1    **Collaborative Evaluation of Individual and Team Performance in Training and Match Environments**

2    **using the Coach Logic Online Platform**

3

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5   **Abstract**

6   Sports coaches' commonly have a limited appreciation of pedagogy (Light & Evans, 2013).

7   Furthermore, investigations concerning coaches' use of performance analysis for athlete learning are

8   rare (Groom, Cushion, & Nelson, 2011). Complex Learning Theory (CLT) advocates nonlinear and

9   sociocultural educative approaches (Light, 2013). Considering this digital age, the aim of this

10  investigation was to examine coaches' use of Coach Logic - an online video-based coaching platform.

11  Seven Head Coaches (five rugby union and two field hockey) were interviewed individually whilst their

12  coaching staff and players contributed to group interviews. Results confirmed *a priori* themes of

13  active, social and interpretive as derived from CLT. Analysis of these findings established that online

14  coaching platforms have the capacity to facilitate the *active* involvement of athletes in the process of

15  performance analysis. From a *social* perspective, online coaching platforms have helped to develop a

16  positive team environment and also interpersonal working. Good practice was evident relating to

17  *interpretive* approaches; however, the potential for coaches to embrace more radical

18  conceptualisations of knowledge acquisition is stark. Online coaching platforms have a place in

19  contemporary team sport environments and can contribute to athlete learning and other important

20  aspects of team culture and cohesion.

21

22

23  Key words: Complex Learning Theory, performance analysis, athlete learning, team culture, coaching

24  practice.

**Collaborative Evaluation of Individual and Team Performance in Training and Match Environments**

**using the Coach Logic Online Platform**

The pedagogic expertise of the sports coach has become an increasingly common topic of discussion within the contemporary sports coaching literature (Light, Harvey, & Mouchet, 2014; Padley & Vinson, 2013). Investigations into sports coaches' beliefs have most commonly uncovered a relatively weak understanding of pedagogy (Evans, 2006; Light & Evans, 2013) whilst research focussing on coaching practice has frequently revealed linear, technically-focussed, modes of delivery (Harvey & Jarrett, 2014; Magias, Pill, & Elliott, 2015). Linear pedagogies are characterised by the 'passing down' of knowledge from coach to athlete through which the learner is conceived as a recipient, rather than an active player, in the development of their understanding and expertise (Roberts & Ryrie, 2014). Contrastingly, consensus within recent research suggests that coaches should adopt nonlinear pedagogic approaches thus acknowledging the complex and dynamic nature of the development of expertise in most sporting environments (Chow et al., 2006; Pill, 2014). Nonlinear pedagogy is considered to be a multidimensional and psycho-social facilitation of the development of athletic expertise and is commonly aligned to constructivist theories of learning (Cassidy, Jones, & Potrac, 2009; Vinson, Brady, Moreland, & Judge, 2016). Constructivist theories suggest humans 'construct' their learning by considering how new experiences and/or information relate to their prior understandings and how these various elements can be pieced together. Within this premise, the learner is cognitively active, adopting a reflective disposition to build their own interpretation of the environment (Nelson, Potrac, & Groom, 2016). However, Davis and Sumara (2003) suggested that the various forms of constructivism (e.g. psychological and social) and the numerous perspectives from which these conceptions have emerged (from, for example, Dewey, Piaget and Vygotksy (Day & Newton, 2016; Light, 2008; Potrac, Nelson, Groom, & Greenough, 2016; Toner, Moran, & Gale, 2016)) have caused some confusion amongst educators. In an attempt to resolve this confusion, Davis and Sumara (2003) proposed a 'complex' learning theory as an umbrella term under which the various perspectives could all be brought. However, Light et al. (2014) were keen to point out that Complex

51 Learning Theory (CLT) is more than just a synonym for constructivism because it is inclusive of

52 theoretical approaches such as enactivism (Varela, Thompson, & Rosch, 1991) and situated learning

53 (Lave & Wenger, 1991). Inclusion of enactivism and situated learning under the umbrella of CLT

54 requires a conscious and deep consideration for cultural influences within learning environments.

55 There are considerable similarities between CLT and recent work by Jones, Thomas, Tuim Vitto Filho,

56 da Silva Pires Felix and Edwards (2016) and Jones, Edwards and Tuim Viotto Filho (2016) discussing

57 the cultural-historical or activity-theoretical (CHAT) perspective. These theories all place considerable

58 emphasis on the process of mediation within an active social context as foundational for

59 understanding learning. CLT was adopted as the theoretical lens for this investigation due to the

60 clarity and applicability of the framework to applied sporting environments.

61 **Complex Learning Theory, Game Sense and sports coaching**

62 Light (2008) was the first to bring CLT to the attention of sports pedagogues and outlined the

63 three broad ideas which inform this framework. First, learning is considered to be *active* insofar as

64 participants should be conceived as adapting to the environments in which they are placed and

65 evolving their understanding by constantly being required to re-examine their historically and

66 culturally-informed experiences of their sporting contexts and performance. To this end, learning is

67 much more than simply receiving and internalising information but a complex, conscious and non-

68 conscious re-construction of their lived experience (Pill, 2014, 2016). Second, learning is considered

69 to be *social* insofar as the interpersonal interactions which participants enjoy within their sporting

70 experiences are considered to be inextricably connected to internalization and/or the constant

71 evolution of their understanding and development. Whether learning is first a social process which is

72 then internalized (Vygotsky, 1978) or simply an important component in the learner's construction of

73 their internally-derived understanding (Piaget, 2001) is debated; however, all constructivist

74 perspectives undoubtedly place heavy emphasis on the importance of social interactions in learning

75 and development. Finally, learning is considered a *process of interpretation* in that all the

76   underpinning theoretical perspectives reject the notion that there is a pre-given, fixed, external reality

77   (Light, 2013). Rather, learning is seen as the individual's interpretation of the world. Light (2013)

78   suggested the implications for coaches in accepting such a notion is that learning should take place in

79   the context of the participant's own game performance rather than expecting athletes to accept direct

80   instruction from the coach as universal truth. Considering learning as a process of interpretation may

81   also help reduce the gap between procedural and declarative knowledge (Anderson, 1983; Light,

82   2008) although there is limited empirical evidence to support such a hypothesis. Regardless,

83   embracing CLT does necessitate rejecting the dualist assumption separating mind and body which

84   elevates the importance of the former over the latter; Light (2008) contended that this elevation has

85   led to the proliferation of linear pedagogies in sport and further afield.

