finally, as the research concerns the internet it would appear appropriate that this is the medium chosen through which to collect the data.

It was considered at the start of the research design concept that interviews would be held with representatives from all three group levels as noted below, however, due to reorganisation of roles within Archery GB since the start of this project and with many of the Level 3 group now advocating the use of coach education and other coach programmes developed, run and organised by Archery GB being placed wholly online, further consideration should be given to whether the responses from this group would be too biased and skew the overall data.

The approach to research quality was to involve the research team in regularly reviewing the data for accuracy, consistency and reliability. Validating the data through peer review aids in identifying weak areas of data and will improve these areas. Collaborating with others will aid in refining the research and seeking feedback should aid overall quality.

Data Analysis

Data were analysed using IBM SPSS (V.27). Descriptive statistics provided data that is critical to understand common trends from the respondents. Comparative means statistics provided data that was critical in understanding the profile of the respondents to the survey. Statistical analysis around key variables will be undertaken, particularly with reference to pre covid and post covid lockdowns. Both the level of data (ordinal/nominal) and its distribution about the mean determined that this research used a non-parametric test. The Mann-Whitney U-test was the most appropriate test on the data from the questionnaire. The Mann-Whitney U-test is used to compare the differences two independent groups. This would be used to explore the differences for the independent variables such as gender and age.

To determine any statistical differences between time points related to the pandemic and considering the distribution of the data about the mean using the Shapiro-Wilk Test and the level of the data (ordinal and nominal) determined that a non-parametric test be used on this survey. Consequently, the data and purpose of the test satisfied the assumptions for the Wilcoxon Signed Rank Test (Jackson, 2015; McCrum-Gardner, 2008).

The interviews were subject to a thematic analysis (King and Horrocks, 2010; Braun et al. 2014). Consideration of this coding mechanism was influenced by the relative inexperience of the researcher and possible misinterpretation and heuristics. Initially, the interview recordings were transcribed, and then descriptive codes were illustrated and sequenced in summary tables. An extract of the descriptive coding is illustrated in figure 3, directing the coding and analysis of the interview transcripts was the broader methodological design and the research questions defined earlier in this dissertation (King and Horrocks, 2010). This was accredited in the “context” section positioned above and before each summary table. So that effective mapping of the coded interviews to the CMO framework could be accomplished, extracts of the interview transcript were colour coded to highlight any contexts, mechanisms and outcomes which could then be easily identified at the descriptive level of the coding process. The mapping of codes to the CMO framework was reviewed by the supervisory team to improve the dependability of the data and avoid the interpretational issues such as those identified by Rycroft-Malone et al., (2010), who suggest that making a distinction between context and mechanism is difficult.

Qualitative data from open-ended questions posed during face-to-face interviews were initially transcribed, coded and themed prior to a more focused coding process being developed to extract emerging themes in relation to the study questions.

Initial or descriptive coding highlighted areas of the interview transcript relevant to the research questions. At this point, comments are added to provide context rather than meaning (King and Horrocks, 2010). The descriptive codes were then grouped together where a common meaning was apparent. A secondary level or interpretive code was then applied that would capture that meaning.

Thematic Analysis of Interview

Date: 29/06/2022

Coding Level: 1 (Description)

Interview Details:. Interview 5 (PH) **PHIL**

Context: *The purpose of this analysis is to expose themes related to the following research questions and organise the themes into Pawson and Tilley's CMO framework*

1. *To what extent do sport coaches access and interact with the internet and its various online platforms and what motivates them to do this?*
2. *How does providing learning and sports coaching information through the internet, online and digital platforms lead to increased learning and creative and innovative practice?*
3. *If digital and online presentations cannot be challenged or queried at source, how is their effectiveness assessed for their positive contribution to increasing and developing coach learning and practice?*
4. *How should quality control be made available for online and digital resources and what can be done to challenge and change content if it is found to be of questionable quality?*

Ref	Extract	Comments	Descriptive Codes (L1)	Interpretive Codes (L2)	Themes
P4:L137	I'm also well travelled Archer. And when you go to archery clubs and you discuss them with other Archers they know of Lloyd Brown, they may not use his resources, but they know of him and know the good work that he does	Validation or affirmation?	Lack of further investigation? – it does what it says on the tin?	Confidence / support	Affirmation
P17:L651	OK, I use them as a like I say a library, but also kind of like when you plant a small seed in your garden it grows a little bit and, but let's say it's a. It's a vine. It grows a little bit, and you want it in a particular shape. You have to trim and cut. You need to you need to prune appropriately. You need to push it in a certain direction to make it go where you want it to go. And that's how it works for me. So I only use the Internet. Really to provide that seedling.	Internet/online content may help at the beginning but only if t supports my plan	Attempting to be open minded	Affirmation of what I am doing is the right thing to do	Affirmation

Figure 3 Extract of descriptive coding summary table.

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Finally, overarching themes were constructed that drew directly from the theoretical ideals associated with Pawson and Tilley's (1997, 2009) Realistic Evaluation framework and concerns of the issues raised in the research questions. These theories will be analysed and discussed in the findings section and discussed as tables.

Ethical considerations

An important consideration at this stage is the identification and negotiation of ethical issues for both the investigator and the participants. The Manchester Metropolitan University aims to '…behave professionally and ethically in all [its] activities' and therefore requires staff and students engaged in scholarly activity, including research, are aware of the ethical implications of these activities. Paramount among the ethical principles of the Manchester Metropolitan University (2020: online) were:

- acting with propriety and care for the welfare of staff, students and the wider public,

- being disciplined and acting and protecting others within the constraints of the law

The project proposal was submitted to Manchester Metropolitan University's ethical committee for comment and to ensure the research was conducted within a proper and ethical framework.

The University ethical framework was recognised and fully accepted in guiding the obligations of this research. The research related to the perceptions of professionals within the profession of Sport Development and the wider public the group served. As such, ethical permission was requested and granted by the Manchester Metropolitan University Faculty of Health and Social Care on 8th April 2021.

In upholding the principles of the University's Ethical Framework, this research sought to ensure the protection of all parties by providing fully informed consent, a commitment to protecting participant identity and safeguarding the participant welfare. Prior to each phase of data collection, ethical implications, inherent in the research design were considered. Each phase would ask participants to divulge personal and professional opinion information about online and digital information regarding archery coaching and archery coach education. Further, the participants of the programmes would give their opinions about information available on internet and online platforms and the personal impacts this information may have on them. Hence, informed consent was required. Indeed, it is widely accepted that in most social research, there is a need for ethical issues to be considered which aim to protect the interests of those who take part in the study (Flick, 2006). Such acceptance has led to the formation of ethical codes and frameworks, for example, the British Psychological Society's (BPS) Code of Conduct (2007; 2009) and the British Educational Research Association's (BERA) Ethical Guidelines for Educational Research. This guidance is designed to regulate the relations of researchers to the people and fields they intend to study. Thus, ethics is more than a 'means to an end' to conduct research as it enables the participants perspectives to be considered and allows negotiated steps to provide protective and respectful relationships whilst conducting research.

To allow participants to provide informed consent for the interviews and questionnaires, a consent form and participant information form (see appendix 2, 3 and 4) were developed. The purpose of such forms is to allow study participants to

make knowledgeable and voluntary decisions about whether or not to participate (Peled and Leichtentritt, 2002). The form outlined the aims of the research, why the participants had been invited to contribute, what the research involved and what would happen to the information on completion of the research (Kirby et al., 2011). Establishing the role of the lead researcher was a key ethical consideration. The researcher was a member of Archery GB, a certified Archery GB Coach at Level 2 and an Archery GB Coach Developer so had insider knowledge of the wider Archery GB coaching community. Thus, it was essential that anonymity and impartiality was assured so that views of all research participants remained confidential.

At the transcribing stage of the interview, where possible, identifying information will be removed from the transcript. Finally, participants were informed that all electronic data including transcripts and digital recordings would be password protected and remain stored on a password protected PC at the Manchester Metropolitan University. Further, the participants were informed that any hard copies of transcripts or questionnaires were kept in a locked filing cabinet in the researcher's office.

Findings

In this chapter the results of the questionnaire and interviews are interpreted and appraised in relation to the research questions outlined for this thesis. Further, there is an exploration and discussion of the findings with key literature to provide some explanation or 'theory building' upon which future research and policy decisions can be made.

Initially, the chapter will focus on the questionnaire data where the data collected should give a clear understanding of the relationships, if any, between archery coaches' and the internet and its various online platforms. It is anticipated that the data will reveal if there are gender or age discrepancies between users and the breadth and depth of usage not only of sites visited but of information gathered being used.

Finally, the chapter will delineate the interview data and qualitative exploration of the thesis. Here, critical appraisal of key themes relating to interaction with the internet, potential learning experiences from those interactions and whether content is challenged both in quality and validity which will be acknowledged and presented under the principles of the scientific realism framework.

Results from the questionnaire

A total of 73 (Table 2) responses were received, however only 63 of these were compliant with the requirements of the survey for example, 2 responses were made by individuals identifying as not currently qualified archery coaches. This is from a total of 1959 registered coaches with Archery GB; however, it is not known how many of these registered coaches were active at the time of the survey.

Table 2 Gender comparison or respondents to AGB members

		Response	Archery GB overall coach Gender (%)*
Coach Gender	Male	37 (66%)	66%
	Female	18 (33%)	34%
	Binary/third	1 (1%)	unknown

Of these respondents (see table 3) that declared a gender, 37 declared they were male and 18 declared as female, 1 respondent identified as no-binary/third gender. The gender responses almost exactly replicate the general Archery GB membership profile where 66% are male and 34% are female. The questionnaire response profile were 67% male and 33% female.

Responses to questions regarding age, qualification and years as a coach can be found in the following table it includes an important variable around the recent covid pandemic:

Table 3 Profile of Archery Coaches using the internet.

		Pre Covid online and Internet Access	During Covid Online and Internet Access
Sex	Male	1.11 (0.32)	1.22 (0.42)
	Female	1.13 (0.34)	1.25 (0.450
Age	18-25 years	1.20 (0.48)	1.40 (0.55)
	26-55 years	1.05 (0.22)	1.15 (0.37)
	55+ years	1.11 (0.32)	1.26 (0.45)
Coach Grade	Session Coach	1.16 (0.38)	1.26 (0.45)
	Development Coach	1.18 (0.39)	1.29 (0.47
	County Coach	1.00 (0.00)	1.00 (0.00)
	Senior Coach	1.00 (0.00)	1.00 (0.00)
Coach status	Volunteer Coach	1.15 (0.36)	1.32 (0.34)
	Paid Coach	1.00 (0.00)	1.00 (0.00)
	Coach Educator	1.00 (0.00)	1.00 (0.00)
Coaching Experience	<3 years	1.25 (.46)	1.00 (0.00)
	3 to 6 years	1.07 (0.26)	1.27 (0.46)

	6 to 12 years	1.11 (0.32)	1.39 (0.50)
	>12 years	1.00 (0.00)	1.00 (0.00)
Computer experience	Literate	1.12 (0.33)	1.17 (0.38)
	Moderately Literate	1.14 (0.38)	1.43 (0.56)
	Relative Beginner	1.00 (0.00)	1.50 (0.71)
	Can barely use a mobile phone	1.00 (0.00)	1.00 (0.00)

Data is presented here as means scores (standard deviation). The mean score demonstrates the average value and is represented as a score and gives the average value. The mean is calculated from the response score values from the completed questionnaires. The standard deviation measurement indicates the variation from the mean, a low standard deviation would indicate that the data is close to the average (mean). A score closer to 1 = agree and closer to 5 = disagree.

Here there is a difference in responses according to age group with the under 25 years category capturing a 10% response rate compared to a 90% response rate for the over 25 age group. Archery GB membership figures demonstrate that the actual membership age split is 74% over 25 and 27 % under 25, however, this may be explained by Archery GB members not becoming coaches until later in life. It should also be noted that the actual age group split of Archery GB coaches is not known.

