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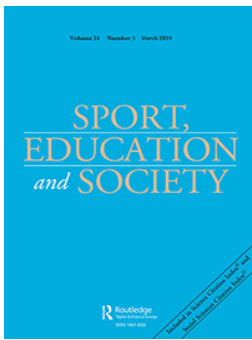
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A realist evaluation of the use of Flipgrid to facilitate collaborative online learning and reflection in sport coaching

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ABSTRACT

Sport coaching researchers have stressed the need for reflection in practitioners whilst the increased growth and impact of online applications has offered new ways to pursue this important goal. Recently, Stoszowski, Hodgkinson and Collins (2021) showed that Flipgrid, an online communication tool that enables short video-based interactions, was a useful tool for facilitating and promoting analytical interaction between student-coaches on a bachelor's degree programme. The present study used realist evaluation to examine this successful use of Flipgrid. A range of methods including surveys, participant observation, content analysis of video transcripts and a semi-structured focus group interview were used to develop preliminary theories regarding how, when and why Flipgrid facilitated and promoted more analytical interaction than earlier studies using online written blogs. Individual realist interviews were then conducted to refine these theories, resulting in three main components: convenience, connection and criticality. This research provides a coherent and plausible explanatory account of the causal processes through which the use of Flipgrid in this specific circumstance produced its outcomes, which may be useful to those implementing reflective practice interventions in similar educational settings.

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Reflective practice; coach education; coach development; coach learning; social learning

Introduction

In recent years, increasing importance has been placed on high quality education and development opportunities for sport coaches (McCarthy et al., 2021). One area that has seen a particularly rapid expansion of use in facilitating and enhancing coach learning and development is that of technology-enhanced and online collaborative learning (Cushion & Townsend, 2019). Approaches which are said to play a key role in enabling and promoting social interaction, sharing and the co-construction of knowledge between coaches (Byington, 2011). Reflecting the increased uptake of online learning tools and platforms in coach education and development (i.e. blogs, forums, and social networking sites), the number of peer reviewed papers reporting their use is steadily increasing. Most recently, Harvey et al. (2020) found that sports coaches perceive the social network Twitter to be a highly valuable platform through which to collaborate, access information and share ideas and resources with other coaches. Similarly, Musa et al. (2020) found that, especially during the worldwide pandemic

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lockdowns, coaches were utilising online sources such as webinars and virtual meetings for the majority of their professional learning. Despite this increase in focus, however, there remains a lack of empirical evidence demonstrating the impact of these technologies and tools on improving coach learning, and our understanding of the learning processes involved is still evolving (Tsiotakis & Jimoyiannis, 2016). Indeed, there are still relatively few studies and evaluations that examine coach development and education programmes that use online educational tools and interventions.

One area that has received significant and ongoing attention as a key component of effective coach learning is that of reflective practice (RP – Dixon et al., 2021; Stodter et al., 2021). This is especially pertinent in online environments, where there have been recent calls for coaches to be more critical in their consumption and sharing of information (Stoszowski et al., 2020). Indeed, a focus of much of our own applied research in recent years has been to test the use of online blogs (both individually maintained and group-based) for their potential to strengthen and promote coaches' critical thinking and collaborative reflection on professional practice (Stoszowski & Collins, 2014b, 2017). Most recently, we attempted to build on this work by moving beyond the predominantly text-based medium of traditional 'blogging' to explore the potential effectiveness of Flipgrid, an asynchronous online video discussion platform (<http://www.flipgrid.com/>), as a tool to facilitate and encourage more analytical dialogue and effectual collaborative learning between student-coaches in their final year of an undergraduate degree programme (see Stoszowski et al., 2021 for a detailed overview of Flipgrid and the specific protocol employed). It was our expectation that the face-to-face verbal communication enabled by Flipgrid would generate increased quality of interaction across this sample of student-coaches.

There is a strong argument for RP as a development tool (cf. Tracey et al., 2014), emphasising the utility of a continual cycle of reflection, learning and acting. Indeed, Schön (1983) saw RP as one of the cornerstones of a profession. Importantly, however, whilst RP is widely listed as a component of coach development, there is less evidence that this is always optimally impactful. RP can pave the way for positive change, but development *only* happens in learning organisations with mechanisms *supportive of coaches* and coaching *sympathetic to* this practice (Carver et al., 2014). There is lots of evidence for the importance of social interactions in parallel professions, including teaching (e.g. Raber-Hedberg, 2009) and health (e.g. Heel et al., 2006). Therefore, we were keen to explore Flipgrid and its underlying mechanisms as our previous work had highlighted considerable social benefits.