86         Empirical research founded overtly on CLT is rare. The majority of research sympathetic to

87   such foundations has been conducted in physical education (Atencio, Yi, Clara, & Miriam, 2014;

88   Koekoek & Knoppers, 2015; Pill, 2016; Quennerstedt, Annerstedt, et al., 2014; Quennerstedt, Öhman,

89   & Armour, 2014; Slade, Webb, & Martin, 2015) although some recent work in this domain has

90   focussed on coach education provision (Galvan, Fyall, & Culpan, 2012; Hussain, Trudel, Patrick, &

91   Rossi, 2012; Paquette, Hussain, Trudel, & Camiré, 2014). The most directly relevant research to the

92   context of this paper has concerned theoretical positioning (Light et al., 2014; Pill, 2014) rather than

93   reporting empirical data. Focussing primarily on rugby union, Light et al. (2014) proposed a model for

94   the application of CLT through Game Sense pedagogy to enhance 'at-action' decision making. Light et

95   al. (2014) attempted to focus coaches' attention on the importance of understanding the holistic,

96   historical and cultural perspectives which inform players' decision making. Game Sense pedagogy is

97   a games-based approach to teaching and coaching through which players engage with a series of

98   context-rich small-sided and modified games designed to elicit technical and tactical understanding.

99   Game Sense currently represents the most commonly discussed pedagogic approach which is founded

100  on CLT (Light, 2013). Light (2013) outlined the three key features of Game Sense as facilitated

101  questioning, a supportive learning environment and collaborative evaluation. In applying both CLT

102    and Game Sense to Australian Football, Pill (2014) also incorporated constraints-led approaches

103    (Chow et al., 2006; Davids, Button, & Bennett, 2008) to encourage coaches to consider how to ensure

104    transferable information-movement couplings are meaningfully designed into training environments.

105    Whilst both Light et al. (2014) and Pill (2014) aid our understanding of the application of CLT and Game

106    Sense pedagogy, the lack of empirical work founded on CLT represents a clear gap in the research

107    literature.

108        In considering the three pedagogic features of the Game Sense model, it is evident that some

109    attention has been paid to the facilitation of questioning (Barnum, 2008; Cope, Partington, Cushion,

110    & Harvey, 2016; Cope, Partington, Harvey, & Cushion, 2014; Pearson & Webb, 2008) and creating

111    supportive learning environments (Cassidy, 2010; Kidman, 2005) but collaborative evaluation remains

112    a relatively untouched area of study in sports coaching contexts.  Furthermore, research into the

113    behavioural and pedagogic practice of sports coaches has tended to solely focus on the episodic

114    delivery of practical sessions (e.g. Cushion, Ford, & Williams, 2012; Ford, Yates, & Williams, 2010;

115    Partington, Cushion, Cope, & Harvey, 2015) rather than on the broader contexts of coaching practice

116    including such elements as the use of performance analysis (PA) as a learning tool.  Combining these

117    elements reveals that consideration has not yet been given to the power of collaborative evaluation

118    through performance analysis from a pedagogically-informed perspective.

119    **Performance analysis, collaborative learning and intrinsic motivation**

120        PA is a relatively new addition to the contemporary multidisciplinary sports science support

121    services  available  to  the  high  performance/performing  sports  coach  (O'Donoghue,  2015).

122    Furthermore PA is now commonly accepted as an integral component of the coaching process (Groom

123    et al., 2011; Groom, Cushion, & Nelson, 2012). Whilst the role and practical application of PA in

124    performance sport is well documented, academic investigations of coach perceptions of PA are

125    somewhat limited (Groom et al., 2011). Moreover, there is also a notable absence of PA studies to

126    have examined the effectiveness of PA procedures from an athlete learning perspective.  Reeves and

127  Roberts (2013) highlighted that video-based PA within elite youth football is considered a necessary

128  tool for coaches and players alike and can contribute to several key developmental areas: a) team and

129  individual performance, b) reflection, and c) psychological implication associated with performance

130  analysis. Bampouras, Cronin, and Miller (2012) discovered that players were sceptical of PA owing to

131  being excluded from having an active role in the process.  Bampouras et al. (2012) reported that

132  coaches believed players were unable to identify any particular issues with a performance and were

133  unable to cope with the information.


134       The principal study investigating individual players' perceptions of PA was conducted by

135  Groom and Cushion (2005).  A group of ten, under 17 year old professional youth footballers received

136  ten video analysis sessions throughout a season, and evaluated their thoughts utilising a semi-

137  structured questionnaire. The players suggested video feedback was a useful tool to stimulate players'

138  learning providing the player with the opportunity to improve game understanding and decision-

139  making, recognise individual and team strengths, improve individual and team weaknesses and

140  develop analytical skills (Groom & Cushion, 2005).  Other work by Nelson, Potrac, and Groom (2014)

141  and Francis and Jones (2014) has highlighted the potential usefulness of PA as a tool for athlete

142  learning, but has provided limited evidence surrounding the value of collaborative evaluation in this

143  regard.  Nonetheless, the contemporary literature cited here is unanimous that coaches should

144  encourage the active involvement of athletes during sessions and ensure athletes take personal

145  responsibility for conducting their own analysis on their performance and the performances of others

146  in order to enhance their knowledge of the game.  The mechanism by which players engage with PA

147  has commonly presented challenges for the performance sports coach operating outside of

148  professional settings.  Although O'Donoghue and Mayes (2013) proposed that the surge in internet-

149  based video platforms has aided coaches in facilitating PA-based feedback for players, there is little

150  empirical evidence providing any insight into such processes.

151          Considerable recent research in sports coaching contexts has demonstrated a strong

152 connection between autonomy-supportive approaches and athletes' intrinsic motivation.

153 Furthermore, prior studies have established the importance of developing intrinsic motivation in

154 athletes in order to perform at optimal levels. Those who are intrinsically motivated have been shown

155 to display greater effort (Healy, Ntoumanis, Veldhuijzen Van Zanten, & Paine, 2014; Ntoumanis, Healy,

156 Sedikides, Smith, & Duda, 2014; Ntoumanis, Taylor, & Thøgersen-Ntoumani, 2012; Pelletier, Fortier,

157 Vallerand, & Briere, 2001), persistence (Ntoumanis et al., 2014; Ntoumanis et al., 2012; Pelletier et al.,

158 2001; Radel, Sarrazin, Legrain, & Wild, 2010) and perform to a higher level (Ntoumanis & Mallett,

159 2014).

160          The aim of the current investigation was to examine Head Coaches' use of an online video

161 coaching platform with a particular focus on the processes utilized to facilitate collaborative

162 evaluation of team processes, training and match performance among athletes and also among the

163 coaching staff. Furthermore, this project investigated the factors which determined athletes'

164 engagement with the platform, their broader perceptions of the importance of PA, as well as the

165 perceived success of the collaborative evaluation activities.