The majority of archery coaches are unpaid volunteers, respondents to the questionnaire noted above revealed that 66% of the respondents were voluntary unpaid coaches, which is as expected given the common position of volunteer numbers. Coincidentally, the 16% of respondents that identified themselves as paid coaches is almost the same as the number that declared themselves as AGB coach developers, 17%. Archery GB coach developers are qualified coaches who are paid to teach, train and develop archery coaches how to coach, but not for any participant or athlete coaching that they may undertake.

Table 4 Response profile of qualification of respondents to AGB

		Response	Archery GB overall coach numbers (%)*
Coach Grade	Level 1 (Session)	19 (36%)	70%
	Level 2 (Development)	17 (32%)	22%
	County	14 (26%)	6%
	Senior	3 (6%)	2%

Data is presented here as a percentage (%) from the total response given on the questionnaire.
*Archery GB Coach Developer workshop 28 June 2022

Table 4 illustrates that although the percentage figures for the number of overall Archery GB coaches may be for those who hold the qualification, these figures may not represent the number who are currently and actively engaging in coaching. In similar vein the number of County coach responses could be due to this group being more likely to be holding a CCO or RCO position and therefore more likely to be engaged with either coaching, coaching administration or coach development.

Table 5 Access to and use of the internet

	Pre Covid	During Covid
Did you access the internet	90.3	78.6
Did you use this info		
Yes	51.9	50.0
Sometimes/ occasionally	44.2	47.7
No	1.9	2.3
Data is presented here as a percentage (%) from the total response given on the questionnaire		

Although almost all archery activity, participation, practising or coaching was halted, except for performance archers, during the Covid-19 pandemic from March 2020 through to May 2021, as previously noted within the section on research positioning, it could be expected that access to the internet for archery coaching or archery coach related content would have grown as a vehicle for keeping in contact. However, as is shown in table 5, this was not recorded in the questionnaire data. Contradictory to the expectation that the internet would see greater online use during the covid-10 pandemic lockdowns, the data demonstrated a slight decrease. However, the data indicated that the information gained from those fewer visits was employed more often. This may have been due to coaches accessing information and then saving or storing it for use after the Covid-19 pandemic lockdowns were lifted. It would appear to be an odd contradiction; however, further research would need to be completed before any substantial conclusions could be drawn from this element of the data collection.

Table 6 Online platforms consulted.

%	Pre Covid	During Covid	Percentage Change
Archery GB Learning Curve	12.63	13.93	+1.30
Connected Coaches	4.44	4.10	-0.34
Archery GB website	13.99	12.70	-1.29
UK Coaching website	10.24	10.25	+0.01
World Archery website	9.56	8.61	-0.95
Archery GB webinars	5.80	7.79	+1.99
Other coaching webinars	3.41	6.56	+3.25
Online Social networks	5.80	5.33	-0.47
YouTube	12.63	12.30	-0.43
Other Archery specific website	7.85	4.92	-2.93
County Archery Association website	5.80	4.51	-1.29
Regional Archery website	5.46	5.33	-0.13
Other Specific Archery Coach website	2.05	2.87	+0.81
Other (please specify)	0.34	0.82	+0.48

Data is presented here as a percentage (%) from the total response given on the questionnaire

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Although the data in table 6 shows a pattern of change in consultation of online platforms the difference was not significant ($p>0.05$) during the Covid- 19 pandemic relative to the period before the pandemic. There is a slight but noticeable shift toward particular platforms, for example, the Archery GB Learning Curve, Archery GB webinars and other coaching webinars, and away from communication platforms such as County Association websites, the World Archery website and social media platforms. This may be due to the information regarding the restrictions placed on sport, due to the covid-19 pandemic being made available and regularly updated by Archery GB on these platforms.

Table 7 Information from online platforms use and effectiveness.

%		Pre Covid	During Covid	Percentage Change
Did you use information from online platforms in your archery coaching?	At least once per week	21.9	17.8	- 4.1
	At least once per month	27.4	27.4	No change
	At least once every 3 months	15.1	8.2	- 6.9
	At least once every 6 months	8.2	5.5	- 2.7
	Less often	1.4	1.4	No change
Did you use information from online platforms in your coach education?	Yes	37	30.1	- 6.9
	Sometimes	31.5	28.8	- 2.7
	No	1.4	1.4	No change
	Not relevant	1.4	0.0	- 1.4
How useful did you find the online platforms	Not at all	2.7	1.4	- 1.3
	Slightly	4.1	2.7	-1.4
	Moderately	26	23.3	- 2.7
	Very	24.7	20.5	-4.2
	Extremely	11	11	No change

Data is presented as a percentage (%) from the total response given on the questionnaire

It is notable from the data in table 7, that information gained from internet use was being regularly used in archery coaching as the once a week and once a month date shows the greater frequencies. This applies to both pre and during the Covid-19 pandemic, although there was a slight downward change on the once a week, but this may be due to opportunities to coach during the lockdowns. Also, it is unknown what this information was, it may have been simple updates on the ability of sport to resume or further restrictions on lockdowns.

It was interesting to note that during the Covid-19 pandemic and enforced lockdown when many archery and archery related sporting activities were either completely curtailed or severely restricted that the use of online and internet platforms actually decreased. Although Archery GB platforms and associated other archery webinars

increased during the Covid-19 pandemic most other online and internet platforms recorded a decrease in their usage, however more local County and Regional internet platforms saw a reduction. Social networks also recorded a small reduction in usage by archery coaches. The information gained from using the internet and online platforms appeared to largely stay around the same without the massive drop noted from the consulted data.

What the results demonstrate is that the respondents consulted the internet fairly frequently. With 21.9% visiting the medium at least once a week rising to 27.4% at least once a month. There is a high satisfaction rate with the information obtained during these visits with a combined total of 38.5% of coaches' adopting the information gained into their coaching programmes. There was also a high satisfaction rate with how useful the coaches' found the online platforms with 61.7% finding them either extremely, very or moderately useful against 6.8% of coaches' who found the platforms only slightly or not at all useful. Clearly, the responses demonstrate a high degree of engagement with the internet.

The results gained from the quantitative survey to an extent provided answers to the first part of the key research question "to what extent do sport coaches access and interact with the internet and its various online platforms?"

Results from the qualitative interviews

The transcribed interviews were subjected to reflective thematic analysis, which is where the researcher examines, closely, qualitative data to identify potentially common themes or topics and patterns of meaning that repeatedly arise. Data is coded to uncover patterns or themes which may involve patterns of shared ideas, concepts or meanings. The researcher consistently reflects on the data so that they can critically identify patterns and meaning from the qualitative data.

Within reflexive thematic analysis, the coding process is essential to theme development, it follows that themes are an 'outcome' of these coding and theme development processes and are developed through coding. Coding is not usually a process for finding evidence for pre-conceptualised themes (Braun and Clarke, 2021)

Following the interview data being subjected to a reflexive thematic analysis, a number of sub-themes were identified under three overarching themes. Each overarching theme and its sub themes will be illustrated using a thematic map. A discussion section will be used at the end of the presentation of results to summarise the key findings of the qualitative data and how they are developed into realist theories to offer a family of answers to the original research questions.

.

Internet use and motivations to access

The first theme on the motivation to use the internet by archery coaches is that there were a number of similar reasons for using the internet, but these were presented in different ways. The overarching theme here was that coaches had reasons to access and use the internet. This led to two sub themes, represented in figure 4, of visual support, knowledge bank or toolbox.

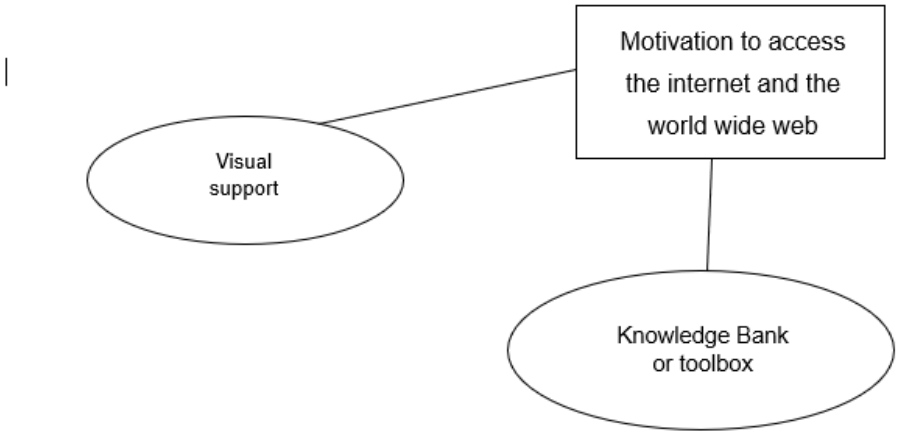

Figure 4 Themes resulting from the analysis and their relationship with the question "What motivates sport coaches to interact with the internet and its various platforms"?

The analysis of responses did not reveal a single common reason among the interviewees to what motivated them to interact with the internet and online platforms in relation to their coach learning or their coaching practice. However, the responses demonstrated that there were similarities, which became the sub themes, *visual support, knowledge bank* and *toolbox*. It should be noted that no interviewee had a single motivation for using the internet and online platforms and that more than one motivation could be experienced by any of them depending on the sub-theme they were experiencing:

> *I've used it* (the internet) *as a resource* (Harriet)
>
> *When I use Google, I'm looking for very short and quick answers to things* (David)
>
> *I looked on the internet for how to tie a nocking point and it gave me a nice YouTube video* (Bernie)
>
> *I use it like a library* (Phil)

Harriet, Bernie, Phil and David all make similar comments about how and why the have accessed and used the internet (mechanism) in connection with their coaching practice and demonstrates that different users have different motivations for doing

so. Naturally, those reasons and motivations may change depending on the situation they find themselves and the information they are looking for (context). They appear to have had a positive experience (outcome).

Banking the knowledge as a motivator for online engagement.

A coach's toolbox is regarded as a depository of acquired coaching knowledge that can be accessed at any time to assist in a coaching situation.

An example of this would be the Archery GB Learning Curve. This is web-based platform that contains in digital form most of the archery coaching subject matter delivered on AGB coaching development courses. It is only available for qualified Archery GB coaches to access and contains information covering, Coaching Science, Anatomy, Strength and Conditioning for archers, Nutrition, Basic Sport Psychology, Adaptive Equipment, Archery Drills and Skills and Safeguarding:

> *I've used them and incorporated them, but the others as like I say is put in the for future reference and something which I may use in the future* (Martin)

> *I tend to use the Archery GB Learning Curve because it's got all the skills and drills recorded on there that I find useful, and there's lots of other stuff about coaching science, coaching techniques and because its AGB stuff it fits in with what I'm trying to coach* (John).

Both Martin and John allude to 'banking' information, but context is key here. Both only store things in readiness for when they are needed or become useful to their coaching. So, there is a motivated component to engagement with online resources as the main outcome and more specifically the toolbox related resources that are specifically accessible to all Archery GB coaches (Mechanism).

This was a common theme throughout all but one of the interviews regarding motivation for using the internet and digital platforms. Archery coaches suggested that a reason for them accessing the internet was also as a repository of previously acquired knowledge which doesn't need to be memorised as it can be revisited when necessary.

Beyond the AGB specific online resource, there was still motivation to use the internet more generally. Although this approach for online learning does not appear to be to acquire new knowledge, rather to reinforce or expand already held information:

> *Looking at other things as well, just like the UK coaching and they have little bits and pieces on there that you can start picking away at, so I think as it goes along as that building up, it's like. a bank of stuff that I can reference to and go and look up.* (John).
>
> *OK, I use them as a like I say a library* (Phil).
>
> *I suppose I've used. I've used it as a as a resource. For example, I've looked for particular exercises if I've wanted to exercise a particular part of the body, I've looked for some ideas on the internet actually thinking about it* (Harriet).
>
> *If I was going to Google, I'm not looking for primary information, I might be looking for support information* (Dave).

Harriet also identified an additional motivation concerning an area of perceived lack of knowledge. Archery coaches should posses a basic understanding of strength and conditioning exercises that are specific to the needs of an average archery participant. However, due to the appeal of the sport to a very wide age range and very diverse ability there are many occasions where a basic understanding of strength and conditioning is not sufficient. Clearly consulting the internet has assisted Harriet to be able to use suitable strength and conditioning exercises.

