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Stewart A. Vella

University of Wollongong, stvella@uow.edu.au

Trevor P. Crowe

University of Wollongong, tcrowe@uow.edu.au

Lindsay G. Oades

University of Wollongong, loades@uow.edu.au

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Abstract

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Keywords

coach, education, evidence, parallel, increasing, process, effectiveness

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Increasing the effectiveness of formal coach education: Evidence of a parallel process.

Stewart A. Vella^a, Trevor P. Crowe^a, Lindsay G. Oades^b

^aSchool of Psychology
University of Wollongong
Northfields Avenue
Wollongong, Australia, 2522

^bAustralian Institute of Business Wellbeing
Sydney Business School
University of Wollongong
Innovation Campus
North Wollongong, Australia, 2522

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Abstract

The purpose of this study was to use the results of an exploratory case study to discuss the design and delivery of formal coach education pathways. Nine coaches completed qualitative and quantitative feedback on a formal transformational leadership training program. The theme that was consistently being presented by coaches was the need for learning to be situated within practical demonstrations and discussions where the coach learner and coach educator work collaboratively to facilitate understanding of the applications of program content to coaching practice. These results have been discussed in the light of the parallel processes that are evident in coach education. The relationship dynamics between athlete and coach are paralleled in the relationship between coach learner and coach educator. Formalising the parallel process in coach education is put forward as a conceptually sound approach to facilitate reflection in coaching practitioners through the use of practical demonstrations.

Increasing the Effectiveness of Formal Coach Education: Evidence of a Parallel Process.

Introduction

Participation in youth sports can be a life changing experience. In fact, sports can be used to build many positive developmental assets that provide a strong foundation for positive growth and development. Such assets include physical and cognitive skills, self-esteem, teamwork and social skills [1]. One reason that sports are often prescribed as opportunities to foster positive development may be that young people are open to developmental gains during sports participation. Organised leisure activities such as sports provide a combination of attention, challenge and motivation that is not evident in schooling, or in other non-voluntary or unstructured activities [2]. In evidence of this, youth who participate in sports and other structured voluntary activities report higher rates of learning experiences and life skills gains than those who participate in regular schooling [3]. Consequently, organised leisure activities are seen as an important avenue for youth development [4], with sport being the most popular and time-consuming leisure activity for youth [5]. Approximately two-thirds of all youth in Australia and the U.S.A. participate in organised youth sports [6-7].

Despite the developmental impact of sports participation being arguably greater than that of schooling on an hour-for-hour basis, Gilbert and Trudel [8] have highlighted the disparity evident in the training of teachers and coaches. Teachers will typically be required to possess a university degree in addition to substantial hours accumulated in practical experience before receiving certification. The authors emphasise that even this extensive formal education has been considered as insufficient in allowing teachers to gain the required professional knowledge for effective practice. On the other hand, coaches receive relatively little formal or non-formal education. Further, these avenues are criticised as being low-

impact endeavours that leave coaches unprepared for the complex reality of coaching practice [9]. Formal coach education programs maintain a focus on technical and tactical knowledge and topics in sports science [10]. While this allows coaches of youth sports to practice with a base of theoretical knowledge, the current state of formal coach education courses does not give coaches the necessary practical and specific interpersonal competencies and may leave them unprepared to facilitate positive development for young athletes. Further, these programs are criticised as indoctrinating coaches by advocating a ‘right way’ to coach that adheres strictly to prescribed coaching strategies [9]. Such methods aimed at ‘knowledge transfer’ are perceived as unable to effectively impact coaching practice due to the top down approach used by coach educators [11]. Further, formal coach education pathways include an insufficient focus on pedagogical and socio-cultural aspects of coaching [12] and tend to present too much information in a short time frame with little follow up and few opportunities to integrate knowledge into coaching practice [13]. Additionally, formal coach education pathways are criticised as de-contextualising learning [10], as well as incorporating significant deviations from intended content that leaves a worrying lack of consistency in the knowledge gained by coaches [14]. As such, formal learning situations are seen as unable to deliver all of the key learning principles necessary for effective coaching [15].