Similar weaknesses are apparent with RP training and its influence on thinking patterns. For example, trainees on university courses often receive training in RP. Notably, however, they may often use RP as a lens to make sense of early experiences, rather than questioning how they could have processed information to better effect (Mees et al., 2020). In short, whilst students may learn about RP, there is less evidence that this translates to its active and regular use as a coaching tool.

Social and cognitive elements are only two elements of effective RP development and use which merit further investigation (cf., Nash et al., 2011). Clarity on the important contribution RP can make is, unfortunately, not matched by careful mechanistically focused research which can provide evidence-based guidance on how the skill can best be developed. Consequently, and reflecting these social and university-related elements, the intervention was applied on a module on the final year of a BA (Hons.) sports coaching degree programme in the UK that required the student-coaches ($N=21$) to complete a coaching placement lasting a minimum of 40 h in a community setting (e.g. local clubs, schools, charities). In the second semester of the module (15 weeks), student-coaches used Flipgrid to engage in collaborative learning and discussion on contemporary coaching issues by reflecting upon their on-going development and practical experiences whilst on placement.

Positively, our results did indeed show good support for the approach, with the student-coaches exhibiting more frequent and more analytical discussion with the video-based format compared to our earlier studies which had used a blog-based written response and interaction format (Stoszowski & Collins, 2014b, 2017). Nevertheless, it is important to note that any educational intervention

is complex and can produce different outcomes in different circumstances, while no two interventions may work in the same way and for all people (Duffy et al., 2013). Consequently, education researchers in a range of fields are recognising the need to supplement experimental studies of effectiveness with a broader range of study designs that can help to identify, understand and explain ‘how’ and ‘why’ particular interventions may work (or fail to work) in different contexts (Wong et al., 2012). Indeed, although we were able to report an increase in analytical interaction observed in our results, we were unable to elucidate the underlying processes that generated these patterns due to the sole use of quantitative content analysis of student-coach activity. Therefore, closer examination of how, when and why this educational intervention appeared to work was warranted.

The purpose of the current study, therefore, was to move beyond a simple measure of whether the intervention ‘worked’ and instead, provide a coherent and plausible explanatory account of the causal processes through which the use of Flipgrid in this specific circumstance produced its outcomes. In short, we wanted to explore the nuances of what worked within this learning initiative, for whom, and under what circumstances (Pawson & Tilley, 1997). To do this, we drew on the principles of realist evaluation.

Methodology

Realist evaluation

Realist evaluation is an avowedly theory-driven approach that was originally intended to evaluate and develop understanding of how and why complex programmes and policies worked (or didn’t), as opposed to simply assessing their success or failure (Pawson & Manzano-Santella, 2012). In their seminal work evaluating programmes related to crime reduction, Pawson and Tilley (1997) argued that any intervention is introduced within a complex social system, which is in constant transformation. Consequently, it is not the interventions in themselves that work but rather, the opportunities/ideas they offer people to make them work (Cheyne et al., 2013). The account of the processes that explain how an intervention leads to a particular outcome is formulated as a middle-range theory (Pawson & Tilley, 1997), and is often expressed in the form of a graphical diagram or table – a so called ‘CMO configuration,’ which identifies the context (C) and underlying generative mechanisms (M) that lead to identifiable outcome patterns (O). ‘Context’ is defined as the particular social and cultural conditions in which an intervention is embedded which may facilitate or impede it because it shapes how things are done, how people respond and to which resources they respond to (Cheyne et al., 2013; Pawson, 2006); ‘mechanisms’ are the underlying entities, processes or structures which operate in a certain context to cause individuals (or student-coaches in our case) to interpret and act upon the ideas and opportunities presented by an intervention and trigger certain ‘outcomes’ (Astbury & Leeuw, 2010; Wong et al., 2012); which are the observed consequences (successful and unsuccessful, intended or unintended) of the mechanisms operating within a particular context (Pawson, 2006).

