

Institution: University of Bedfordshire
Unit of Assessment: 26 - Sport and Exercise Sciences, Leisure and Tourism
Title of case study: Impact of the development of the Coach Analysis Intervention System (CAIS)
<p>1. Summary of the impact</p> <p>Dr. Stephen Harvey and colleagues have developed a computerised observation software tool for the systematic analysis of coaching behaviour. Designed for use on an iPad, the Coach Analysis Intervention System (CAIS) is able to provide researchers, coach educators, and coaches with a range of data that helps coaches improve their practice. In terms of impact, CAIS has been endorsed by national sports governing bodies. A company, in which Dr. Harvey is a shareholder, has been set up to actively develop the software tool.</p> <p>2. Underpinning research</p> <p>Coach pedagogy research has gained increasing attention over the last 20 years. Allied to this, systematic observation has been a key data collection tool for researchers in order to analyse teaching and coaching behaviour for the last 30 years. Developments of computer technology have ‘breathed new life’ into this methodology as it enables the simultaneous capture of multiple coaching intervention behaviours, thus giving a more nuanced and complete account of the coaching process. The Coach Analysis Intervention System (CAIS) iPad application allows for both ‘live’ coding and post-session coding, and thus is a useful tool for practitioners and researchers alike. CAIS is not only one of the first specific coaching behaviour tools to be integrated with computerised technology to aid coach behaviour techniques and practices, but also it is the first iPad software application that has been produced for this purpose. What is also unique about this iPad application is that, unlike many other iPad apps that could be used to analyse coaching behaviour and practice, it is fully underpinned by research and development. Indeed, the application only allows bespoke additions of behaviours that are validated in the CAIS study by Harvey and colleagues published in the <i>Journal of Sport Sciences (JSS)</i> in 2012 [3.1].</p> <p>The validation, development and initial research analysis with the tool has been carried out from January 2008 to the present time. While initial development work was carried out when Harvey was employed at a previous organisation (in collaboration with Muir and Cushion; which involved in stages 2 and 3 of CAIS highlighted in the <i>JSS</i> paper, 2012; [3.1]), the work conducted on CAIS since Harvey’s arrival at the University of Bedfordshire (UoB) (Sept 2010) which included some additional coding of coaching behaviours as well as the intra- and inter-observer reliability testing highlighted in stages 4 and 5 of CAIS (see the <i>JSS</i> paper, 2012; [3.1]), the production of the paper in the <i>Sports Coaching Review</i> [3.3] and the initial piloting of CAIS on the iPad platform with England Hockey coaches (April 2012; [5.4]), research that was funded by an internal research grant from UoB. This work was presented in September 2013 to the International Council for Coach Education (ICCE) conference [3.5].</p> <p>The publication of the <i>JSS</i> validation paper [3.1] has therefore permitted the production of other related research outputs and presentations [3.2, 3.3, 3.4, 3.5, 3.6]. It has also formed the basis of UoB-funded grant to work with coaches from England Hockey, the National Governing Body for hockey in England [5.4]. These links exist as Harvey works for England Hockey as a Centrally Contracted Coach and Coach Educator. He is also an assistant coach to the England U16 National Age Group Team. These links give him access to key decision-makers permitting Harvey to conduct research within England Hockey’s Single System.</p> <p>Furthermore, two PhD students (Cope and Pears) are using CAIS in contexts outside of England Hockey. Cope is using CAIS to explore youth soccer and youth swim coaches’ use of coaching behaviours [5.7], and Pears is using CAIS in a study examining girls’ Centre of Excellence Academy coaches’ behaviours and practices [5.8].</p>

Harvey is also continuing to collaborate in the development of CAIS with Dr. Christopher Cushion of Loughborough University and PhD student Mark Partington with research conducted with youth soccer academy coaches. From this, one study has recently been published in the *JSS* [3.2] and another has been presented at the ICCE Conference [3.6].

3. References to the research

- 3.1 Cushion, C.J., **Harvey, S.**, Muir, B., & Nelson, L. (2012) 'Developing the Coach Analysis and Intervention System (CAIS): Establishing validity and reliability of a computerized systematic observation instrument' *Journal of Sport Sciences*. 30 (2) pp. 201-216.
www.tandfonline.com/doi/abs/10.1080/02640414.2011.635310 - 1.89 impact factor, approx 1,000 downloads.
- 3.2 Partington, M., Cushion, C., & **Harvey, S.** (2013). 'An investigation of the effect of athletes' age on the coaching behaviours of professional top-level youth soccer coaches'. *Journal of Sport Sciences*. 1-12. dx.doi.org/10.1080/02640414.2013.835063 - 1.89 impact factor
- 3.3 **Harvey, S.**, Cushion, C.J., **Cope, E.**, & Muir, B. (2013) 'A season long investigation into the coaching behaviors as a function of practice state: The case of three collegiate coaches'. *Sports Coaching Review*. 1-15. dx.doi.org/10.1080/21640629.2013.837238
- 3.4 Cope, E. & **Harvey, S.** The practice activities employed by children's sports coaches': A macro and micro-analysis. *Poster presented at the International Council for Coach Education (ICCE) Global Coach Conference, 13th – 15th September 2013, South Africa.*
- 3.5 **Harvey, S.**, Cushion, C.J., Cope, E. An investigation into field hockey coaches' self-awareness and self-efficacy through the employment of educational technology. *Poster presented at the International Council for Coach Education (ICCE) Global Coach Conference, 13th – 15th September 2013, South Africa.*
- 3.6 Partington, M., Cushion, C.J., **Harvey, S.** An investigation of the effect of practice form on the coaching behaviours of professional top-level youth soccer coaches. *Poster presented at the International Council for Coach Education (ICCE) Global Coach Conference, 13th – 15th September 2013, South Africa.*