A call has been made for research aimed at increasing the effectiveness of formal and non-formal coach education. Qualitative analyses that are used to assess “the coach learner’s perceptions of the course, (are) therefore required at all levels of formal certification programmes. This would contribute to a comprehensive picture of optimal structures, content, delivery and methods of assessment for coaches...It will also help to ensure that those coaches who are certified are knowledgeable and effective practitioners” [10; p. 255]. Therefore, the purpose of this study is to use the results of an exploratory case study to discuss the design and delivery of formal coach education. The hope is that this discussion

may provide the impetus for extended discussions on increasing the effectiveness of formal coach education. An exploratory case study approach has been used to provide texture, meaning and understanding to the process under study and to identify the salient aspects of the change process that are a result of formal coach education.

Method

Transformational Leadership Training Program

The transformational leadership training program comprised of one group workshop session of 2 hours duration, with subsequent monthly follow-up telephone calls for the duration of the sporting season (5 months) in total. The structure, content and purpose of the group session and follow-up discussions are given in Table 1. A quantitative analysis of this training program is reported elsewhere [16].

Participants

Nine coaches participated in the coach leadership training program, and all nine completed the program evaluation. All coaches were male, and coached at a single soccer club. Each coached teams of athletes between the ages of 12 and 18 years. Coaches ranged from 25 to 58 years of age, with a mean age of 40.67 years ($SD = 10.13$). All coaches had completed the minimal level certification course provided by the national soccer federation. Two coaches had completed the middle level qualification (in a 3-tier certification system). Coaches had an average of 9.67 years of coaching experience ($SD = 9.91$ years). All coaches worked in a 'participation coaching' context, which is highlighted by an emphasis on fun, skill development and social interaction [17].

Measures

Qualitative Questions. Four qualitative questions were given to coaches. They were asked to write as much as they could for each question. Coaches were allowed to answer the questions

Table 1

The structure, content and purpose of the transformational leadership training program

Component	Purpose	Specific Content
Introduction to initial session	a. Provide an introduction to the complete program and outline the coaching program	a. Welcome and overview of course
Education: Athlete Outcomes in Youth Sport	a. Increase coaches' awareness of important developmental outcomes of youth sport b. De-emphasise the importance of winning c. Facilitate a change in values that drive coach behaviour	a. Presentation of the 4 Cs (Competence, confidence, connection, character; Cote & Gilbert, 2009) as athlete outcomes b. Discussion about what 4 Cs look like in practice
Education: Transformational Leadership	a. Increase coaches' awareness of the importance of transformational leadership in coaching b. Educate coaches about the components of transformational leadership c. Increase the value that coaches place on transformational leadership	a. Presentation of the seven transformational leadership components set out in the DTLI-YS b. Outline of the links between transformational leadership in coaching and positive outcomes for athletes
Common Scenarios Workshop	a. Educate coaches about what transformation leadership looks like in their coaching practice b. Give coaches some behavioural guidelines when dealing with commonly faced scenarios c. Facilitate independent thought about solving common problems in a 'transformational' way	a. 6 common scenarios are presented and coaches are asked to discuss how a transformational leader would handle these situations (e.g., misbehaving players, facilitating team cohesion, loss of first game)
Goal Setting	a. To set SMART goals according to what they had learnt about transformational leadership b. To teach coaches how to set SMART goals	a. Outline of SMART goals b. Articulate 3 SMART goals c. Articulate sub-goals for each SMART goal that will allow them to attain those goals
Facilitating Self-Awareness	a. Increase the coaches' awareness of their own coaching behaviours b. To increase awareness of desired transformational leadership behaviours	a. Self-report version of the DTLI-YS b. Encouragement to seek feedback from parents and athletes
Training Manual	a. Allow coaches to contribute during session b. Give coaches outline of session and material to reference during season	a. Detailed outline of all content covered in session b. Avenues for further information c. Contact numbers for help if needed
Individual Monthly Follow-Ups	a. Check on goal striving and attainment b. Maintain awareness and motivation c. Provide practical assistance d. Provide additional coaching and mentoring e. Individualise programs for coaches	a. Telephone conversations between researcher and youth coach (one to one meetings where possible).

anonymously, but most chose to discuss their answers with the researchers. The four questions were as follows;

- 1) What aspect of the training program stood out to you?
- 2) Why was this aspect important?
- 3) What would you suggest be added to the training program?
- 4) What barriers do you anticipate in trying to be a transformational coach?