Realist evaluation proposes that interventions work only where they introduce appropriate ideas and opportunities (mechanisms) into appropriate contexts (Pawson, 2002). As such, it acknowledges nuance and accommodates the messiness of real-world practice, placing emphasis on an ‘explanatory quest’ (Pawson & Tilley, 1997) to identify what makes interventions work, for whom, in what circumstances and why (Pawson, 2002). To date, realist evaluation has been used extensively in public health and social care research (e.g. Cheyne et al., 2013; Doi et al., 2015; Goicolea et al., 2013; Mackenzie et al., 2009; Ogrinc & Batalden, 2009), yet has only recently started to gain traction in the coach education and development research (e.g. North, 2017; Redgate et al., 2020), despite being well suited for innovative educational interventions where outcomes are determined through stakeholder action and interaction, which in turn operate within a complex social and cultural context (Ranmuthugala et al., 2011). Its broad ontological basis is critical realism (Bhaskar, 1998), which

aligns with positivism in that it assumes an external reality exists independent of the researcher, yet it acknowledges that our knowledge and understanding is subjective. As such, realist evaluators accept the existence of independent structures that influence our actions in a particular social setting, while acknowledging the role of our subjective knowledge, interests and objectives (Marchal et al., 2012). Consequently, emphasis is placed on the search for causative mechanisms that explain the social world (Williams et al., 2017) and a core realist intention has always been to complement the measurement of change by understanding how it is generated (Archer et al., 1998).

Data generation and collection

Twenty-one student-coaches took part in the module (5 females and 16 males). Their average age was 21.33 years ($SD = 0.91$), and the median coaching experience was reported as 3.67 years, with experience ranging from 2 to 6 years in a variety of sports (soccer, basketball, rugby union, athletics, swimming). Each student-coach had completed at least one national governing body coaching award, with the highest awarded qualification translating to level 2 of the UK coaching certificate framework (Sports Coach UK, 2012). Ethical approval was obtained from the institutional ethics committee prior to the commencement of the study. Participation in the study was voluntary, with recruitment in each phase conducted via an email which outlined the explicit aims of the study and research process and included an information sheet and invitation to participate. Signed consent forms were returned via email prior to data collection. In considering the fiduciary relationship between module tutor and student-coaches, to reduce the likelihood of perceived pressure to participate and/or inhibited responses, guarantees were made regarding the ability to decline to participate and speak honestly without fear of any recriminations for their module outcomes (Ferguson et al., 2004).

There are limited guidelines available for conducting realist evaluation in practice (Marchal et al., 2012), and its proponents have stressed it is a general research strategy, or philosophy of inquiry, rather than a strict technical procedure or recipe for research (Pawson & Tilley, 1997). As such, a realist evaluation is method neutral in that it does not specify a particular study design or stipulate types of data collection and analysis (Goicolea et al., 2013), although innovation will likely be a necessity and data are required from multiple sources (Pawson, 2006). Consequently, to capture the complex and dynamic nature of Flipgrid use in the current study, our data sources, methods and

Table 1. The realist evaluation process, data sources and activities.

Study Phase	Source of data and activities with the present study
Phase 1 – Theory gleaning. Formulation of initial working theories in the form of hypothetical (causal) Context-Mechanism-Outcome configurations to be tested (CMOs).	<ul style="list-style-type: none"> • Previous research on blogs for coach learning and reflection • Experiential practice knowledge of the study authors • Pre-module student ($n = 21$) survey • Semi-structured group interview with students ($n = 14$)
Phase 2 – Theory testing and refining. Review and refine the initial programme theory as a working hypothesis.	<ul style="list-style-type: none"> • Module tutor's observational field notes • End of module student ($n = 13$) survey • Content analysis of Flipgrids
Phase 3 – Theory refinement and consolidation. Further test and accept, reject or modify the theorised CMO configurations.	<ul style="list-style-type: none"> • Realist interviews with students ($n = 9$) and a module tutor • Analyses and interpretation • Consolidated Context-Mechanism-Outcome configurations

materials were chosen pragmatically based on the nature of the research questions and the initial programme theory (Greenhalgh et al., 2009). This study consisted of three phases (see Table 1). Although we drew on the work of Doi et al. (2015) and Ranmuthugala et al. (2011) amongst others to guide us through this process, it is important to note that the realist methodology is iterative and cannot be expressed in simple sequential terms (Greenhalgh et al., 2009).