4. Details of the impact

The research has been impactful at a number of levels. Firstly, national governing bodies such as the England and Wales Cricket Board have written into their coach education awards the use of CAIS in order for coaches to be able to explore their coaching practice. A pilot licence of the tool was provided to the England batting Coach, when he was in India with the full England Cricket Team (October-December 2012). We have piloted and used the tool with England Hockey coaches at workshops [3.4, 5.4] and High Performance Coaching events such as their 2012 High Performance Assessment Camps and Futures Cup, which are the contexts for junior high performance development [5.5]. At these events we have had coaches utilise the CAIS iPad software tool to enable them to analyse their own and other coaches' practice [5.5].

A company, Axis Coaching [5.1, 5.2], has been formed, of which Harvey has a part-ownership (17.5%), which is taking the developments of the iPad app [5.3] to the sports coaching community. The development of CAIS as an iPad application has involved working with an Irish-based performance analysis company, and these developments are on-going.

The official launch event of CAIS was held with collaborators Loughborough University in November 2012 where key players in the sport and education sectors were present. Examples include the British Olympic Association (now Performance Director as the Football Association) and representatives from performance sport in higher education institutions (University of Stirling).

CAIS has been sold to the following organisations: Sports Coach UK for use with their ASPIRE program; Leicester City Football Club and the England and Wales Cricket Board. A demonstration version of the software now available, which gives users a free 15-day trial for the software.

CAIS was presented to groups at the recent Performance Analysis Conferences held at

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Loughborough in August 2013, and at Glasgow Celtic Football Club in August 2013.

Harvey visited the USA in April 2013 and met with academic staff at Ohio State University as part of efforts to develop the global market for the product. He also visited staff at West Virginia University and they have also expressed interest in the product. The development team including Harvey have also discussed offering different versions of CAIS for different markets. For example, Harvey and collaborators are considering developing a 'lite' version of the application restricted to a few of the behaviours on the main product making the application more available to individual coaches in addition to large organisations. We have approached individuals such as sport performance directors in HEI's and they have fed back favourably on this and suggested they would be able to purchase licences on this basis. CAIS was nominated for a Research Enterprise Award at Loughborough University and received an Honourable Mention at the final awards ceremony.

The England Hockey coaches [5.6] that were engaged in the project are Centrally Contracted Coaches and this role involves them working with and assessing other coaches. These coaches stated the value of the tool in helping them in this role. They also suggested that the tool be built in to an on-going professional development exercise with England Hockey, mainly for themselves but for coaches coaching in other local and regional contexts via England Hockey [3.5].

Now that sales have been made, it is anticipated that a long-term evaluation of CAIS will occur with Sports Coach UK, for example. This will include generating research data for subsequent publications.

- Evidence or indicators of the extent of the impact described, as appropriate to the case being made.
 1. England Hockey May 2012; from Nov 2012 – present
 2. Launch event held at Loughborough University on 21st November 2012
 3. Dr. Harvey – invited keynote presentation to English Institute of Sport coaches conference, 10th December 2012.
 4. CAIS was presented to groups at the recent Performance Analysis Conferences held at Loughborough University, one held at Loughborough University on Friday 16th August 2013, and one at Celtic Football Club on Monday 19th August 2013.
 5. CAIS and related research was presented at both the Research fair and as part of the main conference at the 2013 ICCE Conference in South Africa from 10th-13th September 2013 (3.4-3.6).
 6. On-going evaluation study with Sports Coach UK – on-going 2013-4

5. Sources to corroborate the impact

- 5.1 Axis Coaching is on Twitter and has 1,927 followers (as of November 2013). It is also on Facebook en-gb.facebook.com/CoachAnalysisInterventionSystem and Axis Coaching has its own website www.axiscoachingtechnology.com
- 5.2 A YouTube promotional video has been developed for this purpose which includes testimonials from users: www.youtube.com/watch?v=W5S93ATscc8
- 5.3 A report was submitted in December 2012 by Dr. Harvey on the use of CAIS by the England Hockey coaches at the workshop April, 2012. This work was presented at the ICCE conference in South Africa which was attended by over 500 coach delegates (3.5).
- 5.4 England Hockey Centrally Contracted Coaches also work with England's National Age Group Squads (U16 Boys; U18 Girls and U16 girls, respectively). These are coaches involved in the Rising Star Grant and subsequent research Dr. Harvey has been conducting with CAIS.
- 5.5 Coaches at the Milton Keynes Girls Centre of Excellence Football Academy involved in the PhD study with David Pears. The Club have sent information to the Football Association regarding their involvement with David Pears and the work he is conducting there with CAIS.