Using the internet as a knowledge bank was not trusted as a credible resource by all the interviewees. Many questioned the validity of the information held on the various online platforms and there appeared to be a reluctance to use the internet as a learning resource, a subject I will return to later in this chapter.

Dave made a comment that neatly sums up the feelings of many of the interviewees:

> *I probably think of Google as being a bit of a shotgun really, rather than a .22.*

This is interesting and suggests the banking of information is in part, a reaching out for additional information (outcome) using other platforms beyond those offered by AGB (mechanism) but only if the information is deemed as supportive to more primary resources (context).

Visual support.

A further sub-theme arising from the reflexive thematic analysis of the interview responses regarding motivation for consulting the internet and its online platforms was that it provided visual support.

This could be in the form of 2D pictures, video or diagrammatic representations. Bernie, who stated that they barely used the internet responded with a motivation that they had consulted the internet in connection with support on a technical issue. Archery coaches are expected to maintain a level of expert technical knowledge on equipment. There are critical alterations and additions that can be made to the recurve bow and arrows that would crucially affect the performance of the archer. One of these operations is to set the nocking point of the arrow on the string. This is where the arrow connects with the string and needs to be accurately set to ensure maximum thrust of the arrow from the string while ensuring uninhabited clearance from the arrow rest and recurve bow riser. If the nocking point is set in the wrong position this can cause poor arrow flight or cause the arrow to hit the bow as it leaves the arrow rest again causing poor arrow flight. When the correct nocking point is set on the bowstring it is marked in a number of ways, brass clips, tied thread or even thin tape are common methods. The most difficult, yet most effective is the tied thread, a method preferred by the higher-level performers. Due to the complexity of installation and with different coaches and archers using different materials and techniques depending on their experiences, it can be a difficult operation to undertake. It is not an operation that is regularly completed by coaches as noted in the interview with Bernie:

Depends what I'm looking for I think the last thing I honestly looked for on Google was how to tie a nocking point and it gave me a nice YouTube video. I watched it and the validity of it was yes. I know that our archer can tie nocking points. Because I knew the theory of how to tie a nocking point, but the practical aspect was somehow bypassing me, so I wanted to watch somebody do it.

Here Bernie was describing how they consulted the internet and used a YouTube video of how to tie a nocking point to remind them of the process and give confidence

for them to undertake the task successfully. Clearly, Bernie had learned how to perform this task, but for whatever reason did not have the confidence to undertake it without consulting a trusted visual depiction. Having the ability to watch this operation being completed visually assisted Bernie in achieving the task.

There are other examples where the use of visual support was used by other interviewees, for example John also used YouTube as a resource to watch and assess the higher-level performers and how they performed their shot execution routine:

> *If you look at YouTube and you start getting some of the videos of top archers shooting.*

John also explained that he used the video examples with the athletes and participants he coaches':

> *It's useful as a visual aid for people to build on.*

Phil was also motivated to use video and mentioned the use of YouTube videos as support to his coaching practice:

> *They've got some YouTube videos that you can link to from their website.*
>
> *Every now and then I struggle with getting something across, so I use videos to show what other people are doing, particularly with those people that I'm working with*.

Also using the internet as a visual support to her coaching practice, Harriet remarked that:

> *There are times when I've used examples of video to show somebody or demonstrate a point, I'm trying to get across to help their understanding of what I'm trying to get across.*

One of the themes relating to motivation to consult online information was to use the internet as a validation or confidence support tool. There has been research regarding online learning and most of this develops insights into learning enhancement. For example, Koh et al., (2018) study involving soccer coaches use of the internet revealed how the use of the internet added to their learning. They postulated that as a source for learning the internet was preferred due to it being easy to access, cheap and had an abundance of innovative suggestions. Koh et al., (2018) added that of the group of

10 coaches they studied, all used the internet to advance their acquired knowledge. Earlier research by Lemyre et al., (2007) also demonstrated that youth sport coaches, across several sports, accessed the internet to enhance their knowledge. Although it should be noted that the research indicated that the greatest use of the internet by the coaches, at that time, was to purchase subject specific books (Lemyre, 2007).

An important context here is that, apart from a very small number of high-performance archery coaches, nearly all the coaches interviewed in the present study are volunteer based and may not recognise that their coaching falls into a professional category. Nor may they be able to give sufficient time to learning situations which they consider outside of their assumed needs (Trudel et al., 2013). They usually become certified through the NGB coach developer courses, gaining their coaching certificate following several days of regulated and structured content. There is a query as to whether a learner in these regulated learning situations can absorb and give meaning to the content presented, due to the short amount of time to process the information (Culver et al., 2013). Indeed, a prospective coach in that learning situation may not completely digest the information being given as they may not recognise it as being relevant to their situation (Culver et al., 2013).

During the interviews there were some parallels with previously citied research such as Koh et al. (2018) and Lemyre (2007) and the suggestion that consulting the information to be found on the internet may add to an archery coaches' learning. However, whether this is just to remind the coach of previously acquired knowledge or reinforce known knowledge or experiences as opposed to acquiring new knowledge is not sufficiently clear. This is consistent with how the coach perceives their own competency and knowledge on their coaching journey (Trudel et al., 2013) and is a subject I will be returning to later in this chapter.

It is possible that on their NGB coach development course that the coach developer did not promote the learning advantages that using the internet and digital platforms may provide (Koh et al., 2007). Furthermore, the course content may not have been sufficiently developed to allow coaches to understand that this route of learning maybe useful and could be a route to follow when encountering specific issues in their coaching programmes or to increase their coaching knowledge (Lemyre et al., 2007). There has been much criticism of course content and of delivery of that content (Trudel

et al., 2013). It has been suggested that when designing formal learning opportunities for coaches, for example NGB lead coach certification courses, that both the course content and the style in which it is delivered will potentially impact on each coach learner in a unique way (Trudel et al., 2013). Additionally, the person presenting the course, particularly if online, should be adequately trained and experienced to deliver its contents. If not, then this may lead to coaches not fully understanding the depth and breadth of learning online platforms have to offer (Trudel et al., 2013).

An example of a learning change has been studied by Asogwa et al., (2021) where it was noticed that textbook examples of problem solving could be resolved by surfing the internet. The problem-solving exercises were transferred online and specifically onto YouTube. Clearly being able to resolve textbook examples by applying simple internet searches was not conducive to the students learning to solve complex problems. However, placing complex problems onto YouTube gave an ability to change the complexity of the issue or the base issue to provide a constant supply of new problem-solving situations. This prevented students researching answers to printed problems and enhanced their learning abilities (Asogwa et al., 2021). This is an example of using the internet as a knowledge bank and visual support that also links into the knowledge gained, then being moved to the user's toolbox.

There is also the unresearched area of the Covid-19 pandemic effect on learning. Did the enforced lockdown periods deteriorate the learning capacity, particularly for those undertaking courses which may have had to be delivered over a longer period of time than originally anticipated and designed for? The participants in the interviews all appeared to be motivated to use the internet as a confidence or support platform and as the interviews took place shortly after the end of the Covid-19 pandemic lockdowns their use of the internet in this way could be linked, but further research in this is needed before any conclusions can be reached. Simply accessing the internet and its various digital platforms may have allowed archery coaches to use web-based platforms to reinforce or remind them of what they have previously learned.

On the theme of learning validation and confidence as motivators to access the internet and online platforms a family of answers or theories can be developed about sports coaches and internet usage. These are summarised below in table 8. The data and related themes suggest that because, for the majority of coaches it is not their full-

time occupation, and they give their services for free (content) being able to access and use the internet (mechanism) supports the coaches' abilities and advancement (outcome).

Table 8 Realist theories generated from motivation to engage with online resources.

Context	Mechanism	Outcome
Volunteer coaches (time and importance lacking)	Internet use to prepare and deliver session.	Increased confidence in sessions and a validation of what they know.
Volunteer coaches (time and importance lacking)	Internet as information giving	Developing a 'library of things' perceived as important for future use.
More qualified and experienced coaches	Internet as information giving	Increased learning and acquisition of new knowledge.

Perceptions of the internet as a learning resource

Following the qualitative interview data, the overarching theme on provision of learning and information through the internet following being subjected to a reflexive thematic analysis was that it was recognised that the internet was a potential source of information that could assist and develop the sports coach learning. However, there emerged three sub themes, illustrated in figure 5, which may present barriers to this source of knowledge being used or accessed. These sub themes were that there was too much information expressed as *overwhelming* or *information overload*, that the internet was only used as a communication device *as a connector of coaches* and finally that far from opening new horizons the internet could be *perceived* as a *barrier of accuracy.*

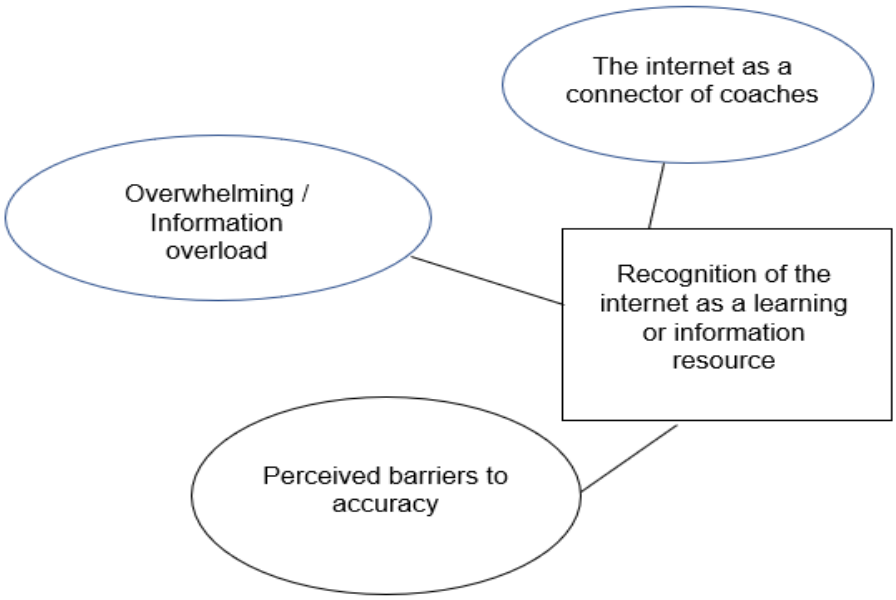

Figure 5 A thematic map representing the overarching theme and three sub-themes (ellipses) resulting from the analysis on "perceptions of the internet as a learning resource".

Recognition of the internet as a learning or information resource

The analysis of responses did not reveal a common reason among the interviewees for how they interacted with the internet as a learning or knowledge base that could be used to increase, update, or develop their coaching knowledge.

However, the responses demonstrated that there were some similarities, which became the sub themes, *the internet as a connector of coaches, overwhelming information overload* and *perceived barriers to accuracy.* It should be noted that none of the interviewees had a single reason for interacting with the internet and online platforms to gain knowledge or increase learning and that more than one reason could be experienced by any of them depending on the sub-theme they were experiencing:

> *I tend to use the Archery GB Learning Curve platform because it has all the drills and skills, sort of little recordings on it that I find useful. There's lots of f stuff about coaching science and coaching technique – it fits in with what I'm trying to learn* (John).

> *you know whatever you come out with, whether you can or whether we can't, my view is we cannot do without the Internet* (Phillip).

Looking at other things as well, just like the UK coaching from and stuff and they have a little bits and pieces on there that you can start picking away out, so I think. As it goes along as that builds up (John).

It tends to get you a lot more information a lot quicker (Bernie).

like websites that you recognise so for archery in particularly it's got like Archery GB or World Archery on it they tend to be quite reliable sources of information (Bernie).

Researching material about things like what's done in other sports, and how it can be referenced back into archery (Dave).

I have seen things on YouTube or occasionally on things like Facebook where people put up their own versions of things (Harriert).

I suppose there are times when I've used examples of video or things like that to show somebody or to demonstrate to somebody a point. I'm trying to get across or to help their understanding of what we're trying to get across (Harriert).