Phase 1 – theory gleaning

At the start of the semester, and prior to the use of Flipgrid, we generated a preliminary middle-range programme theory. Essentially a propositional set of hypotheses for how we thought the use of Flipgrid could work, structured in the form of conjectured (causal) context-mechanism-outcome configurations. Our initial CMO configurations were formulated based on our assumptions and expectations when initially designing the intervention. These ‘hunches’ were largely a function of our existing experiential practice knowledge (Mackenzie et al., 2009), as well as our previous applied research on the use of online blogs for collaborative coach learning and reflection (Stoszowski & Collins, 2014b, 2017). The proposed action of the underlying mechanisms in these initial programme theories were cast as plausible ‘if ... , then ... ’ propositions, which suggested IF this particular resource operates in a particular context, THEN it will provide a particular reasoning/response, that should generate a particular outcome pattern (Pawson & Manzano-Santella, 2012). We also disaggregated resource and reasoning as components of mechanism in order to help differentiate them from context (see supplementary file 1), with context later placed ‘in between’ resource and reasoning, as suggested by Dalkin et al. (2015).

In order to further develop the preliminary CMO configurations, qualitative data were collected via an online survey and a semi-structured focus group interview with students prior to the start of the module. Of the 21 students on the module, all 21 completed the online survey, which took an average of 16 min to complete, and 14 agreed to take part in the focus group interview, which lasted 52 min and was recorded and transcribed verbatim by the first author. The survey and focus group interview were used to explore the student-coaches’ perceptions of the proposed use of Flipgrid for collaborative coach learning and reflection, how they believed its implementation might unfold in practice and any potential barriers and/or facilitators to engagement they foresaw. Data obtained from the survey served as pointers to the aspects that required more probing during the focus group interview, whereby the goal was to explore in more depth the assumptions we were making as programme designers. The survey included items such as ‘list three things you like about Flipgrid as a potential tool for collaborative learning and reflection’ and ‘list three potential issues you see with using Flipgrid for collaborative learning and reflection.’ The focus group interview included questions such as ‘how might video-based discussion influence engagement and interaction,’ with open-ended prompts and clarification probes (e.g. ‘why do you think that is the case?’) used to evoke rich description (Kamberlis & Dimitriadis, 2013).

Qualitative data (i.e. raw participant quotations and responses) were subjected to content analysis using a process of open coding, whereby information rich sections of text were identified as stand-alone meaning units (Thomas & Pollio, 2002), which varied in length and exemplified a meaningful thought, point or piece of information. Next, they were listed and labelled, before being compared for similarities and clustered together into categories. Memos were written throughout the coding process to record emerging conceptual links and other observations about the data (Byng et al., 2005). A deductive a priori code template was also developed in line with the three core CMO concepts of realist evaluation. This process underwent several iterations and revisions before the categories were collapsed into larger and more general themes in a higher-order concept. These data were then synthesised to identify patterns of meaning, similarities and differences (Doi et al., 2015) and generate plausible hypotheses (Ogrinc & Batalden, 2009) about what mechanisms could or might operate, in what circumstances and to produce

what outcomes. The initial conjectured (causal) context-mechanism-outcome configurations can be seen in supplementary file 1.

Phase 2 – theory testing and refining

The aim of the second phase was to test and refine the initial programme theory by assessing the implementation and outcomes (Goicolea et al., 2013). To do this, qualitative and quantitative data were collected using a variety of methods: observation of student-coach behaviour and interaction; descriptive content analysis of each group's Flipgrid activity; and an end of module survey. The use of a multimethod evidence base was intended to ensure suitable documentation of the effectiveness of the implementation of the intervention (Sharpe, 2011).

Participant observation notes were recorded by the first author, who was also the lead tutor on the module, in a digital notebook for the duration of the semester. The goal of this observation was to obtain insight into the dynamics of the interactions between each Flipgrid group's members and the module staff, with a particular focus on how well students acclimatised to using Flipgrid and how their engagement with it developed over time. Descriptive content analysis of the transcripts of each 'grid' was undertaken in order to assess the frequency and reflective quality of student videos (the results of which are reported in Stoszkowski et al., 2021). Thirteen student-coaches (who were again recruited by email) completed the end of module survey, which was designed to explore their perceptions of how Flipgrid worked for collaborative coach learning and reflection, how they believed its implementation unfolded in practice and any potential barriers and/or facilitators to engagement with it they experienced.