166

167 **Methods**

168 **Participants**

169          Following institutional ethical approval, one provider of an online coaching platform (Coach

170 Logic) responded to an emailed invitation to engage with a research project investigating the potential

171 of their product to enable the collaborative evaluation of sports performance. Coach Logic is an online

172 coaching platform that is a commercial service paid for by annual subscription by each club. Within

173 the 'Video Room' of Coach Logic, coaching staff are able to upload training and match footage for all

174 their team to view. Subsequently, either players or coaches could create and apply 'tags' to the

175 footage to highlight a particular element of play, for example, 'successful line-out'. Finally, the Coach

176 Logic enables players and coaches to add comments to each individual tag and, more generally, to

177   each video clip.  These clips, tags and comments can be supplemented by other documents such as

178   training plans, playbooks etc. which can be uploaded and shared through other 'rooms' within Coach

179   Logic.

180       The provider then sent an email to all the Head Coaches using the platform with an invitation

181   to take part in the research and an instruction to make direct contact with the principal investigator if

182   they were interested.  Twelve coaches responded to the principal investigator of which seven were

183   able to meet the inclusion criteria of 1) being based in the UK 2) having used the system for at least

184   six months and 3) being able to offer access to players for group interviews.  All of the coaches,

185   assistant coaches and players were male.  Table 1 provides a profile of the key characteristics of the

186   sample clubs.  In each case, the 'assistant' coaches and 'players' columns represent the number

187   interviewed rather than the absolute number involved at each club.

188

189   Table 1: Key characteristics of sample clubs

| Club | Sport | Level | Head Coach | Assistants | Players |
|------|-------|-------|------------|------------|---------|
| A | Rugby union | National league – senior amateur | L4; 22 years | 3 | 6 |
| B | Rugby union | National league – senior amateur | L3; 4 years | 1 | 7 |
| C | Rugby union | National league – senior amateur | L3; 15 years | 2 | 7 |
| D | Rugby union | Amateur club academy (U18) | L3; 4 years | 0 | 9 |
| E | Rugby union | Private school academy (U18) | L3; 26 years | 1 | 6 |
| F | Field hockey | Regional league – senior amateur | L2; 20 years | 1 | 6 |
| G | Field hockey | National league – undergraduate and postgraduate student | L4; 30 years | 0 | 6 |

190   **N.B. '**L' represents the formal coaching qualification held.  For example, L4 equates to a Level 4 'high
191   performing' coach award (Sports Coach UK, 2016)

192

193       The head coaches engaged with the platform in a variety of ways.  For example, all of the

194   coaches posted videos of either training and/or match performances within the 'video room' facility.

195   Some coaches posted whole matches, whilst other posted team highlights or individually-focussed

196   edited clips.  The processes requiring athlete involvement varied greatly across the sample.  For

197   example, some head coaches required individuals to post a comment or tag each clip, whilst others

198  merely required their athletes to have viewed the material to inform group discussion at a later time.

199  Analysis of the material posted on the platform was mostly facilitated by coaches, although some

200  athletes were also charged with collating feedback from team units (such as the defensive players) or

201  providing individual feedback to peers.  The head coaches typically posted content on a weekly basis;

202  usually post-match and pre-training.

203

204  **Data Collection and Analysis**

205       Semi-structured individual and group interviews were selected for the present study to enable

206  sufficient flexibility to explore the real-world practices of the coaches and athletes under investigation

207  and to ensure that the richest understanding of athlete learning could be captured.  A semi-structured

208  interview schedule was created for each of the groups in question and was based around the CLT

209  learning themes of active, social and interpretative conceptions of learning (see Appendix I).

210  Additionally, questions were designed to gauge perceptions of the online system, the PA-related

211  processes in place at the club and any operational/logistical issues or concerns. A member of the

212  research team visited each of the seven clubs conducting individual interviews with the Head Coach

213  (duration 33-85 minutes).  Individual or group interviews with assistant coaches (duration 17-75

214  minutes) and a group interview with players (31 to 42 minutes) were also conducted.  The interviews

215  with assistant coaches and players were organised by the Head Coach and all were conducted in a

216  quiet room within the host club's facility.

217       Each interview was transcribed verbatim producing 127 single-spaced pages of transcript.

218  Content analysis was deployed in order to organise the data into interpretable and meaningful

219  categories (Miles, Huberman, & Saldana, 2013; Robson & McCartan, 2016).  Numerous researchers

220  have predominantly deployed an inductive approach to content analysis with themes emerging from

221  the raw data (Nelson, Groom, & Potrac, 2014; Robson & McCartan, 2016).  Conversely, deductive

222   approaches necessitate a pre-determined framework for analysis.  From a pragmatic perspective,

223   much qualitative analysis features elements of both inductive and deductive approaches and the

224   rigour of such approaches is well established (Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes,

225   2001).

226          Miles et al.'s (2013) three-stage content analysis procedures were followed in an inductive

227   and then deductive manner.  The first stage comprised the identification of meaning units by the lead

228   author.  Meaning units were words or phrases used by the participants which were considered to be

229   potentially important.  The meaning units were coded based on key terms identified within the raw

230   data. Subsequently, themes were derived inductively through careful consideration of the codes and

231   meaning units. For example, meaning units all relating to the coaches' facilitation of the advancement

232   of their athletes' sport-specific understanding, were grouped together to form one emergent initial

233   theme.  Following the identification of initial themes, the lead author consulted with the rest of the

234   authorship team to check the accuracy and confirm agreement of the thematic structure.  This process

235   resulted in some minor alterations to the placement and interpretation of meaning units, but the

236   inductive thematic structure was unanimously supported.  For example, whilst the team agreed with

237   all the identified themes, a small number of quotations were reallocated to another theme following

238   discussion surrounding the interpretation of the meaning unit.   The authorship team then

239   collaboratively sorted the themes deductively into the *a priori* framework of active, social and

240   interpretative learning drawn from CLT. The final deductive process enabled an explicit connection to

241   be drawn to the underpinning theoretical framework for the study and a facilitated clarity in

242   addressing the study's research questions (Miles et al., 2013).  All processes were managed using the

243   standard tools and features of Microsoft Word.

244          To ensure trustworthiness of the data analysis processes, a number of key features were

245   implemented. Peer debriefing (Robson & McCartan, 2016) was a regular feature of the investigation

246   and involved all members of the research team regularly discussing matters of design, data collection

247   and analysis. Throughout the process of the investigation, different members of the research team

248    took the lead on identified sections.  Inclusion of any particular meaning unit required the unanimous

249    agreement of the research team concerning the interpretation and placement within the respective

250    theme.  Furthermore, member checking was implemented through the emailing of completed

251    transcripts to participants; only minor typographical alterations were requested (Robson & McCartan,

252    2016).  All four members of the authorship team have experience of coaching and competing in

253    performance sport at a level concomitant with the clubs featured with this investigation.  This enabled

254    the authors to more dependably understand the culture, language and competing pressures within

255    the featured clubs (Miles et al., 2013; Robson & McCartan, 2016).  Finally, rich, thick, descriptions of

256    the participants' perceptions and experiences are described throughout the results section (Geertz,

257    1988) with data triangulated (Robson & McCartan, 2016), where possible, through the individual and

258    group interviews.  These processes enable the reader to construct their own connections to their

259    individual contexts as we do not generalise our findings to a broader population (Crotty, 1998).