This qualitative data was obtained one week following the initial group session and again at the conclusion of the season. This was done so that coaches could give a reliable indication of the effectiveness of training components in the first instance before too much time had passed, and could also give data on the effectiveness of training in the context of attempting to apply it to their coaching practice over the course of a complete season.

Quantitative Questions. In addition to the qualitative data, quantitative data was sought to expand the narrative that is provided on the effectiveness of the training program. The effectiveness of each component of the transformational leadership training program was assessed using one item for each component, as well as one item to assess the overall effectiveness of the program. Each item was rated on a 5 point Likert scale ranging from 1 (*Not at all helpful*) to 5 (*Extremely helpful*). There were eight items in total, and each is listed in Table 2. These questions were administered one-week following the initial group session.

Data Analysis.

Written answers to qualitative questions were coded at a semantic level using content analysis as described by Neuendorf [18] and explained by Braun and Clarke [19].

Frequencies of key words were recorded by two coders for each question. Both coders were students trained in qualitative research methods and data analysis. The qualitative data analysis proceeded according to five key steps; (1) Familiarisation of data by reading coach responses. (2) Initial codes were generated. Codes represent semantic content of the data and

Table 2

Items used to measure the effectiveness of training components.

Item	Component effectiveness
1	How helpful did you find the training program overall?
2	How helpful were the suggestions of what your athletes should get out of sports participation?
3	How helpful was the explanation of the various components of transformational leadership?
4	How helpful were the scenarios that were given to you to work through?
5	How helpful were the behavioural guidelines that were given to you?
6	How helpful was setting your goals for this season?
7	How helpful were the tips on helping you to be more aware of your coaching behaviours?
8	How helpful was the training manual that you received?

Note. Items were rated on a 5-point likert scale from 1 (Not at all helpful) to 5 (Extremely helpful).

are the most basic element of the raw data that can be assessed in a meaningful way. For example, codes generated include ‘bad kids’, ‘difficult athletes’ and ‘kids who misbehave’.

(3) Codes were organised into keywords that reflect common themes. In the example above, each code was included under the keyword ‘problem athletes’. (4) Extracts for each code were taken from the data and collated into keywords to ensure that the data within keywords was coherent and related, as well as identifiably distinct from other keywords. (5) Intercoder reliability was calculated once using the percentage of agreement between the coders on the codes that were generated in step 2. Steps 3-5 were undertaken collaboratively between the coders.

Exploratory Case Study.

Given the importance of qualitative evaluations of coach training programs and the small number of participants in this study an exploratory case study approach was used to supplement the data. An exploratory case study approach is advocated by Callow, Roberts,

Bringer and Langan [20] as an effective strategy for reporting the results of coach training interventions when the number of participants is small. In this approach one or a few cases are selected to highlight important aspects of the study. Qualitative data from two coaches was used to highlight results of this study. This data was drawn from the qualitative responses that were written by the coaches, as well as the notes taken during each telephone session with the coaches. This data was sent back to the coaches following the conclusion of the program for confirmation of its accuracy in order to ensure fidelity.

Results

Qualitative Data

Frequencies of key words for questions 1 and 2 are given in Table 3. Frequencies of key words for questions 3 and 4 are given in Table 4. Intercoder reliability was 96%, with only two differences in code generation at stage 2. These two differences were reconciled by mutual agreement. Overall, coaches most often indicated that the transformational leadership principles and the application of these principles to their coaching practice were the most important aspects of training. An emerging theme from these qualitative questions is the need that coaches have to be given practical demonstrations and information. Notably, dealings with parents was a common theme that ran across what coaches most wanted to learn about and what coaches anticipated to be difficulties in applying the training. Six of the 9 coaches mentioned parents in one of these two contexts.

Quantitative Data

Mean response for each item is given in Table 5. The explanation of transformational leadership, as well as an explanation on its application to commonly encountered scenarios were reported as most beneficial. An explanation of athlete outcomes, increasing coach self-awareness and the training manual provided were also reported as helpful components of the training program. These results are highly consistent with those reported qualitatively.

Table 3

Key word frequencies for questions 1 and 2.