Qualitative data were analysed using the same approach described in Phase 1. The initial programme theory provided the framework categories and analysis focussed on understanding the ways in which the hypothesised mechanisms unfolded or did not unfold in practice, identifying alternative mechanisms and explanations where necessary. A refined programme theory was then generated that explained what mechanisms were operating, in what circumstances and to produce what outcomes.

Phase 3 – theory refinement and consolidation

The aim of the final phase was twofold: to strengthen or reduce support for the refined theories, and to determine how they best explained (or not) why and in what circumstances Flipgrid worked for collaborative coach learning and reflection. To do this, the refined CMO configurations (developed in Phase 2) informed the topic guide for semi-structured realist interviews (Mukumbang et al., 2020; Pawson, 1996), whereby the conjectured theories are placed before the interviewee for them to comment on with a view to providing refinement by confirming, falsifying or tweaking the theory (Manzano, 2016). In that sense, the explicit aim in this phase was to 'test' the hypotheses by seeking disconfirming or contradictory data and alternative explanations. As such, the programme theories were the primary focus in each interview, rather than the participant's thoughts or feelings of the topic under investigation, which is typical in other qualitative interviews (Greenhalgh et al., 2015). In doing this, the 'traditional neutral territory' (Manzano, 2016) was abandoned, and each participant was instead engaged with directly on issues relating specifically to the proposed theories about the intervention. In this sense, the first author as interviewer was both teacher (in respect of taking an active and explicit role in 'teaching' the theories to each interviewee) and learner (with regard to trying to understand how those theories played out in their world) (Pawson, 1996). Pawson and Tilley (1997) describe this fluid relationship as a 'teacher-learner cycle' and it is distinctive of realist evaluations, with the interviewee more of a participant in the meaning-making process than simply a source of information (Mukumbang et al., 2020).

Procedure

The first author, who was an experienced academic tutor and coach educator trained in qualitative research methods conducted 10 interviews in total, one with the other member of the module teaching team and 9 with students on the module. Respondents were purposively sampled as they were in a position, having participated in the module, to comment on context, mechanisms and outcomes. The first interview was with the other module tutor. Pawson and Tilley (1997) suggest it is better to start by interviewing frontline ‘practitioners’ rather than ‘subjects’ of the programme, as they have specific ideas on what it is within the intervention that works (mechanisms) and are likely to have broad experience of successes and failures (outcomes), as well as awareness of the people and places for whom it works (Manzano, 2016; Pawson & Tilley, 1997). The remaining interviews all involved student-coaches on the module (i.e. the subjects/users of the intervention). Each interview lasted an average of 36 min (SD = 8.35) and for convenience took place using online video calls via Skype (Deakin & Wakefield, 2014). The audio from each interview was recorded using ‘Call Recorder for Skype’ (Ecomm Networks LLC) and then transcribed verbatim.

To put each interviewee at ease and get them talking, each interview started with general questions about their role in, experience of and views about the module. For example, ‘What do you consider the outcomes of the module to have been for you?’ and ‘If you could change something about this module to make it work more effectively, what would you change and why?’ For the remainder of each interview, conversations were framed by causal language, where the theories about how the intervention worked were explained to the interviewees (Manzano, 2016). These propositions consisted of ‘what’ we did, ‘how’ we expected that to bring about desirable outcomes and ‘why’ we thought that would work. Then, each interviewee was given the opportunity to accept, refine or refute multiple theories based on their lived experiences of the module (Layder, 1998). They were also encouraged to ‘talk openly’ and elaborate on specific experiences of the module or clarify particular issues or ideas where necessary by providing examples of how and why they thought the intervention did or did not work according to the theory (Byng et al., 2005; Mukumbang et al., 2020).

As the interviews progressed, the first author progressively became more knowledgeable of the intervention’s nuances and complexities, and the questions evolved to being less standardised and more focussed on the refinement of specific outcome patterns as the theories were refined or even discounted (Greenhalgh et al., 2015). In that sense, a realist evaluation of an educational intervention is an iterative explanation-building process (Wong et al., 2012), with the first author repeatedly moving between data analysis and collection, which Manzano (2016, p. 157) describes as a process of ‘placing nuggets of information within a wider configurational explanation.’ After the ninth student interview, it was decided that the theories were now consolidated and ready to be finalised, and no further interviews were needed. Indeed, realist hypotheses are not confirmed or abandoned through saturation in realist interviews, and more is not necessarily better (Pawson & Tilley, 1997).