260

261                                    **Results and Discussion**

262        The data analysis processes produced 1,016 meaning units which were placed into six key

263    themes (see Table 2).  The six key themes were allocated to one of the three *a priori* categories of

264    active, social and interpretive.  These three categories will be considered in turn with themes relating

265    to each element presented, analysed and supported through the use of direct quotations from the

266    coaches and players.

267     Table 2: Concepts, themes and meaning units

| Concept | Theme[a] | Sample meaning unit |
| --- | --- | --- |
| Active | Athlete involvement through tasks (96) | Coach Logic [enables] the players to contribute, to the point of this is what you do; this is what we should do. (Chris) |
| | Athletes' developing understanding of the sport and their performance (199) | Now the girls are actually able to start [viewing] the game and start seeing themselves, and make comments themselves. (Hugh) |
| Social | Learning in community and athlete collaboration (220) | It [working in small groups] makes the players more together. (Chris) |
| | Roles, responsibilities and team culture (233) | The senior guys, the guys that are the main leaders on the pitch, tend to take more responsibility for putting the comment up, from the less senior guys. (Matthew) |
| Interpretive | Inviting multiple perspectives (193) | We're hoping they have that discussion in the club house after the game, which they do, you hear them speaking about it after the game. (Brendan) |
| | The pursuit of consensus (75) | I was going to say the majority of the points last season, we were in agreement with the coaches I think, there were only a few occasions where our opinions differed, which is a good thing because were all on the same page. (Paul) |

268     [a] The number in parentheses illustrates the number of meaning units attributed to each theme

269     **Active**

270          Two subthemes of (i) athlete involvement through tasks and (ii) athletes' developing

271     understanding of the sport and their performance emerged through the inductive phase of the

272     content analysis and will be reported in turn.  These subthemes relate to two elements of Light's

273     (2013) explanation of the 'active' component of CLT.  Relating to the first element, our data provide

274     support for the way in which coaches and athletes conceived learning as being more than a passive

275     receiving and internalising of information.  However, relating to the second element, our data provide

276     only partial evidence of any meaningful advancement of athletes' understanding of the sport or of

277     their performance.

278    *Athlete involvement through tasks*

279         At one level, where learning is active, athletes play a participatory role in their development

280    as a performer. They guide their learning and engage in the process rather than being dependent upon

281    the feedback from the coaching staff.  Coaches' facilitation of tasks through Coach Logic enabled a

282    considerable degree of athlete involvement in the learning process.  Dominic's (Coach, Club D)

283    approach to the use of Coach Logic overtly embraced the value of athlete involvement in the process

284    of performance analysis:

285         [My] coaching philosophy is trying to get players to facilitate learning themselves. So

286         giving them all the tools to be able to do that. I think the thing for me as a coach, is to

287         not have to tell the players what they've done wrong, but them know what they've

288         done wrong, for them to have the tools to go out and do that as well ... The good thing

289         is they're very proactive, they've taken it all on board and they're really looking to

290         push, that's where you will see the integration from the academy up through the

291         senior rugby.

292    The value of player involvement in the process of performance analysis is further supported by the

293    testimony of Scott (Player, Club B):

294         I think it [being involved] makes it more meaningful to you – if you're part of it.  If

295         someone is just telling you what to do, then you might think that's just an opinion.  I

296         think if you're part of it, you may buy in a lot more: it actually means something to

297         you.

298    Using the online video platform has clearly enabled the coach to provide opportunities for the athlete

299    to engage with their learning and supports the previous literature that has highlighted the potential

300    value of video feedback and performance analysis (Francis & Jones, 2014; Groom & Cushion, 2005;

301    Nelson, Potrac, et al., 2014).

302   *Athletes' developing understanding of the sport and their performance*

303         The processes facilitated by the coaches through Coach Logic took a number of different

304   forms.  Several coaches used the system to post material prior to training or matches in order to

305   enable players to have time to review content in advance.  For example, Freddie (Coach, Club F)

306   outlined one aspect of his practice:

307         But what I often do, is post video clips on to [Coach Logic] ahead of that session, and

308         say to them defence, midfield and attack and maybe defensive players look at this

309         clip, what's wrong, what's right, how can we improve? So when they come into that

310         video session, they've seen the clips before and they can think about what they're

311         doing, rather than it being a shock for them on the night. It gives them the opportunity

312         to preview the video, before we actually get through the session.

313   Several players highlighted the benefit they perceived in posting material in advance of the

314   subsequent review of performance.  For example, Bobby (Player, Club C) said:

315         Yeah when we get given those scenarios, because we've already watched the video.

316         You know what ideally they're hoping for. They're hoping that we can identify the

317         structure of things and that will help us buy into it. Rather than them say, look at this,

318         this is what's wrong. They give us a chance to do it and have a feedback to the group.

319         And the coaches will have their feedback in as well. So everyone can get their say.

320   Freddie and Bobby's testimony reveals their mutual belief in the importance of time for individuals to

321   reflect before answering.  This finding supports the related literature concerning the need for coaches

322   to allow sufficient response time when asking questions (Cope et al., 2016; Cope et al., 2014) and the

323   potential value in collaboration in the learning process (Light, 2008, 2013), albeit through the original

324   context of an online coaching platform thus accentuating the importance of interactive accessibility

325   in this digital age.

326         Given the athlete-initiated and collaborative processes facilitated by the majority of the

327    coaches, it is clear they both invited, and were welcoming of, a wholly inclusive approach to the use

328    of performance analysis and the subsequent learning process. This is commensurate with Light et al.'s

329    (2014) belief that the process of learning may even be more important than the solution at which the

330    learners arrive. Tim's (Player, Club F) perception supported the value of the (learning) process over

331    and above the establishment of the 'correct' solution:

332         Everybody has their say and [Freddie] picks people to say about certain videos which

333         I think is quite good, because we've all seen it, we can all say our bit, you know

334         whether people say it's right or wrong it doesn't really matter. It's all about having

335         that open discussion, we're a team trying to discuss the problem or the situation,

336         whatever it might be and thing that's quite good … I think the quality of the people's

337         answers was a lot better, from not just panicking and say something, because

338         everyone's waiting for them to say something. I seem to remember them last year a

339         few times just being sort of, people being very defensive about the video … so I think,

340         having more people with time to think about it [helps].