What aspect of the training program stood out to you?		Why was this aspect important?	
Keyword	Frequency	Keyword	Frequency
Scenarios	5	Brought theory to life	2
		Put theory into context	1
		Gave theory meaning	1
		Facilitated understanding	1
Leadership Principles	3	Help me to handle kids	1
		Learnt how to teach creativity	1
		Holistic view of a good coach	1
Goal Setting	3	Showed me how to do it with the team	3
Ongoing Contact	2	Facilitates further thinking	1
		Reinforces the message	1
Open Discussion	1	We can learn a lot from each other	1
Reinforcement Principles	1	Showed me how to maintain discipline	1

Table 4

Key word frequencies for questions 3 and 4.

What would you suggest be added to the training program?		What barriers do you anticipate in trying to be a transformational coach?	
Keyword	Frequency	Keyword	Frequency
Dealing with Parents	5	Time with the team	4
Practical demonstration	4	Problem athletes	4
Dealing with problem athletes	2	Parents	4
More peer interaction	2	My skill level	3
Technical information	1	Remembering to apply theory	2
Nutritional information	1	Understanding the theory	1

Table 5

Mean item response for each item used to assess the effectiveness of training components.

Item	M	SD
Effectiveness of training components		
Common scenarios	4.56	.53
Explanation of transformational leadership	4.33	.71
Overall program	4.22	.44
Goal setting	4.00	1.00
Behavioural guidelines	4.00	.50
Athlete outcomes	3.78	.83
Self-awareness	3.78	1.20
Training manual	3.78	1.09

Note. Items were rated on a 5-point likert scale from 1 (Not at all helpful) to 5 (Extremely helpful).

Case study (Coach 5: 'Arnold')

Arnold reported moderate to high success in being a transformational leader at the end of the program. However, he had also anticipated the most number of barriers to applying the training during his coaching practice. He nominated the time that he spends with his athletes as the major barrier.

'...time with the kids. I only have an hour with them once per week. There is just so much to get through that you just don't get time to stop and think about what I should be doing (in terms of transformational leadership). And add to that when the kids start to get crazy. I have to think about keeping the other kids occupied and I can't think about...how I should be acting'.

Arnold nominated the goal setting and common scenario components of the training as the most helpful. Consistent with the opinions of the group, Arnold placed a very high value on the direct application of these components to his coaching practice, emphasising that the most effective learning occurred during these practical demonstrations.

'The goal setting was great because it showed me what to do with my team'.

'The scenarios really put all of this stuff (transformational leadership theory) into context for me. I can see that it is so important and that it's...probably not so hard to do it'.

Further, Arnold requested more follow up sessions that were face to face. He emphasised that in order for sustained change to occur the coach educators needed to 'keep reinforcing the message' by arranging multiple follow up sessions throughout the season. According to Arnold, these follow up sessions should involve all club coaches and place an emphasis on practical collaboration between coach learner and coach educator.

Not all coaches reported as much success as Arnold. 'Daniel' is also presented as a case study. Despite the marked differences in subjective success, there was a high degree of consistency in the feedback from both coaches.

Case study (Coach 2: 'Daniel')

'Daniel' reported having moderate to high levels of motivation to improve his practice of transformational leadership behaviours. However, he reported very little success in applying the training.

'I just don't have the skill or understanding to do it consistently. I don't get enough time or opportunity to practice. And besides, I don't even train them enough for this to work fully'.

This doubt is also manifested in the requests made by Daniel for additions to the training program. He emphasises the need for a collaborative partnership between the coach and coach educator, where the coach is given sufficient time in order to develop their skill during coach education programs. He also highlights that this may best be undertaken in the context of group sessions where groups of peers can work with the coach educator to advance their knowledge and skill base.

'What we really need is more group sessions. More face to face time with the guys who know their stuff (coach educators). This is a different way of thinking.

We don't usually get that'.

Daniel rated the 'common scenarios' component of the training program as the most helpful (rating of 4/5). He emphasised how practical discussions and demonstrations were of high importance in training programs such as this because many of the coaches had never heard about the theory that was being taught, and would have great difficulty in understanding how to apply it.

‘The scenarios were the best because it wasn’t ‘til then that I actually understood what we were talking about. It helped me understand...what I was supposed to do’.