During this process, three overriding components that played a prominent role in the integration of Flipgrid – convenience, connection and criticality – were identified, each of which were associated with specific outcome patterns and the context and mechanisms of each.

Findings

The purpose of the current study was to provide a coherent and plausible explanatory account of the causal processes through which Flipgrid facilitated more analytical collaborative online learning and reflection than written blogs. Three consolidated programme theories were the end product of the analysis in phase 3. These are PT1: convenience, PT2: connection, and PT3: criticality, each of which were associated with specific outcome patterns, contexts and mechanisms, which are detailed in supplementary file 2. The following sections briefly summarise the CMO patterns, with quotes used to enable the reader to gain a better appreciation of each one. Quotes from survey responses

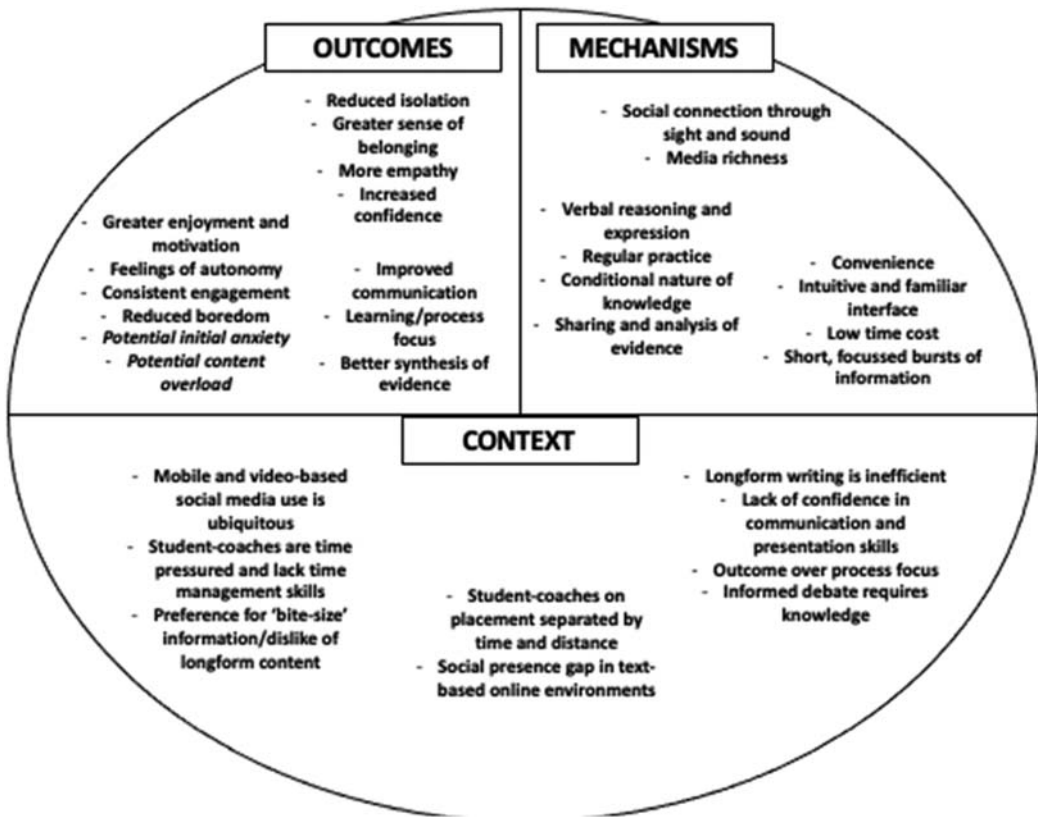


Figure 1. Final programme model.

Note: For an explanation of each component, please see the specific outcome patterns, contexts and mechanisms, which are detailed in supplementary file 2. For an explanation of the context-mechanism-outcome configurations, please see the findings section.

are identified by 'SR' in parentheses, and field notes 'FN'. Pseudonyms are used to protect participants' anonymity. A final programme model is also presented in Figure 1.

PT1: convenience

The mobile app-based nature of the Flipgrid meant that student-coaches could access it at a time and place most convenient for them. This was particularly advantageous given that smartphone use was ubiquitous among the group and all had their device with them at all times. It also meant that student-coaches weren't reliant on a laptop or desktop computer to participate as longer-form blogging would need, due to the advantages of a physical keyboard. As such, it was more motivating to do.