341    The coaching practices described above are illustrations of autonomy-supportive approaches. The

342    design of such practices is paramount as the tasks facilitated by the coach must be meaningful in order

343    to secure the engagement of the athletes. Our findings provide some support for the previous

344    investigations that have connected autonomy-supportive approaches and athlete effort, persistence

345    and performance level (Healy et al., 2014; Ntoumanis et al., 2014; Ntoumanis & Mallett, 2014;

346    Ntoumanis et al., 2012; Pelletier et al., 2001; Radel et al., 2010). The use of Coach Logic created the

347    opportunity for the development of an autonomy-supportive environment. The selection of tasks and

348    ensuring they provide choice within specific rules and limits has been shown to develop athlete's

349    intrinsic motivation (Mageau & Vallerand, 2003; Occhino, Mallett, Rynne, & Carlisle, 2014). However,

350     the findings of the present study only offer limited evidence of a positive impact of using Coach Logic

351     on athletes' intrinsic motivation.  For example,

352         That's where you will see the real benefits, the fact that you have guys, from under

353         14's been used to that. That system of reviewing their own games, looking up what

354         they need to improve, knowing how to improve it and going out and doing it

355         themselves, rather than waiting for the coach to improve it. (Brendan, Coach, Club B)

356     Whilst Connor (Player, Club C) said:

357         If you discuss with people and come together with common goals, and you identify

358         what to work on or whatever. Then you can see what you want to work on, you know

359         that that's what you're trying to achieve and then gives you that inspiration for

360         training and you train that bit harder.

361

362     Brendan's suggestion that his use of Coach Logic facilitated greater input from the athletes and

363     Connor's belief of a resultant added impetus in training hints at a possible enhancement of intrinsic

364     motivation, although our data provide no evidence relating to performance improvement.

365     Nevertheless, Aaron (Coach, Club A) felt that Coach Logic effectively enabled him to ensure that a

366     greater range of his players were actively involved in the analysis of team performance than he had

367     been able to facilitate through other approaches:

368         Maybe I'm using it [Coach Logic] as a learning tool. Some people like to visualise it and

369         see it. Some people like to do it and some like to be told how to do it. So what Coach

370         Logic is doing from a learning perspective is - People [who are] asking 'Where do we

371         need to go, why do we need to do that?'; they've ticked that box. People that do it

372         and feel it; they've done it. The ones that like to review it and see it from the 3D

373         perspective from actually seeing the video; can say 'that's where I need to go'. So I

374    think by being able to have this kind of tool, you're helping all of the learning styles.

375    Getting a greater understanding, instead of just shouting at them.

376  However, autonomy-supportive approaches via Coach Logic were not always well received.  A number

377  of players preferred to be told what to do rather than engaging with collaborative work.  For example,

378  Duncan (Player, Club D) said:

379    I think the stuff we do with [the coach] is better [than what we do ourselves]. Because

380    when, after like a day at school or something, the first thing I want to do is relax. And

381    not worry about watching an 80 minute game of rugby. And have to pay attention and

382    say I've done that wrong, or I've done something well there. So it's quite time

383    consuming.

384  However, even if the players do fulfil the tasks, it does not mean that the player themselves are

385  engaged in the activity. It appears that the necessity for an open supportive environment is met by

386  scepticism by some of the players.  For example, Eric (Player, Club B) said:

387    Yeah I think your voice is listened to, but then it's not going to override anything the

388    coach has already decided to implement. That's just my opinion.

389  This clearly highlights the need for the coach/coaching staff to consider how the information is used

390  and help the athlete's understand the importance of their contribution.  Our data reveal that it was

391  through consideration of the social interactions between athletes that coaches addressed such needs.

392  **Social**

393    Two subthemes of (i) learning in community and athlete collaboration and ii) roles,

394  responsibilities and team culture emerged through the inductive phase of the content analysis and

395  will be reported in turn.  Under both sub-themes, our data provide overwhelming positive support for

396  social and collaborative approaches to athlete learning through the analysis of performance.

397     *Learning in community and athlete collaboration*

398         The social constructivist approach claims that both the communication process and

399     interaction between individuals and the social context results in learning (Koekoek & Knoppers, 2015;

400     Potrac et al., 2016; Vygotsky, 1978). Coaching practice is socially constructed and involves the

401     relationship between the coach, athlete and the environment (Cushion, 2010a, 2010b, 2010c). In

402     order for interactive sport team members to learn it is of paramount importance that they are able to

403     develop meaningful inter-personal relationships and communicate effectively within a positive

404     environment. Chris (Coach, Club C) focuses on the communication facility afforded with the learning

405     platform:

406         Coach Logic has lots of logistical things - this is where you've got to be and when; some

407         straight forward things that make management of the squad easier. We live in this

408         age of communication, so somebody telling a story about how they found out they

409         were dropped on a board [shakes head] ... Whereas communication now is constant,

410         but it can also be quite shallow. We still try and do things face-to-face ... The main bit

411         for us, is the analysis the opportunity for us to watch.

412     The platform has positively contributed to the culture and shaped behavioural norms within the team:

413         For me, it's gone well. It does give everyone an equal chance and share regardless of

414         whether you've got 100 caps [representative honour] or one cap; that's obviously

415         important within the community of the team. The exchange of ideas, talking with your

416         peers. There's more value in that obviously. (Alf, Assistant Coach, Club C)

417     These findings support the following functions of team norms in providing information and allowing

418     for group integration (Carron & Eys, 2012).  The development of a community with collaborative

419     learning and group work opportunities frequently leads to the development of a positive team culture

420     that has a collective vision.  Percy (Player, Club D) emphasises the importance of peer learning and

421     mentoring:

422        So once I tag a video, he'll [my mentor] maybe comment on it and say you've did this

423        well, pointing out to me what my strengths and weaknesses were and we can almost

424        have a conversation about what I need to improve … Because coach has got a lot going

425        on, [my mentor] does that.

426     An open and honest communication channel is vital as transmitting and receiving messages efficiently

427     is the cornerstone of successful teamwork.  The social perspective indicates that authentic learning

428     does not merely relate to formal engagement but also to the informal interactions that take place in

429     conjunction with the "unplanned intersection of people, culture, tools and context" (Hansman, 2001,

430     p. 44).  The Coach Logic platform has afforded the opportunity for communication to take place in a

431     variety of different ways.  For example, Piers (Assistant Coach, Club C) said:

432        [We're] getting the engagement from 20 or 30 guys coming in instead of engagement

433        from five guys, so that's quite good. So you ask different guys to present for five

434        minutes … So it's helping the communication and camaraderie as well.

435     Along a similar theme Barry (Player, Club C) and Freddie (Coach, Club F) highlight the collective

436     engagement of team members:

437        I think it's useful when there's a bit of player input as well. Some match analysis you

438        can have throughout the season but if you don't actually see it happening, you don't

439        have your own input or get your own opinions across, it's quite difficult to get much

440        out of it … when you've got players working together who've been watching a video

441        of our performance, I think that helps balance ideas off each other and get a better

442        understanding of what's actually being talked about.

443

444        The pitch stuff is really the most important thing as far as the collaboration is

445        concerned. I think getting people together to sit as a group and look at the video is

446        very important as it's not just the coach standing up. Again, it's about their learning,

447        being able to sit in a room with the whole group there and to get them, to feedback

448        on what they're seeing is really important. I think also it's their ability to look at, what

449        happened on the weekend on their phone ahead of training I think all those little

450        aspects are actually important.