Daniel also emphasised the importance that he had come to place on goal setting as a result of this program. He acknowledged that he knew it was probably an important thing to do prior to starting this training program and that he had a general idea of how to do it, but didn’t realise that ‘it was so easy’. He stated that if he knew that it was so simply he ‘would have done it with (his) girls (team) a long time ago’. Inherent in this discussion was the fact that he valued the goal setting exercise that was part of the training program because it showed him how to do it with his team, despite rating it only 3 out of 5 on helpfulness.

Overall, the theme that was consistently being presented by coaches throughout the training program, was the need for learning to be situated within practical demonstrations and discussions where the coach learner and coach educator work collaboratively to facilitate understanding of the applications of program content to coaching practice.

Discussion

In line with the recommendations of Nelson et al. [10] this study set out to provide an evaluation of a formal coach education program in order to shed some light on the optimal structures, content, and delivery methods of such programs. Several important themes emerged. Coaches valued information, practical demonstrations and the examination of coaching scenarios which gave them the skills to apply the theoretical principles to their coaching practice. The need to situate learning within collaborative relationships between coach learner and coach educator was a recurring theme. Further, these collaborative relationships should be aimed at facilitating practical, rather than theoretical, understanding. Self-reflection was valued, but not as highly as the other components of the program.

Supplementing formal pathways with informal methods of coach education such as communities of practice and mentoring was also important to the coaches.

These results are highly consistent with previous research [21-22]. Thus, it may be concluded that coaches are telling a powerfully story about their preferences for formal coach education courses. At the heart of this story is the desire for coaches to be given practical skills and understanding through collaborative relationships with coach educators. Regardless of the underlying theory, coaches have consistently indicated a strong preference for practical demonstrations and the ability to apply the theoretical principles that they have learned within formal coach education courses. However, with a fundamental disconnect between the importance placed upon formal coach education, and the intent to engage in it [21], it is worthwhile to reflect at this point upon some important questions: ‘what do coaches *actually* get out of practical demonstrations?’; ‘what *can* they get out of them?’ and ‘are the current methods meeting coaches’ needs’?

Apart from increasing the likelihood that coaches will engage with formal coach education, meeting coaches’ preferences for course content does not necessarily increase course effectiveness. Evidence suggests that practical demonstrations aimed at equipping coaches with a ‘tool box’ of predetermined skills that are necessary to overcome common coaching situations have significant limitations [10]. Firstly, such methods equip coaches for only a very limited range of challenges. In reality, coaching practice is closely aligned with improvisation [22] and has very limited routes in planning [23]. The interpersonal interactions that constitute coaching practice [24-25] make planning the pedagogical process a difficult endeavour. Secondly, the current methods used to deliver practical demonstrations within formal coach education courses have been likened to indoctrination rather than education [10]. The current systems are argued to promote uniformity in coaching practice in response to standardised situations where coach educators prescribe a ‘right way’ of

coaching. Thus, coaching practitioners are unable to adapt to the complexity and diversity that is inherent in the coaching process [9-10]. Therefore, as it currently stands, coaches are likely to get very little benefit from the practical demonstrations and collaborative relationships that are commonly offered within formal coach education courses.

The question must then turn to what is possible for coaches to learn through this process. The importance of experiential learning has recently taken precedence in the coach education literature. Based on the work of Gilbert and Trudel [8, 26], it is recognised that coaches translate experience into knowledge and skills through a process of reflection that is fundamentally embedded within the activity, context and culture in which the coach will practice. A model of experiential learning was put forward that incorporates six components: (1) coaching issues; (2) role frames; (3) issue setting; (4) strategy generation; (5) experimentation and (6) evaluation [26]. Setting practical demonstrations within this experiential learning framework illustrates the potential benefits of such demonstrations. Based on the experience of the current training program, coaches do not come to formal coach education courses as a tabula rasa, or blank slate. At the very least coaches come with preconceived ideas about the coaching process that are already well-developed within their mental model or coaching schema [23, 27]. Even more likely, coaches come with some form of coaching experience and knowledge of coaching. In either case, coaches who attend formal coach education courses have preconceived ideas about the issues that are inherent in coaching. Practical demonstrations within coach education courses give coaches the opportunity to adopt the role of the learner/athlete and they are therefore able to frame their own role and understand key coaching issues from the point of view of an athlete operating within the context and culture of the sport. Coaches are subsequently able to generate strategies for these issues by making coach educators aware of the learner's issues and

observing their responses. Coaches can then experiment with these responses themselves and evaluate their effectiveness.