Clearly the general perception is positive from the above interview responses. There are undertones of context with references to the speed of access, and source being important to triggering the positive perception (outcome) of online resources (Mechanism).

The internet as a connector of coaches

Throughout the interviews it was noted that archery coaches valued being able to discuss topics and ideas with other coaches. Although the preference was clearly identified as face to face or person to person in real time, the use of connecting with other coaches over the internet and its online platforms for the use of learning and knowledge was generally regarded as a positive:

the ability to talk to other coaches who you know and trust over Internet platforms is very useful (Bernie).

Although there could be negative conversation or outcomes where coaches did not want to change from their established coaching practice, what they knew or where they felt comfortable:

> *I hope I never become the people I sneer at today and they are the people on Facebook. The people I talk to, the people I see who are just so stuck in their own ways. They're scared of actually going to find any research, going to talk with people. And I hope I never become those people.* (Bernie).

Ensuring clarity appeared to be another reason for connecting in this way. Checking that understanding with your peers, who may have been attending the same online presentations, appeared to be a support system that coaches used. This could be interpreted as a useful learning tool as it would enable discussion away from established club practises and cultures and add in potentially differing experiences of similar situational issues.

Harriet made many comments on this context:

> *when I've learned things so either face to face or via an online presentation more recently from a more qualified coach educator, I have still discussed this with other coaches* (Harriet).

Adding:

> *I think that's where the discussion comes in because I think just watching something. You don't fully have the opportunity to understand what it is, or the reasoning behind what it is.*

And:

> *I would probably discuss it with other coaches as well and say what do you think of this and could you see that working.*
>
> *I've then questioned what people have seen and why they think that's a good idea.*
>
> *It would usually be from other people* (Harriet).

Other interviewees made similar observations:

What one resource would I look to improvement? I think my answer to that would be, more contact with elite level coaches (Dave).

my preferred source is other people (Martin).

Clearly, online resources (mechanism) help social interaction between coaches (outcome). But this is predicted on important contexts such as being able to trust the source and only coming together with coaches in order to validate (or not) the information gained.

Overwhelming or information overload

There were meaningful discussions in the interviews about the volume and quality of information available. This suggested that although the internet may have been recognised as a source of learning or information, there appeared to be issues around how it could be used, when it should be used and its reliability. This was associated with a common theme of using google and then having to filter the information it provided. Filtering by attempting to define what is useful and what is not:

A scattergun of response, some of which is relevant, some of which isn't relevant and therefore needs filtration (Dave).

Further filtering before experimenting with whether to use freshly learned information:

when I've learned things so either face to face or via an online presentation from a more qualified coach educator. I have still discussed this with other coaches that I work with about how I would then implement it and use it (Harriet).

Or a perception that if the internet is used or searched the information returned is too overwhelming to process:

That's really more reliant on me using some kind of menu function to navigate my way to find the information that I want and assume that that pot of gold is actually at the end of the rainbow (Dave).

A common theme was the sheer volume of information that was returned when searching the internet. However, this was quite odd. All of the interviewees admitted

to using the internet and its various platforms for learning or accessing coaching knowledge yet none of those interviewed suggested that they would use this newly acquired knowledge or information without further discussion with other coaches. Clearly this has implications for newly researched, and evidence based coaching practises becoming established and outdated practises being updated. The emerging theme suggested a complete mistrust of all thing's internet without any justification for this mistrust:

> *Its very difficult to determine what's true and what's not on the internet* (Martin).
>
> *during all the COVID lockdowns a lot of those presentations were made online, but I don't tend to go out there searching for things on the Internet*. (Harriet).
>
> *I very rarely do things like Google searches because the amount of incorrect information out there far outweighs the amount of useful stuff* (Bernie).
>
> *Social media is poisonous* (Bernie).
>
> *Because the Internet generally takes a lot more effort* (Bernie).
>
> *When you look around other places, it is a bit do I trust what I'm being told? There's an awful lot of rubbish that people post* (John).
>
> *Get a broader view of what's going on, then decide what I think looks right. There is so much nonsense and stuff posted out there you can't help but be. cynical* (John).
>
> *you don't do single source you're checking information with various sources because you want to understand what's going on* (John).
>
> *You know, the internet's great, but it's got big flaws. It thinks that everybody is the same sort of standard and ability and that's where it falls on its face* (Martin).

This is significant and is helpful in developing theories about coaches using the internet for online learning. For example, in the above case, for some, there is clearly a vast amount of information held on the internet (context) from searching the internet (mechanism) that amount of returned information is too great to filter and digest (outcome)

Perceived barriers of accuracy

Clearly, all the interviewees approached the internet with a high degree of scepticism. All new academic information and learning has been validated and evidenced and subject to a verification process before it reaches publication and has been subjected to a high degree of challenge. Yet, coaches' aware of the depth of knowledge and information that the internet holds appear to approach the whole system as suspect:

> *There's nothing wrong with the Internet providing it's validated and checkable. But to go from nothing on or very little on the Internet to everything on the Internet was a bit silly because not everybody learns at the same pace* (Martin).
>
> *I think it was a bad move to go everything to the Internet* (Martin).

This interviewee's comment reinforces the previous sub-theme of overload and adds to the theme of accuracy. The context here is that by moving all information, knowledge, training and CPD onto the internet, it removed the ability of the participant to choose their learning platform. Far from empowering the coach to make the decision on which platform they would prefer to use to start and build their learning journey, focussing on the internet alone was seen by this individual as a retrogressive step:

> *the internet's great, but it's got big flaws with regard to this. It thinks that everybody is the same sort of standard and ability and that's where it falls on its face* (Martin).
>
> *You get what you look for and what you're critical of. So, you know the name online Archery Academy sounds is a dubious name until you go see somebody trying to sell me something. Sounds odd when you look at the content, it's credibility there (*John).
>
> *like you avoid the sponsored ads* (Bernie).
>
> *Don't really use the Internet for coaching, I'm more likely to ask other people who I know of coaches, and I trust* (Bernie).

Clashes between existing coach practice and that found on the internet could cause some confusion for coaches with several years experience. It appeared to lead to some power exchanges where new information was clearly challenged. Those that

choose to believe whatever information the internet holds against those that choose practical experience:

> *And people are saying this is the way we've been taught, and then you get people who were taught back when I was taught going, but that's not the way you do it this is the way you do it* (Bernie).
>
> *if I saw something that I thought was a good idea, probably tried to find out a bit more about it and to see if it was actually a good (*Harriet).
>
> *whether it's just somebodies' individual opinion, who's opinion is I know best, or whether it's actually something with some validity behind it* (Harriet).
>
> *You don't fully have the opportunity to understand what it is, or the reasoning behind what it is* (Harriet).
>
> *You know, I could, I could think of lots of things in books. I can't obviously think of anything from a, you know from a digital space* (Dave).

As stated previously Koh et al., (2018) revealed how the use of the internet added to the coaches' learning and made available new concepts to support coaching practices. Further studies on coach learning by Werthner and Trudel (2006) and by Lemyre et al., (2007) has demonstrated that online learning can be effective in increased opportunities to learn. Although Wright et al., (2007) queried whether coaches actually used the internet for educational or learning purposes.

It would be reasonable to expect that with the ease of access and availability of limitless information online that this reservoir of information would include access to enhanced learning and problem resolution with innovative solutions to sports coach situations. If sports coaches are generally becoming more developed to use self-reflection and self-regulated learning (Trudel et al., 2016; Nash et al., 2017) then it could be reasonably expected that sports coaches who have a requirement to problem solve or upskill would use the internet and its various platforms as the key to access the greater sum of knowledge contained on that platform. Sports coaches with a need to progress their level of knowledge at whatever level they coach, introducing participants to the sport, early years of development, later years of development or at elite levels need to have access to a reservoir of resources (Nash et al, 2017) that only the internet can realistically offer.

However, this does not appear to be a reason for the archery coaches to access the internet, its online platforms or the vast volumes of information to be found these platforms. There appeared to be a failure to recognise the potential for the internet-based information to enhance either learning or innovative practice. This could be due to the way in which archery coaches define or perceive themselves. In the introductory chapter the relationship between the post of sports coach and sports instructor was analysed. It was established that differences between the two are the skill levels at which they tend to operate. For example, instructors usually work with beginners or novices or those populations who lack adequate levels or ability. Sport coaches tend to work with already skilled sports performers (Knudson and Brusseau, 2021). If you perceive yourself as a sports coach there is, therefore, an inference that within that context, you must have learning or knowledge of a level to fulfil that role. That to increase your skill level, the most important process would be to “learn on the job” rather than attempting to find new and innovative ways and learn from the wider community via the internet.

Trudel et al., (2016) demonstrated that sports organisation cultures, with particular reference to sports coaches, have an advance need to succeed in their endeavours. When success is not forthcoming there is a tendency to investigate the situation and try to fix it. This can involve either identifying and rectifying a skills gap by importing additional talents or changing the coach. Rarely, if ever, do sports bodies consider a more innovative approach (Trudel et al., 2016). The same research concluded and demonstrated that the more experienced and assured the coach is, the more they are likely to change routines and the established methods and work towards different frameworks and methods by being innovative. So, Trudel et al., (2013) suggests innovation is to be desired, understood and welcomed by both organisation and sports coach.

The qualitative research stage of this project involved archery coaches who, apart from one interviewee, were all volunteer coaches with other full-time occupations away from sport and archery. They may have little, if any, time to devote to keeping abreast of current coaching practice and developments away from their coaching commitments. Equally, they may have limited financial resources to commit to attending formal courses which will develop their skill sets (Koh et al., 2017). Or, to have the time and resources to be present at NGB or other organised and relevant expert led CPD

courses or seminars particularly if the coach does not view the contents of those forums to be relevant to them or their coaching setting (Nash et al., 2017). The coaches', depending on their coaching environment, for example, low level participant, skill enhancement or high-level performer, and stage of development may not recognise the need to keep up to date on and within current coaching practice (Trudel et al., 2016; Nash et al., 2017). Consequently, it may not be readily obvious that the resources to be found on the internet are an easy way of achieving their own personal development in unmediated learning situations, either formal, non-formal or informal (Trudel et al., 2016).

Archery is also an individual sport that doesn't discriminate between age or ability and therefore archery coaches, who are also of all ages and abilities, should not apply a "one size fits all" approach but be constantly aware of the participants differences and reflecting on whether they are providing the most suitable coaching sessions for the athlete in front of them. In their study Koh et al., (2017) also found that coaches would use the internet as a source of information and learning for differing levels of athlete ability and for different stages of athlete development.

Other comments made during interviews were very much within the same theme and context. Although online websites, other resources and platforms were consulted, the value of them as a learning resource was seriously questioned and, in many responses, dismissed. This was usually due to the approach of the content being one size fits all, which clashed with the coaches' experiences of being constantly aware of the participants differences and reflecting on whether they are providing the most suitable coaching sessions for the athlete in front of them.

This is in direct contrast to the findings in Wright et al., (2007) study on learning situations of youth ice hockey coaches which even at that early stage of development of the internet they found that ice hockey coaches were using web-based sites to increase their knowledge, with particular reference to finding new drills. If, as suggested by Trudel et al., (2016), Lemyre et al., (2007), Koh et al.,(2017), Wright et al., (2007) and many other published works and research into coach education, the situation and content of NGB delivered formal coaching courses is vital to the learning and understanding of the individuals attending such courses, then future consideration

for those courses and course design should consider adding modules on how to use the internet to acquire coaching knowledge.

Many researchers have positively promoted the concept of informal learning as being of importance to the growth of knowledge for a sports coach, among these are, Cushion et al., (2010), Mallett et al., (2003), Nelson et al., (2006), Lemyre et al., (2007) and Trudel et al., (2016). Some have suggested that informal learning online between sport coaches can also be a very positive encounter, Hrastinski (2009), Stoszkowski and Collins (2014), (2017) and (2017a).

However, whether collaboration over internet platforms is an effective learning platform appears to be in some dispute. In the study by Stoszkowski et al., (2017) on the use of online sources to positively alter coach education they discovered that without the necessary attributes, for example well developed internet use skill sets and an open to learn and study disposition, students would not use the internet mediums effectively. For example, the learners who perceived themselves to be more knowledgeable appeared to see their role in conversations as the expert and the learners who perceived themselves to be less knowledgeable were agreeable to act as recipients of that knowledge without challenging it. There was also a perceived approach to not be wrong which prevented some from taking part in online learning.