I did every single video off my phone, even when I was out and about, I could listen to them, when I was at work in the bar I was listening to and commenting on peoples' videos, so I did enjoy using it. You didn't have to set yourself an hour aside like you would with Wordpress, just watch a nice and concise video then reply to it when you got time. (James)

Throughout the realist interviews, the second module tutor and student-coaches referred to how easy the Flipgrid app was to use, especially given they were already users of popular apps and platforms such as Instagram, YouTube and Snapchat, which often involve video-uploads and self-recording using a mobile camera. As such, the Flipgrid user interface was intuitive and had a degree of

familiarity. There was almost no learning curve needed, which made it enjoyable and motivating to engage with.

It's so easy to access when it's on your phone, everyone has a smartphone these days, it's more enjoyable – it doesn't feel like an assignment, it's more comfortable, a lot of people are taking selfies and vlogging, and everyone is watching vlogs on YouTube. (Chris)

The lower time cost of Fligrd (compared to reading and/or writing long form text) also meant student-coaches were more able to balance their participation with competing life commitments such as part-time employment, their coaching placement, sports participation and study on other modules. In that sense, it was much easier to fit around the demands of their daily lives, which led to more regular and consistent engagement in discussion over time. Interestingly, 58% of videos were posted after 8pm.

You can look at the app any time, if you are busy out doing something or on the train you can look and watch the replies, and then before you get home, you're thinking of ideas on your way home ... It's a lot better to do it like that. At one point I put a reply on in the car, so it was great for supporting time management. (Dudley)

You can go and play sport and you still have time to reply, you're not worrying about spelling and grammar. For students who are not as motivated, who are very busy, it's still quite motivating in a sly way because it is so convenient, it's not easy but it's definitely more convenient. (Ellie)

The second module tutor was also keen to emphasise the benefits they saw of lower time costs to student-coaches getting involved.

There is definitely a lower cost in terms of time – it's instant access, visible all the time having it on your phone, so engaging doesn't cost much time or effort. Writing takes a while just to get set up ready to write and engage, the fall of that is off-putting, but FlipGrid cuts that out. (Module Tutor)

Similarly, the 'bitesize' information that Flipgrid promotes (i.e. videos a maximum of 3 min in length) was aligned with the way that these student-coaches tended to consume information every day (i.e. online through YouTube vlogs, social media etc.). It was clear, for example, that they preferred to consume verbal/auditory content. Long form written content was not something they particularly enjoyed or typically engaged with of their own volition. This meant that collaborative discussion via Flipgrid was not burdensome or 'boring' to do and, as a result, the student-coaches were less likely to disengage from it over time.

Videos were easier to access, I learn better by watching and listening, it's hard reading stuff and I get bored. Stuff just doesn't make sense when people are using fancy words, when you're talking it's a lot easier to communicate, you're just having a conversation, it was much easier and more enjoyable that way. (Lyndon)

The ease with which student-coaches could post videos, however, did bring with it the potential for content overload at certain points during the semester, which was an unforeseen and potentially negative outcome. If, for example, a lot of group members had been contributing, but another group member had missed a day or two, there was the potential for content (i.e. videos) to build up quite quickly which was then time consuming for them to go through and 'catch up' with. This was evidenced in a field log entry:

Group B have been flying in the last couple of days. Rachel has been left behind a little bit though after she was away on a Level 2 course on Monday and Tuesday. I think she just ended up skipping that thread because it had moved on so much and James had just kicked off another one by that point. (FN)

Furthermore, the ease of access and quickness with which discussion got going in the initial stages of the semester meant a small minority of students did not get the time they needed to ease into it. For example, one student in particular struggled to find her feet initially, although this did ultimately result in increased enjoyment and confidence levels.

To start off with I found it quite awkward – I didn't like filming myself and watching myself back, I felt embarrassed and it took a couple of weeks to get used to the routine of filming myself, but once I got going it got easier. It definitely developed my confidence and communication a lot, and towards the end I was really enjoying it and found it much easier, it just didn't come naturally at the beginning. (Terri)

PT2: connection

The student-coaches, who were separated by time and distance while on placement, felt much greater social connection with the other members of their group as a result of interacting via Flipgrid. The fact they could both see and hear each other meant they felt they were very much part of a community of learners.