451    Working in smaller groups and ensuring that significant peer learning takes place alongside offering

452    social support.  For example, Chris (Coach, Club C) said:

453        Some of the feedback [from the players] was absolutely top draw … The task we came

454        up with gave them ownership: 'here's what you found, how do we put that into a

455        game plan to make that improvement?' … And again, cultural things moving forward,

456        I want them to come to us and say 'I saw myself do this, how can I improve it? How

457        do I change? It's all very well, if they know what they need to work on, but if they

458        don't ask for support or make the effort to improve it, it's pretty worthless.

459    For such social support mechanisms to be successful, the team members have to be prepared to

460    maintain a collaborative mind set and provide emotional, affective and performance-related

461    information (G. W. Jones, 2010; Yukelson, 1997).  These mechanisms illustrate the importance of well-

462    defined roles and responsibilities for all team members in order to facilitate an effective team

463    environment.

464    *Roles, responsibilities and team culture*

465        Appreciating the roles and responsibilities of other team members is vital for the development

466    of a positive team culture (G. W. Jones, 2010).  For example, Chris (Coach, Club C):

467       It [working in small groups] makes the players more together. Most players, if they

468       work on line-outs, maybe the rest of the other players can breathe a sigh of relief and

469       know that it's going to be done for them. But what we want to do is bring people in

470       and upskill them.

471    Chris's beliefs resonate with some important principles outlined within a number of theoretical

472    principles.  Chris is attempting to build a cultural norm in which all players are expected to actively

473    and collaboratively contribute to the enhancement of team performance and also to athlete learning.

474    This perspective resonates with the principles underpinning situated learning and legitimate

475    peripheral participation (Lave and Wenger, 1991) through which newcomers to the team will learn

476    the cultural norms and expected ways of operating within the environment through prolonged

477    exposure to the behaviour of the 'old-timers' within the group.  This is further illustrated by Andre

478    (Assistant Coach, Club B) how discussed the impact of experienced players on the development of

479    younger squad members:

480       You learn from experienced players. You learn from what other guys do. So I think

481       when it comes to that side of it, that often, it's something that's highlighted more if

482       you have just the young group of players. So if you got a really young squad with not

483       much experience, things like that where they can learn from other players. You

484       suddenly realise you're struggling in certain situations in games or they don't learn

485       from their mistakes week in week out and I think part of that is having a good balance

486       to your squad having some good, key experience players, in key positions.

487    The platform has also been instrumental in the development of cohesion which has often been linked

488    to success in sport (Carron, Bray, & Eys, 2002):

489       I think the bits around the connectedness and team has shown the way we've gone

490       about things this year but it's a very subjective measure. But when you see the

491        number of people who train and who play for the team and the number of people

492        who pat on the back … It's a pretty strong sign of the connectedness. If you look at

493        performance, one of the other things I've said to the players, if he loses, we lose, if he

494        wins, we win, it's that unselfishness for the betterment of the team. Taking pride in

495        other people's success. (Chris, Coach, Club C)

496  Chris' perception illustrates that, in addition to the social benefits of Coach Logic to athlete learning,

497  the associated enhancement of team cohesion was also important.  Player interaction was also

498  deemed extremely beneficial in the empowerment process and ensuring that communication is not

499  simply coach to player orientated:

500        I think it's useful when there's a bit of player input as well. Some match analysis you

501        can have throughout the season but if you don't actually see it happening, you don't

502        have your own input or get your own opinions across, it's quite difficult to get much

503        out of it. So if it's just coaches or the strength and conditioning guys it's really difficult

504        to get a lot out of it. But when you've got players working together who've been

505        watching a video of our performance, I think that helps balance ideas off each other

506        and get a better understanding of what's actually being talked about. (George, Player,

507        Club C)

508  George's insight provides further evidence relating to the importance of player empowerment and

509  athletes' perceptions of autonomy for authentic learning (Iachini, 2013; Ntoumanis & Mallett, 2014;

510  Pelletier et al., 2001) but also highlights the extent to which the players' interpretation should shape

511  collective training foci and match strategy.

512  **Interpretive**

513        The interpretive strand of this investigation reflects the belief that there is no pre-given, fixed

514  and external reality (Light, 2013) and strives to understand athlete learning in the context of their own

515 game performance, rather than as an enactment of the coach's universally applicable belief.  Two

516 subthemes emerged through the analysis namely i) inviting multiple perspectives and ii) the pursuit

517 of consensus.

518 *Inviting multiple perspectives*

519 At first glance, there appeared to be widespread investment in learning processes that embraced an

520 interpretive perspective.  For example Kyle (Player, Team B) said:

521     You've got 23 sets of eyes looking over it. What you comment down, four or five guys

522     might agree but in different way. But then they can have their say on what you've

523     written and something to add, it's not just you putting the information … so you're

524     constantly learning.

525 The value placed in the collaborative processes espoused by Kyle reflects the positivity commonly

526 associated with the social aspects of athlete learning (Atencio et al., 2014; Quennerstedt, Annerstedt,

527 et al., 2014) and those components discussed within the 'social' section of this paper.  Furthermore,

528 Kyle's perspective provides an insight into the potential value to athlete learning of performance

529 analysis conducted in collaborative ways, as opposed to a coach-directed conversational dialogue

530 (Groom et al., 2012).  Central to Kyle's belief is the value placed in different perspectives and

531 interpretations of the same environments that he acknowledges as a pivotal component of his

532 continual learning journey.  Similarly, Gus (Player, Team C) illustrates how the use of video itself can

533 offer that alternative perspective to enable an interpretation of an environment from a different

534 perspective than that held-over from playing the game:

535     Just that it gives you a different perspective of everything. If you're on the pitch you

536     don't see half of what the camera will show you. Just give you a different approach to

537     things, so you can think this is the right option.

538   The collaborative processes implemented at Teams B and C extend the evidence provided by Reeves

539   and Roberts (2013) concerning the positive psychological associations with performance analysis.