Trudel et al., (2013) noted an issue with collaborating with coaches in so far that coaches in their usual working environments will form relationships with others that they have preferences for. This may lead to less feedback and mentoring and produce affirmation bias when talking within these coaching groups. This is also recognised as an online hazard. As noted earlier in this dissertation, confirmation bias is the process of seeking evidence to confirm a held belief as opposed to seeking contradictory evidence to that belief (Klayman and Ha, 1987; Jones and Sugden, 2001) and are known as echo chambers, with online users tending to search or consult for like minded contacts to those with which they have broad agreement (Flaxman et al., 2016). This could lead to a lack of knowledge enhancement as the participants within that group retain the status quo rather than challenge, innovate or generate new ideas or pass on new knowledge.

Social media platforms received mixed comments. Some regarded the platforms as a great connector of coaches, while others perceived the dangers of using such

platforms. Several examples were given during the interview of where archers, and occasionally more recently qualified coaches had posted on publicly available and accessed social media platforms, particularly Facebook, with a performance issue they were experiencing and with which they were seeking some advice or help. Criticism of the noted online conversations centred around giving general replies; given without knowledge of the performer's ability or experience. Also, the tone of some contributors was noted as being potentially aggressive particularly if long held assumptions were challenged.

Interviewees were critical of the manner in which the internet had been promoted as a vehicle to provide sports coach education and development. Archery GB were in the process of updating their coach education and development programmes when the Covid-19 pandemic struck. In an attempt to continue the programmes and their delivery during lockdowns and social distancing measures, Archery GB transferred all their development and learning courses on to online learning platforms and presentations. It was recognised that the learning and development opportunities available to sports coaches via the internet, but recognised that other more traditional learning, methods were of equal importance. There is research that supports these comments. For example, Trudel et al., (2013) considered the differences between the life histories and journeys of prospective coach candidates and the different ways in which they may learn and understand what is being understood in different learning environments and platforms. They further suggest that there may not be a single learning situation that is suitable for all learners and that those responsible for developing coach education within NGB's, should take account of this. The content design and delivery of the learning content may not transfer to an online structure without careful consideration and training of the presenters (Crawford-Ferre and Wiest, 2012; Moustakas and Robrade, 2022). For example, Archery and indeed any sport, involves a physical activity with practical considerations and interactions and these factors are not always easy to transfer to online presentations (Juliano, et al., 2021). Limitations on space, computer equipment, internet connections can all be obstacles to effective online learning. Distractions may also be more easily encountered in the participants learning environment which is considered as a negative toward effective online learning (Moustakas and Robrade, 2022).

It is also clear from the research into the switch to online learning during the Covid-19 pandemic that there are questions over whether this style and type of learning is effective and successful. There has not been sufficient research to firmly establish that online learning whether formal, informal, or non-formal is effective. Consequently, there is an inference that coaches' who have gained their learning purely from structured content delivered online, may be awarded NGB certification based on attendance rather than competence (Trudel et al., 2013; Trudel et al., 2016; Stoszkowski et al., 2017; Koh et al., 2017).

There are important contextual backgrounds and resulting outcomes to be collected here regarding learning and coaches use of the internet. These are summarised in table 9 below and offer interesting explanation for this theme:

Table 9 Realist theories generated from perceptions of the internet as a learning resource.

Context	Mechanism	Outcome
Senior experienced coaches (mention of books and more traditional methods)	Internet as a potential for learning.	Nothing newly acquired and dismissive attitude towards the internet for learning.
Informality	Internet as a connector of coaches	New perspectives and learning Trust issue remains

The data seems to suggest that in this study, learning happens when coaches use the internet as a connector of coaches but not when used as an information resource. But the parallels between what/which sources are trustworthy remain.

Table 10 Realist theories generated from perceptions of the internet as a learning resource.

Context	Mechanism	Outcome
Availability	Internet/World wide web	Illiteracy of use
Internet/World wide web	Hardware/software to access	Do not possess.
Vast repository of information	Search engines.	Too much information
Vast repository of information	Search engines.	Need to be aware of the information you need.
Vast availability of information	One of many resources	Not used
World wide web	Everyone can have access.	In everyday use
Social media	Anyone can post.	May not always be truthful or accurate.

Social media	Communication	Trusted friendship groups

Coach Education and online learning experiences.

In this section the interview theme explores, examines and is concerned with the interviewee's opinions and reactions to their use of the internet and online platforms and their experiences of using them in their coach learning from online courses and CPD. The overarching theme (figure 6) for learning was that the coaches did not recognise the internet as a learning or development resource with the sub themes that coaches validated the information given, through their own opinion and experiences; that confirmation bias and echo chambers were not recognised or challenged; coaches found it difficult to know what it was that they wanted, and scepticism of internet content was rife.

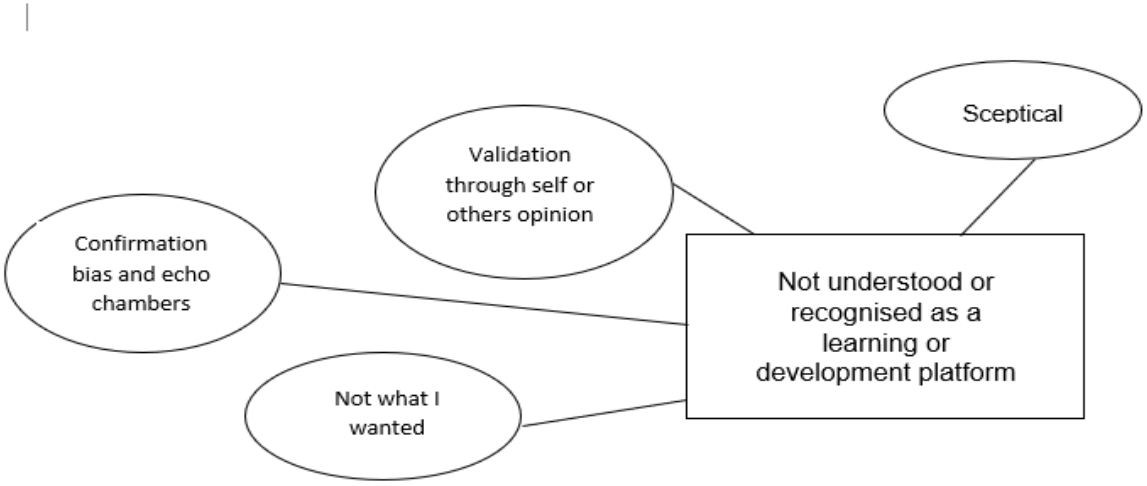

Figure 6 A thematic map representing the overarching theme and fur sub-themes (ellipses) resulting from the analysis of coach's relationship and online learning experiences.

Not understood or recognised as a learning or development platform.

Responses demonstrated a notable outcome that the interviewees did not fully appreciate that the internet could be used as a coach learning and skill development platform. It was recognised that the internet contained coaching information and knowledge but that this was to reinforce or support previously held knowledge and

experience rather than as a portal to new learning. Dave leads with great uncertainty about this:

> *Well, yes. Does it make me a more innovative and creative coach or using more innovative and creative practices? I'm not, that's a. it's a great question, but I'm not. I can't really think of a specific example of where I would say, Oh yeah, categorically that's the case* (Dave).

> *every now and then I struggle with getting something across. So, I use people like your Lloyd Brown and videos to show that what other Archers are doing particularly with those people that I am I'm working with.* (Phil).

> *Certainly, some of the if you look at YouTube and you start getting some of the videos of Top archery shooting top archery shooting* (John).

Clearly, Dave is uncertain about how the internet provides a learning experience while Phil and John acknowledge what has already been done rather than creation of new ideas or practice or how they use the internet to develop new ideas. Some respondents used the internet and its platforms for assistance in issues or problems that occurred during their coaching sessions. However, these tended to be ready made solutions rather than new learning. Further study in this area is indicated, for example, is the internet with its vast library of knowledge gradually replacing coach learning?

Phil recognises that there are internet websites that can provide the information and knowledge that he is looking for and needs for his coaching practice. His issue is that not only are the websites difficult to find but so is the information they contain:

> *That archery site is difficult to navigate around and that you need to find him, and he does go on a bit, but he genuinely is technically very, very good. But Lloyd Brown and Archery GB deliver really, really useful, practical solutions to most of the archery problems that I come up with* (Phil).

There were a few responses that indicated some had used the internet but were still sceptical to its overall usefulness:

> *On the web, then it would probably be another coach that I had some respect for and who I could see had a measure of success for all sorts of reasons and I don't*

just mean success in people winning things, but success in helping people to Improve or carry on or whatever (Harriet).

Here, Harriet has identified a more directed and selective use of the internet (mechanism) so that learning can take place (outcome) citing a wider context of performance improvement as the filter for internet use. Other responses indicated that not all the interviewees were averse to the possibilities of increasing learning through the internet:

Well, I suppose I mean in fitness you would look to people that understand fitness and training (Harriet).

Looking at other things as well, just like the UK coaching from and stuff and they have a little bits and pieces on there that you can start picking away out, so I think. As it goes along as that building up, it's like. A bank of stuff that I can reference to and go and look up. And yes, I think it is, is and will be a big boon for me in the coaching (John).

Again, Harriet alludes to having to filter the available information and John speaks of learning from a progressive banking or storing of selected information There was one interviewee that saw the move placing learning and knowledge on to the internet as a very negative move for some and therefore the internet could not be considered a learning platform:

I think it was a bad move to go everything to the Internet because it singled out a lot of people (Martin).

Martin recognised that different people learn in different ways (context) and so by placing the learning and knowledge emphasis online (mechanism) there could be some who did not learn (outcome) in this way that would be excluded from those learning opportunities. There may be those who lack the skill to use the internet, lack the hardware to access the internet or even those who have no internet connection who would automatically fit this profile. This is significant and is helpful in developing theories about online learning. For example, in the above case, for some, there is clearly no learning (outcome) from use of the internet (mechanism) and the importance of contexts lies in the capacity for some to willingly learn from it,

Others saw it as having future potential:

That then creates the innovation and the change and the reasoning for moving forward (Harriet).

Here, Harriert recognises that the internet offers the potential to deliver new learning and knowledge to a wide audience with great speed at very low cost in terms of time and money. However, currently there are barriers to this potential, as has been discussed. Harriert suggests that if those barriers can be overcome then the innovation and change that may be necessary to “raise the bar” in sports coaching should follow.

Scepticism

There were many responses that demonstrated that information given on the internet was not dependable and this inhibited coaches learning from this platform:

No, I prefer to learn everything from other people other mediums like books I've bought them recently bought the drills and skills books recently too, because I've read it in the Bow International magazine about drills and skills and actually, yeah, I'm going to start doing them a lot more. So, it isn't just one source. My preferred source is other people. but then again, I like to back it up with cold hard solid knowledge because you can't print anything unless it's actually real and validated (Martin).

Books appeared to be a favourite source of information, in hard print rather than on screen, for many interviewees. There appeared to be a level of acceptance of truthfulness in the written word that has yet to manifest itself when consulting the internet. It was disappointing to note that any reference book used need not be the latest or updated version or whether the facts in the reference material used was ever checked:

I can sort of research where I think there's valuable material to be found and then by going at it from a book point of view, it gives me things I can easily reference back to (Dave).

Books on compounds or whether it's whatever it might be. I find those really useful reference materials just to revisit and revisit and revisit, and I wouldn't. I don't think my mentality would lend itself to doing that on a platform like Google. You know, I might, I think when I'm going to Google, I'm looking for very short and quick answers

to things. And where I'm probably looking for one answer to something which I can pick up and take away (Dave).

Here Dave had not recognised the connection between storing information electronically on the internet where it can be easily accessed and kept up to date and preserving that same information in hard format from on a bookshelf where, although just as readily accessible, it may become rapidly outdated:

Now sometimes I look in books and sometimes I see things in books and think about them and maybe again discuss them with other people maybe sometimes I do just say let's give that a try and see how it works and see what happens.