The process of experiential learning in this way is a well established phenomenon. Recognition of this 'parallel process' has long been identified as a valuable tool in the training of psychotherapists [28] and has more recently been applied within a coaching psychology context [29]. This is important because psychotherapists have a very high developmental impact on clients, and have relatively low levels of learning opportunities prior to commencing formal training. Most typically, the 'parallel process' has been evident within the training of psychotherapists where the dynamics between a therapist and a client are paralleled in the relationship between the therapist and their supervisor/mentor. Subsequently, the parallel process is a powerful learning tool whereby the therapist does to the supervisor what the client has done to them in the hope of learning how to deal with the situation [30]. This learning situation is mirrored in formal coach education, with research showing that the learning experiences of novices coaches are applied to coaching practice through the 'mimicking' of perceived good practice [31]. Upon this understanding, the relationship dynamics travel 'up the line' [32] from the coach-athlete relationship to the coach learner-coach educator relationship. When the coach learner observes how the coach educator deals with important issues set by the coach in this situation the relationship dynamic is able to travel back 'down the line' as the coach engages in behavioural experimentation within the coach-athlete relationship based upon the strategy that has been generated through observation and personal engagement.

The parallel process is a transitory process that operates below the level of conscious thought [33]. Cassidy [34] has highlighted the importance of understanding the explanatory power that non-conscious learning processes have on behavioural change in coaching practice. It is argued that the knowledge that coaches gain on a sub-conscious level allows

change to occur within coaching practice while conscious effort is given to more relevant activities. For example, conscious cognitive resources can be applied to breaking down a complex technical skill to a developmentally appropriate level while the interpersonal and pedagogical interactions are undertaken on a sub-conscious level as a result of observing and experiencing how coach educators interacted with the coach during coach education demonstrations. This can be seen in the case study of coach Arnold who reports very high rates of success in implementing the training despite acknowledging that he does not have ‘time to think about how he should be acting’ during his coaching practice. As such, coaches *can* realise significant benefits from practical demonstrations. However, this is unlikely to occur within formal coach education in its current form.

In order for positive transformations in coaching practice to be realised through the use of the parallel process, coach educators need to take a different approach to demonstration. Current programs are argued to ‘indoctrinate’ coaches to respond in a prescribed manner to highly controlled and contrived coaching situations [10]. Yelon and Ford [35] refer to this type of training as developing ‘closed skills’. Closed skills are the abilities to respond in a particular way according to a set of rules. Often due to legal reasons, or in the case of coach education, the desire to demonstrate ability in order to receive certification, closed skills are used to demonstrate strict adherence to a prescribed set of steps. However, for the reasons outlined above, this is undesirable in coach education. More desirable is the development of open skills. Open skills are the abilities to respond in highly variable, adaptable and creative ways. The nature of the coaching process demands that coaches develop open skills and it stands to reason that the skills derived from training are a direct result of training methods [35]. In order to develop the desired and necessary open skills, coach educators must allow freedom in responses, allow high levels of autonomy and educate according to principles and not behaviours. This is consistent with the suggestions of

Nelson et al. [10] that formal coach education can be a more influential source for transfer of knowledge if coach educators took a theoretically-informed approach, rather than a closed-skill approach. It is also consistent with the assertion that a ‘questioning’ approach to coach education is best, despite this approach not being used [9]. It is also consistent with work which suggests that in order to make coaches more receptive to learning experiences, self-determination should be encouraged, promoted and facilitated within formal coach education courses [31].