540   Reeves and Roberts (2013) posited that performance analysis is largely associated with positive

541   motivation as long as the athletes' considered they had had a 'good' game but questioned whether

542   highlighting a poor performance may affect athletes conversely.  The findings of this investigation

543   illustrate that structuring performance analysis in a collaborative manner can help to mitigate

544   potential negative affective responses and thus reflect the assertions of Koekoek and Knoppers (2015)

545   relating to the impact of affect in relation to framing an individual's interpretation of their own

546   performance.  Koekoek and Knoppers (2015) found that children, in a physical education context,

547   when framing their constructions of reality, are strongly influenced by the affective implications of

548   their team mates' reactions.  Kyle and Gus' perspectives suggest that affect can also be a factor in

549   adult learning in a coaching context.  Furthermore, Alfred (Player, Club F) speculated that the

550   processes facilitated by the coach through the online platform had altered players' perceptions of the

551   performance analysis processes and had moderated the potential for negative affective responses:

552         What I've been aware of … it [Coach Logic] kind of normalises the self-analysis because

553         the video is available to everyone to analyse.  People do not expect so much, the big

554         wow, the big reveal, when the coach walks in with the video, saying 'right we're going

555         to watch these clips' and everyone feels a little bit self-conscious … mainly that's the

556         reason why at the moment we talk people through the video rather than posting

557         notes, because people can take that the wrong way very easily, you can be seen to be

558         pointing your fingers unless it's written very carefully.

559   Alfred's belief is commensurate with the evidence presented by Groom et al. (2012) and Nelson,

560   Potrac, et al. (2014) insofar that a domineering and/or controlling approach to performance analysis

561   feedback heightens the potential for the coach to induce anxiety.  Nelson, Potrac, et al. (2014)

562   reported that 'John', the subject of their investigation, often perceived his teammates were fearful of

563    a judgmental analysis of their performance and considered the greatest value from performance

564    analysis work to occur when experienced players were able to collaborate in the reviewing of match

565    footage.  Steve's (Player, Club F) perspective highlighted a similar value given to collaborative

566    processes by suggesting that a shift away from coach-led performance analysis along with the

567    provision of time away from the rest of the group to reflect led to an increase in the quality of

568    contribution from athletes:

569        Yeah I think, the quality of the people's answers was a lot better, from not just

570        panicking and saying something, because everyone's waiting for them to say

571        something. I seem to remember them last year a few times just being sort of, people

572        being very defensive about the video. What you said there about people not being

573        afraid to have the video. There was a time, I remember seeing a clip of video which

574        Freddie asked us, what do we have to say about it and one person, ripped it apart, like

575        every little tiny thing. What Freddie was actually trying to show us was that was a

576        really bit of good little play and we should do that again. But the feedback that came

577        was very negative, so I think, having more people with time to think about it.

578    The findings of this investigation demonstrate that placing value in each individual's interpretation of

579    performance is an important component in facilitating a successful collaborative analysis.  For

580    example, Ben (Player, Club F) said:

581        Well I think everybody interprets each video differently, so it adds to a discussion, I

582        think Freddie has been quite good at not always saying this is the right thing to do in

583        this situation ... Like I say there is no right and wrong within hockey and within sport.

584        You know, you're just addressing each situation as you come to it and it's nice that

585        everybody can say there bit about certain situations and that makes us more of a

586        team, because, we're not afraid to criticise other people too, that's obviously quite

587      important as well because I think that does bring people together, it's not upsetting

588      to know that people think you've done something wrong, and so on and so forth.

589  Ben's acknowledgement that there is no universal truth to be imparted by the coach and his

590  appreciation of Freddie's ability to draw wide-ranging interpretations from across the group is

591  commensurate with an adoption of sociocultural learning theory (Hodkinson, Biesta, & James, 2008)

592  in that the value of each individual's perspective should be upheld.  The findings of this investigation,

593  therefore, offer further evidence that underline the potential value of sociocultural perspectives of

594  learning in sporting environments (Quennerstedt, Annerstedt, et al., 2014).

595  *The pursuit of consensus*

596      Whilst there are numerous aspects to suggest that the coaches featured within this

597  investigation were able to facilitate a collaborative approach to performance analysis through the

598  online platform that was commensurate with an understanding of the interpretative nature of

599  learning, there were also a number of factors that cast doubt on the coaches' true intentions.  For

600  example, whilst Chris (Coach, Club C) initially said:

601      Its [video analysis] open to everyone. I'm not the only one with the DVD and they have

602      to take my opinion. Those opinions become important as well. Not all coaches want

603      that.

604  … he also then went on to say:

605      And now they can't say it's me against them, its video. Making judgements backed up

606      with hard evidence. So setting players targets. So one of our players has got a really

607      simple issue. When he carries the ball he cuts back in, rather than work his way out.

608      Bending their line and giving us a chance to go forward. When he cuts back in, it loses

609      our momentum and it makes it difficult for our players to support him. It's a really

610      simple thing. I've got half a dozen clips that prove my point.

611   These two quotations illustrate Chris's conflict surrounding the ultimate purpose of facilitating

612   collaborative performance analysis.  Initially, Bruce appears to be inviting and valuing an interpretive

613   framework and welcoming diversity in opinion, whereas in the second quotation, Bruce views the

614   video as a tool to evidence and support his assessment of a player's poor decision making.  Such a

615   contrasting perspective reflects the difference between viewing learning as *acquisition* and

616   *participation* (Sfard, 1998), commensurate with the work of Quennerstedt, Öhman, et al. (2014).

617   Bruce's initial assertion could be likened to a disposition encouraging a 'participatory' perspective in

618   that athletes' are being considered as active members of a community (Lave & Wenger, 1991) whilst

619   the latter quotation reveals a desire for the athletes to internalise and 'acquire' his own understanding

620   (Piaget, 2001).  Brendan (Coach, Club B) also demonstrated a strong desire to reach consensus through

621   the process of collaborative performance analysis:

622        Every time the attack guys had said a comment that I had in my video and we were

623        getting a bit more excited every time we played the clips and its bang on with what

624        they've just said. That's when you can tell it's really important, so that works really

625        well and we will continue with that this year.

626   Similarly, Carter (Assistant Coach, Club C), whilst espousing the value of athlete-derived analysis,

627   essentially sees the purpose of such processes as being to establish answers that the coaches have

628   already constructed, albeit without the need for the coaches to actually ask the question.

629        Being able to come up with the information that we want them to come up with in

630        the first place [is great], but the value is much greater if it comes from the players than

631        if it comes from the coaches. So they're coming back with the answers before we've

632        asked the questions and it's fantastic … They're thinking through themselves; they're

633        going home spending more time on the thought process in preparation for the game.

634   Therefore, Brendan and Carter can be seen to be struggling between the more radical forms of

635   constructivism in which valued knowledge is that pieced together by the learner and the more

636   empirically-oriented approaches in which understanding is tacitly or explicitly located in an external

637   environment (Cobb, 1986; Slade et al., 2015). Eddie (Coach, Club E) explains that the battle to engage

638   with more radical perspectives on learning may be impeded by the coach's desire to maintain a 'face'

639   of competence and understanding of the situation:

640         The thing about coaching is, in a coaching session you want to show how smart you

641         are sometimes, and impart knowledge, whereas I think with the kids we've got to look,

642         we've got to get them on board with learning so we've been, from last season we've

643         been videoing it on the iPad a lot to show model practices. Instead of showing it to

644         them after, we've been showing it to them before. So here's where we want to work

645         at the break, show them the tackle technique, here's some good passing goals so

646         we're going to show it to them all before we even coach it to them.