I mean, I do use books to reference things, and particularly with sort of exercises and fitness and fun things you can do, but the preferred source is people (Harriet).

Other responses indicated that context was key, for example, scepticism was minimised when coaches had found the subject area interesting. It is not known how much motivation, reason or reluctance was involved in the first consultation but clearly some had put aside their doubts when they required some new learning or knowledge:

They're quite a useful tool if you try to do skills and drills and teach things (Bernie).

I've not really tried to find any others (Harriet).

However, even those that may have consulted the internet and maintained their reservations, at least acknowledged the internet as being a part of the learning journey as Harriert states below:

but I wouldn't just go oh they use that, I'll use it. I would have to understand, or I have to try to understand what the advantage of that bit of equipment or that particular style were (Harriet).

I have seen occasionally seen things on YouTube or occasionally saying things on things like Facebook where people put up their own versions of things, but I haven't actually used them (Harriet).

The issue of accessing the learning opportunities the internet had to offer was an issue, John outlining that he didn't use the internet very much until he attended an Archery GB coach development course. This was an important mechanism and the content of the course prompted those attending to use online materials. It is clear that

further research needs to be conducted to understand if the latent mistrust of the internet is through lack of understanding how to access and use it:

> *I could say yes to that. I think because with the session coach course we were sort of forced to do it online* (John).

However, the scepticism developed by coaches on the content of valid web platforms adds to the general doubts of any, if not all, web-based information and casts doubt on accepted methods and tools for assessing the viability and honesty of internet and online platforms. New Archery GB coaches receive limited and brief training in how to identify valid websites and other online platforms during their Session Coach module. The course materials ask the coach to use four general tests:

'…where has it come from and how trustworthy is the source?'
'…what sort of quality is the information?'
'…how up to date is the information?'
'…how technically accurate is the information?' (Archery GB, 2021:43)

These are not unusual critical evaluations that would be expected to be used when considering the sources of information, a sports coach might use when surfing the internet and its various online platforms. Stoszkowski et al. (2020) add a further dimension with their comment that '…critical thinking is not a common feature of interactions in sport (indeed it is more often than not discouraged) and cheerleading rather than criticality is the prevalent behaviour' (Stoszkowski et al., 2020:15).

The next step on the evaluation pathway would be that if a sports coach had the capacity to critically assess websites and other online platforms for the viability of information, would using the four general tests above result in being able to solidly conclude the information given was honest, useful and comprehensive? Assessing the Archery GB Learning platform, in its document library under the title Drills and Skills section, with the four tests noted above, generates the following, the information has come from an NGB and is presented by an internationally recognised, successful and experienced archery coach; the information given is conducive with coaching a young participant at the highest level, but only in a single circumstance. The information given covers a single bow style (there is at least three other popular bowstyles which are not mentioned) the technique given is for that single bow style and although that technique may be transferable to other bowstyle this isn't demonstrated; the information given is

at least six years old; there is no way of comprehensively answering the matter of accuracy except by trust, see also the answer to is it a trustworthy source? The tests were also completed on a further section and subsection, Session Coach and Disabled Beginners. Unfortunately, the video clearly meant to be on this section, was not working at the time of my assessment which was completed on 12 March 2023. Does the information comply with the Archery GB guidance to assess the validity of information from a website? Potentially not.

Validation through self, or others, opinion

The mistrust of the internet appeared to be compounded by the lack of external validation. Whether content was believable or not appeared to be controlled by the individual coach's experience or the opinion of other trusted individuals. Interviewed coaches expressed frustration that, unlike small groups of coaches, there were no opportunities to socially discuss topics and suggestions for new coaching information. The shared experience would indicate that there are few, if any, internet platforms that offer a feedback or discussion process for coaches to challenge, clarify or support published material. During the course of this research project the Archery GB "Learning Curve" platform changed. In its initial format there was a section where users were able to feedback, discuss, challenge or share information, in its new incarnation this facility has been completely removed:

> *Yeah. Well, I mean, you know, I do credibility checks* (Dave).

> *what their validity might be, whether it's just somebodies' individual opinion, who's you know I know best, or whether it's actually something with some validity behind it?* (Harriet).

The opinion of other coaches appears to be a driving factor of whether some new piece of knowledge is credible. Harriet suggested that although she preferred to learn from other coaches she had become as sceptical about this knowledge route as she was from the internet. Whichever information source was used Harriert needed proof that it was valid and not just opinion:

Because talking to the coaches and having conversations with them along the lines of did you experience? Have you done? Did you come across this? How did you resolve it? (Harriet).

Once again, the interviewees process for deciding the validity and honesty of information was based on personal experience and preference rather than by any scientific or academic reasoning, to such an extent this researcher considered that the answers to questions being asked were based on what the interviewee thought the researcher wanted to hear rather than their actual opinions and beliefs:

The Internet's useful but actually being around other coaches is very useful for me (Phil).

So, the one thing that's really, really helpful is being around other coaches (Phil).

It does lead to that conversation and questioning (Harriet).

Previous experience, and not necessarily in the field of sports coaching can also influence the ways in which users' interface with the internet:

And I think a lot of ways, the way that I work in my job, it's you don't do single source, you you're checking information with various sources because you want to. understand what's going on. So, I think would I settle on a single source? I don't know that I would. (John).

Yes, if I'm looking at technique, particularly if I'm looking for myself to develop my own technique, but also then becomes relevant in pass that on (John).

They can be useful if they used in the right way (Bernie).

Confirmation bias and echo chambers

In the previous section, "Getting online, a game changer", discussion was raised regarding the internet's ability to use "surfing" information to direct content at the user. Although this was a difficult topic to openly discuss in the interviews, there were statements that indicated that coaches looked for knowledge and information that supported their own coaching and life experiences. When searching online for information for example:

I'm also a well travelled Archer and when you go to archery clubs and you discuss them with other Archers they know of Lloyd Brown, they may not use his resources, but they know of him and know the good work that he does (Phil).

OK, I use them as a like I say a library, but also kind of like when you plant a small seed in your garden it grows a little bit and, but let's say it's a vine. It grows a little bit, and you want it in a particular shape. You have to trim and cut. You need to you need to prune appropriately. You need to push it in a certain direction to make it go where you want it to go. And that's how it works for me. So, I only use the Internet really to provide that seedling (Phil).

It's from Google and they are all the same people, so it might also be the same thing. Beyond that it tends to be I don't really use it (Bernie).

And it's good to bring some of that across and particularly the juniors that I coach to show them what good technique looks like and sometimes, techniques of the pros look like. So yeah. Bringing some of that through is useful (John).

Because it's got all the drills and skills, sort of little recordings on that I find useful. And there's lots of other usual stuff about coaching science, coaching technique that it's because it's the AGB stuff. It fits in with what I'm trying to learn and to coach. (John).

You hear of them going to clubs at home offering to help and being told they're not coaching the correct way (Bernie).

I tend to try and look at people that are open minded and willing to take a fresh look at things or to consider things (Harriet).

I think it's useful as a visual aid for people, so it starts to build up (John).

Although many of the interviewees acknowledged their own, limited relationship with the internet and its potential dangers, none of them acknowledged that this could be an issue to knowledge acquisition and learning. The stated safety net was that they would discuss it with others or consult previously printed books.

Not what I wanted.

The final key theme was that the coach interviewees used personal experience to "judge" the validity of information on the internet. If they searched the internet for

information or knowledge, a common thread, was the internet did not hold the information they were searching for. In analysing the responses this stance could be challenged in that the information is there it was just not recognised as such:

> *To create something as, say a YouTube something or some other resource, some click on resource, a YouTube resource that says something like. You know when you get that perfect releases videos on YouTube, perfect releases. You know athlete that's doing it 15 hours a day* (Phil).

> *Perfect releases with normal people where they do it perfect release, but they don't show archers with physical challenges, they have, limited special awareness or are visually impaired. I've got an Archer who is visually impaired* (Phil).

> *But dealing with all those different shapes on a on a resource, a click on resource would be enormously helpful for coaches* (Phil).

> *Yeah. I think generally if I was going to Google, I'm not looking for primary information. I might be looking for support information. I might be looking for* (Dave).

> *Let's say interesting quotations or experiences to use from elite performers or high-level coaches in other sports and things like that. So, I suppose I'd probably say it would be more I'd use it more as a cross referencing tool* (Dave).

> *I really don't like the Internet, but I like it as a social tool* (Bernie).

> *if I saw something that I thought was a good idea, probably tried to find out a bit more about it and to see if it was actually a good* (Harriet).

> *There's an element where you might see something, but it's that then further researching it and further trying to further understand it* (Harriet).

> *So those of other resources that I have used, so I've actually received gone out and searched for coaching and watched other coaches that come and shoot with us from time to time and they coach our Archers and so yes, I learned vicariously from them* (Phil).

Thematic analysis around the question of effectiveness on increasing and developing coach learning and practice has demonstrated that there is an initial query surrounding whether coaches actually consult the internet for learning or skill development.

Martin was the only respondent to consider whether the availability or access to the internet was consistent for all coaches. Some coaches may not have ready or reliable access to the internet due to where they live or they may not have sufficiently up to date hardware, for example laptop and web camera, that would enable them to access online platforms. Martin suggested that some may fail to connect because they had not been shown how to use or access the internet or had not received any training in how to perform the necessary tasks to achieve this. Or individuals may simply have taken the view not to be interested or motivated in going online. Martin's comment is supported by recent research. Moustakas and Robrade (2022) reported that not only did the lack of a quality and consistent internet connection affect the ability of learners to take part in online learning but also the potential lack of useable hardware. They also noted that the environment in which the learner was situated may not be conducive to learning in that they may have many distractions around them, particularly if they are studying at home.

The ability of the presenter of online sessions was also noted as a potential blockage to the successful delivery of internet-based learning and the presenter's familiarity with the software used to deliver those sessions (Crawford-Ferre and Wiest, 2012). If potential learners do not possess the basic hardware and reliable internet connections, it is reasonable to assume that any attempt by them to access online learning would not be successful and potentially very stressful. There may be a need by those advocating the move to online learning to ensure that the target learner individual or group has adequate, secure and safe access to those resources before offering this form of learning as the only route or partial route. Further research needs to be conducted to determine what effect poor service levels of internet presentation hold to dulling or diminishing the motivations to consult the internet and whether poor online presentations reinforce the mistrust clearly experienced by users.

The thematic analysis also demonstrated that coaches using valid platforms were narrow in their perspective of what was being displayed. Frequent comments were made regarding the level and stature of the performers used as examples on videos, for example, young, fit and well practiced. When in real life, performers and participants of this level were far from common and what the coaches' experienced. This offers an important theory in that the internet (mechanism) may be more useful to coaches (outcome) if the material contained – e.g. video - is more representative of

the participants coaches deal with (context). Users of internet platforms (mechanism) had high expectations that the information provided would cover all eventualities (outcome), but even the internet with its vast resources cannot have the answer to every minute difference.

This unrealistic expectation may be a contributory factor to the lack of trust of internet content. There may be a case for controlling expectations when teaching how to use the internet and accessing its information resources and again further research is indicated in this area. Phillip had clearly visited the Archery GB Learning Curve platform and viewed the videos of the skills and drills available for archery coaches to access. He has also clearly searched the internet and various online platforms trying to find resolutions or examples of the issues he was experiencing to try and find answers. His frustration at not being able to identify internet platforms that could give examples or information on how he might potentially deal with the very individual types of issues archery coaches may encounter is evident. Clearly, he wanted guidance on how to work with the vast range of age and ability of participants attending archery sessions and the internet platforms he had searched had not provided that guidance. Further criticism of content on the internet revolved around single aspect representations where only those considered to be the best were used as examples. Ordinary participants were never or very rarely used as examples which Phillip considered unrepresentative and unhelpful to archery coaches and coaching.