Using the parallel process to develop highly open skilled practitioners has been present in the psychotherapy literature for over a decade. The emphasis is placed upon educators who are able to empower therapists, who are empathetic and supportive, who are less directive and prescriptive and who can encourage reflection [36]. Thus, practical demonstrations are not about showing coaches what to do, but empowering them to draw upon their own personal strengths and resources with the primary concern of equipping them to coach effectively by reflecting-in-action and reflecting-on-action [37]. In order to do this coach educators need to encourage coaches to access their own resources and to reflect on their own coaching practice by using appropriate autonomy inducing questions and demonstrations. In this way, coach education will be less like ‘knowledge transfer’ and more akin to a cooperative learning environment where “coaching knowledge is shared and created in context” [11; p. 220]. Importantly, such changes may move formal coach education from ‘designed learning’ to ‘designed *for* learning’ [34]. According to Wenger [38] learning cannot be designed, as is the case in current formal coach education structures. However, learning can be a result *of* design, where formal coach education programs are designed to facilitate learning by allowing coaches to reflect-on and reflect-in their practice within the context of formal coach education.

Using practical demonstrations of common coaching issues has already been advocated as a legitimate and desirable method to foster reflection in youth sport coaches [39]. However, these methods have been criticised as being of limited value because they facilitate a reflection-on-action that is derived from somebody else's actions. Subsequently, the reflection undertaken in this scenario is arguably a superficial one. Practical demonstrations are also criticised as being unable to let the coach set their own problems, which has an important primary role in the reflective process. Using a parallel process in practical demonstrations may go some way to addressing these issues. Coaches are encouraged to set relevant problems that are constructed from their own coaching practice or mental model and are allowed to explore these problems at a deeper level by assuming the role of the athlete/learner. The coach is then opened to a subconscious reflection-in-action, allowing them to learn through this experience. Cassidy et al. [12] have already alluded to this process by suggesting that practical demonstrations should be made to simulate the messy reality of coaching practice, thereby allowing coaches to learn through experience.

Formalising the notion of the parallel process within formal coach education can potentially be a powerful learning tool for coach educators. This may go some way to addressing the serious concerns that formal coach education courses are extremely low impact endeavours when compared to informal pathways [10]. It may also go some way to providing a sound conceptual basis for the recommendation that coach educators working within formal coach education pathways model the behaviours and practices that they wish to see from the coach learners and the more general concern that the shortcoming of coach education is at least in part due to a lack of conceptual clarity [10]. Lastly, given that coaches' first preference for gaining knowledge is to 'learn by doing' [40], this conceptual clarity can be used to foster a greater extent of learning during coaches' preferred learning contexts. The result of this is likely to be coaches that are more willing to engage in formal

coach education courses and may go some way to reducing the gap between the perceived importance of such courses and the intent to participate in them [21].

Formal coach education, however, cannot and should not be the totality of coach education. Complimenting formal pathways with informal pathways is a necessary endeavour [41], with informal pathways such as communities of practice and mentoring being held as key components of future programs [42]. Coaches in this study strongly requested the addition of these informal pathways to supplement the formal program. There is a large base of literature to suggest that these pathways are high impact learning endeavours for coaches [43-45] and also produce better developmental outcomes for athletes [46]. However, formal and informal pathways need not be ‘complimentary’, ‘supplementary’, or mutually exclusive. For example, formal certification can be dependent upon attendance at a minimum number of informal ‘community of practice’ gatherings. The results of this study suggest that such a combination of formal and informal requirements for certification would meet the needs and preferences of youth sport coaches. The foremost reasons for pursuing formal coach education is because it is a league requirement and because the course includes relevant topics [21]. A combination of formal and informal pathways may best meet both of these needs by offering certification that is dependent upon attendance at a minimum number of pre-scheduled meetings where relevant topics such as ‘dealing with parents’, ‘dealing with problem athletes’, or ‘building character’ are set as themes.

Conclusion

This study offers some insights into the effectiveness of formal coach training programs. In order to change coaching behaviour in the messy reality of coaching practice coaches need to be given practical skills that have a direct application to coaching practice. Further, coaches need to be shown how to apply these skills. Acknowledging and formalising the concept of the parallel process that is present in coach education has been put forward as

one way to increase the effectiveness of formal coach education programs. If coach educators were aware of such processes they may be able to promote the development and acceleration of key skills in coaches, rather than 'indoctrinating' them by prescribing a 'right way' to coach. These key skills incorporate reflection-in and reflection-on coaching practice. Coaches also need ongoing support from their peers and mentors. Requiring attendance at a minimum number of 'community of practice' gatherings as a part of formal coach certification is promoted is a viable way of achieving effective and preferred coach education.

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