647   Eddie's perspective is reinforced by Nelson, Potrac, et al. (2014) who found that players who consider

648   the coach to be unable of conveying meaningful information through performance analysis may lose

649   the respect of their athletes and that this may negatively impact on the ability of the whole group to

650   learn.

651                                    **Conclusion**

652         Coach Logic, and other similar online coaching platforms, clearly have a place in contemporary

653   team sport environments and can contribute to athlete learning and other important aspects of team

654   culture and cohesion. The investigation has demonstrated that CLT represents an effective and

655   insightful perspective from which to better understanding individual and collaborative learning within

656   a team sport environment. Shifts towards the use of online, video-based, coaching platforms are an

657   inevitable part of the evolution of coaching practice in this modern digital era. Communication

658    channels between coach and athletes need to incorporate information technology as well as more

659    traditional methods.  The accessibility and practical functionality of online coaching platforms is vital

660    in establishing engagement from all parties and opening-up performance analysis as a meaningful and

661    normative component of team preparation.  For many performance-focused sports teams operating

662    at amateur level, such as those featured in this investigation, face-to-face training time is precious and

663    often greatly limited.  For these reasons, online coaching platforms should be seen as a mechanism to

664    augment and enhance the value of that precious and limited time, rather than as a replacement.

665    Therefore, online coaching platforms have the potential to contribute to a coach's holistic

666    construction of a nonlinear approach, but only as one component of a broader pedagogical strategy.

667         Online coaching platforms have the capacity to facilitate the *active* involvement of athletes in

668    the process of performance analysis and this appears to be valued and accepted by all parties.  The

669    athletes' involvement through tasks and their subsequent development of understanding represents

670    two key elements for coaches to consider.  The active involvement in meaningful and autonomy-

671    supportive tasks may well have subsequent benefits to athletes' intrinsic motivation.  Whilst many

672    athletes can be engaged and empowered through tasks facilitated through online coaching platforms,

673    it is inevitable that such approaches will not be universally embraced by each individual team member

674    and so coaches will need to remain cognisant of the challenges of facilitating a diverse range of

675    learners.  Athletes should be tasked to complete meaningful and accountable analysis of training and

676    performance on a regular basis.  Coaches should seek to establish a cultural norm within the team

677    environment of engagement with the online coaching platform and with a focus on enhancing athlete

678    autonomy, competence and relatedness.

679         From a *social* perspective, online coaching platforms have helped to develop a positive team

680    environment and interpersonal working at a variety of levels.  Coaches' effective use of such tools can

681    greatly enhance the principles of learning in a community through athlete collaboration.  Furthermore,

682    effective structuring of tasks with well-defined roles and responsibilities can enhance the team culture

683    and learning process.  Despite the virtual nature of the interactions facilitated through online coaching

684    platforms, it is clear that such approaches can contribute to a socially and culturally embedded

685    appreciation of coaching practice.  Furthermore, the social components of this investigation have

686    demonstrated the value in theorising the complex reality of coaching practice from a sociocultural

687    perspective.  Coaches should facilitate regular directed tasks demanding collaborative analysis

688    amongst team members featuring carefully constructed groupings to best enhance athlete learning

689    and team performance.  Opportunities for collective decision making and problem solving should be

690    constructed with an emphasis on shared responsibility.

691        Considering the *interpretive* perspectives of athletes' learning, this investigation has

692    evidenced considerable good practice but has also revealed the potential for coaches to embrace a

693    more radical conceptualisation of the acquisition of knowledge relating to their sport.  Whilst inviting

694    and valuing multiple perspectives from all parties, coaches struggled with the pursuit of consensus as

695    the most desirable outcome from the learning tasks; this may highlight limitations within their

696    epistemological understanding of coaching practice (Grecic & Collins, 2013).  It is clear the coaches

697    grappled with the balance between long-term development and achieving more immediate success

698    in terms of match result.  In most instances coaches felt constrained by the immediacy of the next

699    competitive match and so may have benefitted from further pre-season and between-season

700    preparations.  More substantive preparations incorporating online coaching platforms during all

701    phases of the season might enable athletes to be more meaningfully engaged in their learning.  An

702    overt understanding of the purpose of each task is crucial to learning.  Specifically, athletes should be

703    helped to understand how their engagement was to more explicitly impact on training foci and match

704    strategy.  For example, through the transparent dissemination of the processes through which team

705    strategy is constructed, athletes should be shown how their involvement in the performance analysis

706    processes will shape the team's vision, tactics, principles and norms.

707    Given the importance of the social processes outlined within this paper and the difficulties

708    experienced by some coaches in embracing the multiple perspectives offered by players, it appears

709    that coaches need support to develop their practice in facilitating a wholly inclusive learning

710    community that embraces a wide range of experience, knowledge and abilities.  This investigation has

711    shown some evidence of benefit to younger players and those working with peers; however, future

712    research should consider how more senior players and mentors can learn from engaging in

713    collaborative activity.  Future research should also consider how to more meaningfully construct an

714    inter-disciplinary approach to the use of online coaching platforms that more authentically

715    incorporate the wider coaching team including, for example, strength and conditioning coaches,

716    physiotherapists and performance analysts.  Finally, future research should more overtly consider

717    whether more tangible performance improvements can be evidenced through the use of online

718    coaching platforms.

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910

911    **Appendix I:** Interview guide for Head Coaches

913 Introduction

1. Can you tell me about your coaching journey?
   a. Key milestones?
   b. Development of role?
   c. Motivations?

919 Transition

1. Can you tell me about how you have learned to coach?
   a. Formal (courses/degrees)
   b. Informal (CPD/workshops)
   c. Non-formal (mentoring/observation/web-content/books)
   d. Experiential

926 Main body

1. What do you think are the most important aspects of quality coaching?
2. How did your decision to use Coach Logic fit with your understanding of quality coaching?
3. In what ways have you sought to use Coach Logic with the team?
4. To what extent has your use of Coach Logic been successful?
5. What affects the likely engagement of team members and coaching staff with Coach Logic?
6. To what extent is collaborative analysis of performance important to the success of the team?
7. How would you characterise the team's engagement with Coach Logic?
   a. Players
   b. Coaching staff
8. To what extent has your use of Coach Logic helped the team to learn?
   a. Examples?
9. To what extent do you perceive using Coach Logic has impacted the team?
   a. Collaboration
   b. Team performance
      i. Wins/quality of performance – team/individual
   c. Understanding
   d. Contributions
10. What do you consider to be the most useful functions within Coach Logic?
    a. Suggestions for improvement?

949 Ending

1. What does the future look like for the use of Coach Logic within your team?

952 Summary

- I think we've discussed these things today [enter topics of discussion]; do you feel that's a fair reflection of what you've said?

Is there anything else you'd like to mention that you haven't yet had a chance to discuss?