However, how reasonable is it of coaches to expect to be able to access video or instruction of every variable in capacity that he or she may encounter as a coach when working with archery participants? Surely, if they have the physical knowledge of how the muscles and skeleton work and interact, they should be able to formulate adaptive processes or equipment to assist in their coaching with different populations? Again, further research is indicated in this area of expectation of what the internet can provide and how much it can provide as guidance, is it a signpost or solution provider? The interviewees appeared to want the internet to be a solution provider. This could be due to the way in which individuals learn. According to Trudel et al., (2013) when coaches attend a formal or mediated learning module, the learning content of that session will be the same, but the way in which the coach learns will be individual to that coach. That which is learned by the individual coach, whether from the internet or from a more

formal course will differ, subject to the coaches' sole prior experiences and encounters in learning circumstances and how that coach interprets these.

There are, however, many advantages to using the internet as a learning platform. Most courses can be accessed at a time convenient to the learner, an important context, and are usually cheaper both in terms of time and money saved in traveling to and from venues and also in course fees (Koh et al., 2017). Cost may be a large contributory factor when archery coaches are considering the different avenues offered by learning opportunities. For example, most archery coaches are unpaid volunteers, respondents to the questionnaire noted above revealed that 66% of the respondents were voluntary unpaid coaches, the 16% that identified themselves as paid coaches were almost the same as the number that declared themselves as AGB Coach Developers, 17%, who are paid to teach coaches how to coach, but not for coaching. Given that archery coaches tend to be unpaid volunteers it would be reasonable to deduce that any opportunity to save time and money would be a priority (Wiersma and Sherman, 2005).

There are important contextual backgrounds and resulting outcomes to be collected here regarding coaches' interaction and learning with the internet. These are summarised in table 11 below and offer interesting explanations for this theme:

Table 11 Realist theories generated from coach education and online learning experiences.

Context	Mechanism	Outcome
Online guidance for CPD vague and without direction	Internet as policy guidance	Too much responsibility on personnel to decide on the right way to learn and develop
Video depictions 'too perfect'	Internet as a video, visual aid	Lack of empathy or transfer to reality of coaching athletes
Internet/World wide web	Availability	Ignorance of use
Vast repository of information	Search engines.	Too much information
Vast repository of information	Search engines.	Need to be aware of the information you need.
Vast availability of information	One of many sources	Not used
World wide web	Everyone can have access.	In everyday use

Social media	Anyone can post.	May not always be truthful or accurate.
Social media	Communication	Trusted friendship groups

Conclusions

This research project had the research aim of investigating whether the internet had an impact on coaching and coach education. To generate theories that would explain these impacts and although the data has not been able to fully answer some of the key research questions, the overarching conclusion is that the internet has potential. However, this study found little evidence to suggest that, after sport administrator's policies over the last 5 years being directed toward this, it has achieved its objective and that there is still some way to travel before the internet and the potential for its use in coach education can realise that objective.

To what extent do sport coaches access and interact with the internet and its various online platforms and what motivates them to do this?

The data from the qualitative research demonstrated that a large number of archery coaches' (90%) regularly logged on to the internet with much of the accessed information being subsequently employed (52%) or sometimes employed (44%). What is less clear is whether this was to acquire new information or knowledge, previously accessed information or knowledge, general sport information (tournament, results, awards, licencing or other archery coaching related matters) or just for ordering books, courses or archery equipment. The questionnaire was, however, a very general "snapshot" across all genders, ages, coach grades and years of experience. The resulting data is also not clear on the extent to which sport coaches use the internet as a learning resource, knowledge bank or communication device to consult with other archery coaches.

With the Covid-19 pandemic lockdowns came the challenge on how to operate effectively as a sport (at its very least a social activity) while being compelled to isolate from your fellow archers. All archery ranges covered by the insurance provided by Archery GB, both indoor and outdoor, were closed from 19th March 2020 (national

lockdowns began on 23rd March 2020 (Institute for Government Analysis, 2023). Outdoor ranges were allowed to reopen from 13th May and indoor ranges from 25th July. These dates did not fully match those set by the government as AGB felt they needed to provide guidance on how ranges could open to ensure, as far as possible, that the sport could continue in a way that was as safe as possible for the participants. Restrictions were placed on how many people could practice together and on the spacing of targets and shooting positions. Some of these spacing and numbers able to be present, “rules” were applied to both indoor and outdoor ranges and there were some additional restrictions indoors such as the use of screens between shooting lanes.

Archery GB, like many other social institutions and sports, rapidly transferred a lot of its activity, particularly coach education courses, online. It would be reasonable to expect that this unplanned but necessary shift to online would result in a greater use and access to the internet, however, the collected questionnaire data did not support this expectation. It may be that, as many sport coaches could not hold coaching sessions or attend club sessions that they waited until the “all clear” was given and the lockdowns were lifted before resuming usual routines and coaching activities.

The semi structured interviews gave greater insight and rich data into how sports coaches used the internet in their coaching, coach education and their motivation for using this pathway. The main theme drawn from this research method was that archery coaches had differing views on the extent to which the internet could be used as a learning resource. The sub themes of banking the knowledge and using the internet as a toolbox/library of previously learnt information and knowledge was very powerfully stated. This was particularly supported when visual assistance was required.

The use of the internet to access existing knowledge and known information was demonstrated as the main motivator for using this medium. However, the coaches with the greater experience and higher qualifications were also motivated to use the internet to fill knowledge gaps, particularly when researching supporting information from other sports.

How does providing learning and sports coaching information through the internet, online and digital platforms lead to increased learning and creative and innovative practice?

The semi structured interviews revealed a level of contradiction and confusion indicating that archery coaches' do not possess a level of understanding regarding the internet that allows them to deliver a considered assessment. A kind of hopeless resignation appeared to be the overwhelming position. Replies to the semi structured interview questions were frequently confusing with many participants denying use of the internet for anything other than an information service to then, later in the interviews admitting that they used the internet to access new learning. These answers could be driven by the interviewees wanting to give expected answers rather than their actual thoughts, an area examined and discussed earlier in this dissertation. Or it could derive from the confusion that is, the internet. Is it a communication or information platform, a social dialogue platform, an entertainment service or an education medium? It may at various times be any or all of these things to any user at any time. However, from the replies received in the interviews there is no clear agreement on what the internet provides.

The constantly stated position that the coaches preferred to learn from other coaches and preferably in face-to-face situations, may be strengthened as a result of this bewilderment. Internet content needs to relevant, interesting and easy to use so that coaches understand where to look for what they need rather than enter a term in a search engine and hope the information will be returned and not thousands of possible suggestions. This may require more training in the use of the internet, but it would be a shame if this huge resource of knowledge was ignored because the way to access it was not a comprehensively taught subject. Naturally, this also applies to those who provide the information placed on the internet. Clarity needs to be given to on, what and why, the internet is being used. Much of how an individual perceives the world is through their life journey and experiences, so, maybe less emphasis should be placed on where data is stored and more emphasis on why it's there and how to access it. Further research is clearly required in this area, after all as the majority of coaches become qualified in their later years, this could be a generational effect.

People in face-to-face situations can be questioned and challenged in order to clarify what is being discussed or provided, however, there are rarely opportunities to do this with the internet. “Live” internet presentations may be a way forward with this issue; however, further research is needed to ensure that online presenters are sufficiently skilled to be able to deliver online presentations to the required levels and standards.

Similarly, the content needs to be competently designed, so that the user can understand it. Poorly produced pages or presentations are not likely to engage the participant, and this again could be a reason the coaches preferred other means rather than through the internet of acquiring information.

Linking the findings to the learning theory discussed earlier in this dissertation it can be noted that there are areas of most learning theories that may be supported by the use of the internet and its digital platforms. However, there may also be issues in this as Sfard (1998) discussed the potentiality for negative consequences of uneven learning in respect of only learning through experience and equally, only learning through a structured progressive system; for illustration, acquiring knowledge in a structured setting for example using the internet and any of its online platforms for acquiring learning may result in knowledge, however in the absence of participatory knowledge, applying classroom learning in a wider context may prove difficult (David et al., 2006).

If, therefore, coaches prefer to learn from other coaches it could be argued that the single source effect may be resolved if the internet is used to support that route of acquiring knowledge. However, if coaches use the internet and its various platforms to only support the knowledge and learning gained from other coaches then it could be also argued that this would support Sfard (1998) comment regarding negative consequences of uneven learning.

The consequences of uneven learning could result in the continuation of poor practice, tradition and culture within the Archery coaching community as similarly demonstrated and identified by Anne Whyte in her independent investigation into the sport of gymnastics (Whyte, 2022). Her report indicted that coach education that was not based on directed continuous professional development, reflective practice and with input from other sports reinforced existing practices and traditions. Therefore, unless coach learning is well directed, based on current and new experiences and

sport science, learning theory would indicate that only existing knowledge and practices are being acquired.

There was also no evidence or data collected to demonstrate that providing learning and sports coaching information through the internet leads to increased learning and creative and innovative practice. If the internet provided anything the data collected demonstrated that it was being used primarily as a support tool, rather than being used to provide new creative processes and ideas for creating increased sports performance or assisting in the formulation of innovative coaching that would enhance sports performance.

A final consideration in this section is that sports coaching is a very social process, it concerns people interacting and communicating with other people, it should come with little surprise, that if sports coaches' use their personal skills to pass on observations and information that their preference is to acquire knowledge and learn through that same social process.

If digital and online presentations cannot be challenged or queried at source, how is their effectiveness assessed for their positive contribution to increasing and developing coach learning and practice?

In reality, the data demonstrated that this appears not to happen. This research is merely a snapshot of an ever developing medium and a longitudinal study is indicated to be able to answer this research question with any degree of clarity.

However, the data demonstrated that the participant coaches mainly perceived the internet as a resource for their existing knowledge and not as a development or innovative tool for their coach learning and development. This should be a concern for any sport using the internet in the desire to increase the skill levels of their coaching workforce at any level. If NGB's are using the internet and digital platforms to educate and inform their coaching workforce, surely, it would assist in this aim if they understood how their prospective audience perceived that delivery medium. Consideration should be given by those charged with the publishing of online training and learning material that the place to start is with the aim of ensuring that if you are going to use the internet, that the user audience knows how to use and access that

medium. Further research needs to be completed in this area to ensure that the stated aims of using the internet to inform and educate are actually capable of being achieved through this medium.

How should quality control be made available for online and digital resources and what can be done to challenge and change content if it is found to be of questionable quality?

Data from this research project did not fully answer this question, however, it did inform potentially the greatest challenge to coach education when using this vehicle for education and demonstrated the contradictions which have arisen during the research.

For policy makers, the attraction of using the internet as a platform for conducting coach education is clear. Low cost, convenience, ease of access are just a few of the advantages, but are they advantages? No evidence from the data revealed that moving coach education and development onto the internet has brought any benefits. Indeed, there are some potential dangers, the user experience may deter future involvement, content may not be fully understood, and innovation and creativity become stifled. The adoption of a top-down approach with few, if any, mechanisms to encourage or allow bottom up contributions may lead to further frustration on the part of those wanting to improve their coaching careers. There is much further research that needs to be completed in this area and in understanding the limitations of the internet before it can become that comprehensive learning and communication tool that sports bodies want it to be.

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Appendices

The Questionnaire

Manchester Metropolitan University

Coaching quality and coach education: the impact of the internet

We would like to invite you to take part in this research project to develop insight into sports coaching and sports coach education. My name is Bryan Woodcock, and I am the lead researcher. Current sport policy makers lack the evidence to provide informed decision's surrounding the rapid emergence of online and internet resources and this may impact on sports coach learning issues.

It is up to you to decide if you want to take part. If you agree you will be asked to give consent for the data, you provide to be used for this study. You are free to withdraw at any time without giving

a reason. There is no payment, reward or other benefit for taking part in this study, however, there are no risks involved with participation. Only a small amount of your time is required to complete the survey, it should take no longer than 10 minutes to complete.

You will be asked to complete a short questionnaire. The digital data this generates is recorded and will be stored on a central database that is only accessible by the lead researcher.

Should you require a copy of the Participant Information sheet or have any questions about this project then please email the lead researcher, bryan.woodcock@stu.mmu.ac.uk

Please indicate if you would like to take part.

- ○ Yes
- ○ No

I confirm that, I have read the previous participant information for this study.

I understand my participation is voluntary and that I am free to withdraw at anytime without giving any reason, without my legal rights being affected.

I have had the opportunity to consider the information, ask questions and have received satisfactory answers.

I am over age 18.

I am a current Archery Coach of Level 1 (Session) or above.

- ○ Yes
- ○ No

Pre-Covid did you ever access the internet in connection with your Archery coaching?

- ○ Yes
- ○ No

Which of the following online platforms did you use (please tick all that apply)?

- ☐ 1) Archery GB Learning Curve
- ☐ 2) Connected Coaches
- ☐ 3) Archery GB website
- ☐ 4) UK Coaching website
- ☐ 5) World Archery website
- ☐ 6) Archery GB
- ☐ 7) Other coaching webinars
- ☐ 8) Online Social networks
- ☐ 9)
- ☐ 10) Other Archery specific websites
- ☐ 11 County Archery Association website
- ☐ 12) Regional Archery website
- ☐ 13) Other specific Archery Coach website
- ☐ 14) Other (please specify)

How often did you use these online platforms in connection with your Archery coaching?

- ○ 1) At least once per week?
- ○ 2) A least once per month?
- ○ 3) At least once in every 3 months?
- ○ 4) At least once in every 6
- ○ 5) Less often (please specify)

Did you use the information obtained from your online source in your Archery coaching / Archery coach education?

- ○ Yes
- ○ Sometimes / Occasionally
- ○ No

Not relevant

Overall, how useful did you find using internet and online platforms in supporting your Archery coaching / Archery coach education?

- ○ Not at all useful
- ○ Slightly useful
- ○ Moderately useful
- ○ Very useful
- ○ Extremely useful

During the Covid pandemic did you ever access the internet in connection with your Archery coaching?

- ○ Yes No
- ○

Which of the following online platforms did you use (please tick all that apply)?

- ☐ 1) Archery GB Learning Curve
- ☐ 2) Connected Coaches
- ☐ 3) Archery GB website
- ☐ 4) UK Coaching website
- ☐ 5) World Archery website
- ☐ 6) Archery GB
- ☐ 7) Other coaching webinars
- ☐ 8) Online Social networks
- ☐ 9)
- ☐ 10) Other Archery specific websites
- ☐ 11. County Archery Association website
- ☐ 12) Regional Archery website
- ☐ 13) Other specific Archery Coach website
- ☐ 14) Other (please specify)

How often did you use these online platforms in connection with your Archery coaching?

- ○ 1) At least once per week?
- ○ 2) A least once per month?
- ○ 3) At least once in every 3 months?
- ○ 4) At least once in every 6 months?
- ○ 5) Less often (please specify)

Did you use the information obtained from your online source in your Archery coaching / Archery coach education?

- ○ Yes
- ○ Sometimes / Occasionally
- ○ No
- ○ Not relevant

Overall, how useful did you find using internet and online platforms in supporting your Archery coaching / Archery coach education?

- ○ Not at all useful
- ○ Slightly useful
- ○ Moderately useful
- ○ Very useful
- ○ Extremely useful

Which of the following resources would you prefer to consult for your Archery coaching/coach education?

- ☐ 1)Other Archery coaches (including Mentors)
- ☐ 2)Books, Academic Journals, Magazines or other written resources
- ☐ 3)Internet, digital or other online resources
- ☐ 4)Other (please specify)

About you.

What is your gender?

- ○ Male
- ○ Female
- ○ Non-binary / third gender Prefer not to say

What is your age?

- ○ 18 – 25
- ○ 26 – 55 Over 55
- ○ Prefer not to say

Are you a (please tick all that apply)

- ☐ 1) Volunteer Archery coach
- ☐ 2) Paid Archery coach
- ☐ 3) Archery GB coach educator?

What is the highest-level of Archery GB coach qualification you currently hold

- ○ 1) Level 1 or Session coach
- ○ 2) Level 2 or Developer coach
- ○ 3) County coach
- ○ 4) Senior coach

How long have you been a qualified Archery coach?

1) Less than 3 years
2) 3 to 6 years
3) 6 to 12 years
4) Greater than 12 years

Would you describe yourself as;

1) Computer and online literate
2) Moderately computer and online literate
3) A relative beginner in the use of computers and online services
4) I can barely use a mobile phone

2.Participant information form for the questionnaire

Participant Information Sheet

Questionnaire

Coaching quality and coach education: the impact of the internet. A case study for archery

1. Invitation to research

We would like to invite you to take part in this research project to develop insight into coaching and coach education. My name is Bryan Woodcock, and I am the lead researcher.

2. Why have I been invited?

You have volinteered to take part in this study as you are actively involved in the delivery of coaching or coach education within the sport of Archery. Current sport policy makers lack the evidence to provide informed decisions surrounding the rapid emergence of online and internet resources and how this may impact on sports coach learning issues. As one of those constituents, the research has to value your personal perspective and interpretation about your use and interpretation of data and information contained within various online and internet platforms and the impact they have on the sports coach learning and development.

3. Do I have to take part?

It is up to you to decide. We will describe the study and go through the information sheet, which we will give to you. We will then ask you to sign a consent form to show you agreed to take part. You are free to withdraw at any time, without giving a reason.

4. What will I be asked to do?

If you do decide to take part you will be asked to sign an informed consent form stating your agreement to take part and you will be given a copy together with this information sheet to keep. There will be no payment for taking part in the study which will take place over a period of two years and you may also be contacted further (with your permission) over the telephone.

Once consent has been granted, you will then be asked to complete a short questionnaire. The lead researcher will contact you via email to arrange this. The lead researcher will email or send the questionnaire directly to you for you to complete and return. The Digital data this generates recorded and stored on a central database that is only accessible to the lead researcher. Hard copies of such information will be within a locked storage unit within the researcher's locked office. All digital files are password protected and your name or address will not be used in any published material.

5. Are there any risks if I participate?

There are no disadvantages or risks involved with the participation of this study, only a small proportion of your time may be taken up during the day to conduct the interview.

6. Are there any advantages if I participate?

There are no benefits involved with the participation of this study however, as a result you may acknowledge and understand the position of physical activity within the sport and how this is being delivered through sessions, programmes, and initiatives within Archery.

7. What will happen with the data I provide?

When you agree to participate in this research, we will collect from you personally identifiable information. The Manchester Metropolitan University ('the University') is the Data Controller in respect of this research and any personal data that you provide as a research participant.

The University is registered with the Information Commissioner's Office (ICO) and manages personal data in accordance with the General Data Protection Regulation (GDPR) and the University's Data Protection Policy.

We collect personal data as part of this research (such as name, telephone numbers or age). As a public authority acting in the public interest we rely upon the 'public task' lawful basis. When we collect special category data (such as medical information or ethnicity) we rely upon the research and archiving purposes in the public interest lawful basis.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. We will not share your personal data collected in this form with any third parties.

If your data is shared this will be under the terms of a Research Collaboration Agreement which defines use and agrees confidentiality and information security provisions. It is the University's policy to only publish anonymised data unless you have given your explicit written consent to be identified in the research. **The University never sells personal data to third parties.**

We will only retain your personal data for as long as is necessary to achieve the research purpose. On completion of the associated degree award, all data will be deleted and destroyed.

For further information about use of your personal data and your data protection rights please see the University's Data Protection Pages (https://www2.mmu.ac.uk/data-protection/).

What will happen to the results of the research study?

The study will be reported in a dissertation and submitted to the University.

Who has reviewed this research project?

Only the lead researcher and the research supervisory team (Members identified below) will review this body of work. The University's Post Graduate exam board and external examination team will also review the final submission for assessment purposes

Who do I contact if I have concerns about this study or I wish to complain?

If you have any concern about this study or wish to complain please contact:

The researcher: Bryan Woodcock: bryan.woodcock@stu.mmu.ac.uk

The principal supervisor: Dr John Daniels; j.e.daniels@mmu.ac.uk; Telephone – 0161 247 5467

Second supervisor: Dr Ryan Groom; r.groom@mmu.ac.uk; Telephone – 0161 247 5719

Faculty ethics Head: Dr Gethin Evans; gethin.evans@mmu.ac.uk; Telephone – 0161 247 1208

All can be contacted in writing at; Manchester Metropolitan University, Fourth Floor, All Saints, Oxford Road, Manchester. M15 6BH.

If you have any concerns regarding the personal data collected from you, our Data Protection Officer can be contacted using the legal@mmu.ac.uk e-mail address, by calling 0161 247 3331 or in writing to: Data Protection Officer, Legal Services, All Saints Building, Manchester Metropolitan University, Manchester, M15 6BH. You also have a right to lodge a complaint in respect of the processing of your personal data with the Information Commissioner's Office as the supervisory authority. Please see:

"https://ico.org.uk/global/contact-us/"

THANK YOU FOR CONSIDERING PARTICIPATING IN THIS PROJECT

3. Participant information form for the interviews

Participant Information Sheet

Interview

Coaching quality and coach education: the impact of the internet. A case study for archery

1. Invitation to research

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3. Do I have to take part?

It is up to you to decide. We will describe the study and go through the information sheet, which we will give to you. We will then ask you to sign a consent form to show you agreed to take part. You are free to withdraw at any time, without giving a reason.

4. What will I be asked to do?

If you do decide to take part, you will be asked to sign an informed consent form stating your agreement to take part and you will be given a copy together with this information sheet to keep. There will be no payment for taking part in the study which will take place over a period of two years and you may also be contacted further (with your permission) over the telephone.

Once consent has been granted, you will then participate in a single, semi-structured one-to-one interview with the lead researcher which will be conducted at a time and date of your convenience. The lead researcher will contact you via email to arrange this. The interview will last for approximately 1 hour and will take place on an online digital platform such as Zoom or MS Teams. Alternatively, the interview can be conducted over the phone or, should social distancing measures allow – face to face at a location of your convenience.

A digital recording and notes will be made throughout the interview process along with a transcript after the interview has been made for analysis purposes. Digital data such as interview recordings and transcriptions are recorded and stored on a central database that is only accessible to the lead researcher. Hard copies of such information will be within a locked storage unit within the researcher's locked office. All digital files are password protected and your name or address will not be used in any published material.

5. Are there any risks if I participate?

There are no disadvantages or risks involved with the participation of this study, only a small proportion of your time may be taken up during the day to conduct the interview.

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There are no benefits involved with the participation of this study however, as a result you may acknowledge and understand the position of physical activity within the sport and how this is being delivered through sessions, programmes, and initiatives within Archery.

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We will not share your personal data collected in this form with any third parties.

If your data is shared this will be under the terms of a Research Collaboration Agreement which defines use and agrees confidentiality and information security provisions. It is the University's policy to only publish anonymised data unless you have given your explicit written consent to be identified in the research. **The University never sells personal data to third parties.**

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"https://ico.org.uk/global/contact-us/"

THANK YOU FOR CONSIDERING PARTICIPATING IN THIS PROJECT

Interview Consent form

Manchester Metropolitan University

CONSENT FORM

Coaching quality and coach education: the impact of the internet. A case study for archery

Interview

Participant Identification Number:

	Please tick your chosen answer	YES	NO
1.	I confirm that I have read the participant information sheet version 3 , date 11 March 2021 for the above study.	☐	☐
2	I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐	☐
3	I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.	☐	☐
4	I agree to participate in the project to the extent of the activities described to me in the above participant information sheet.	☐	☐
5	I agree to my participation being audio recorded for analysis. No audio clips will be published without my express consent (additional media release form).	☐	☐
6	I understand and agree that my words may be quoted anonymously in research outputs.	☐	☐
7	I wish to be informed of the outcomes of this research. I can be contacted at: _____	☐	☐
8	I give permission for the researchers named in the participant information sheet to contact me in the future about this research or other research opportunities.	☐	☐
9	I give permission for a fully anonymised version of the data I provide to be deposited in an Open Access repository so that it can be used for future research and learning.	☐	☐

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Name of person taking consent	Date	Signature

When completed: 1 for researcher, 1 for participant to keep with the PIS
EthOS ID 24315, version v.3. and 12/03/2021