You don't need to know each other for it to add value, our long-distance relationship on FlipGrid worked – you soon got to know about people through hearing about their experiences on FlipGrid, it definitely brings a group together and makes it stronger and relatable. (Adam)

Both module tutors noticed how relaxed the student-coaches appeared in their videos and felt this was made possible by the video medium making conversations feel less formal and more 'fun'.

It's easier to connect with people when it's more informal like this. Ellie was in her dressing gown – it was just like chatting to her over a cup of tea – it's much easier to connect with people in that more 'social' video environment. (Module Tutor)

It's obvious how relaxed they are, the 'up tightness' of interaction on a formal course has just lifted. They seem really comfortable seeing each other and being on screen and they can relate to each other more now, it's like friends chatting, rather than people on a course interacting for an assignment. (FN)

Flipgrid also negated any potential social presence gap, and content became more authentic, personalised and meaningful for the participants in each group as a result of being able to see and hear the people they were involved in discussions with. As a consequence, they were again more likely to persist in the task over time.

When you talk face to face you can see facial expressions, you can see if someone criticises you in their face, but they are not being mean they are just talking to you, whereas on Wordpress you can't see that facial expression so you don't know what they are actually saying – you can read it how you want to read it, it brings something social to it rather than just trying to interpret things yourself. (Bryn)

The student-coaches also felt more able to empathise with each another and less confident student-coaches were able to model behaviour off the more confident group members.

Even the quieter people within lectures would have an input, there was a sense of 'we're all in it together' – you see someone doing it so you think I'll do it, whereas just text doesn't motivate you to think I should do it. Some people were uncomfortable at first, but once they see their peers doing videos, they think I'll have a go too. (James)

PT3: criticality

The verbal reasoning and expression that Flipgrid permits was a key facilitator of more analytical discussion between student-coaches. Communication became more efficient as they felt more able to communicate their opinions and ideas (i.e. get their points across) due to being less constrained by the demands of written communication, which is a skill that did not appear to come naturally to them.

Writing well is a skill in itself, and that skillset differs massively between a module of students, but everyone can talk and have a conversation about coaching and spark a debate, that's the key. People struggled to write as well on Wordpress, they can deliver a sounder argument on Flipgrid – that's the underpinning product of it, people can have a conversation, but you get a massive range of quality in written arguments. (Archie)

I could put my point over easily – rather than having to type it out. Having the chance to put over your opinion vocally has more benefits rather than typing – where the writer can't really put an emphasis or feelings behind their opinion. (SR)

This ability to make the thrust of an argument or opinion clear also meant a perceived reduction in ambiguity or misconstrued views, which was again more motivating and enjoyable to engage with and led to increased analytical discussion.

On Flipgrid you are being academic, but not speaking like you are reading. You spoke as you would speak normally, so everyone could understand it. I enjoy writing but thinking back I was just writing the fake essay. Flipgrid makes sense to me because I'm speaking like I speak so you can understand each other. (Rebecca)

Similarly, the verbal dialectic that Flipgrid facilitated meant it was much easier and more efficient for student-coaches to ask a peer to explain or justify an opinion, ensuring that conversations stayed centred. Discussion was less contrived and led to perceived enhancements in levels of authenticity, rather than 'waffling' or impression managing through written posts.

It's more comfortable because you don't have to be somebody that you are not – you don't have to use big words and formal language; you can just get it over to them in the best way that feels more comfortable when talking verbally. (Paul)

In an apparently self-fulfilling cycle, the regular recording and posting of short videos over a sustained period of time also meant that student-coaches developed greater confidence in their communication and presentation skills. This relationship between ongoing practice and increased confidence resulted in an enhanced ability to communicate ideas and opinions, which in turn fed into more analytical discussion and greater perceived employability skills. In the same vein, Flipgrid also gave student-coaches the opportunity to continually practice and get better at being 'critical'.

You gained confidence by recording yourself over and over, so communication was a big thing, practicing being clear and getting opinions across, and trying to be more critical and go against people's opinion when appropriate. You would watch your own video back in case you looked like an idiot, just to see if there's anything you've missed, it was very quick to learn from your mistakes and make it better. (Paul)

It [critical thinking] takes time to understand what that is – many students don't know what critical thinking and discussion is and need more of a breadcrumb approach to lead them toward it and then practice it, they have those skills, it's just in a different or non-academic context, for example discussing and debating a football game in the pub with their mates. (Module Tutor)

The more nuanced discussions that Flipgrid promoted, whereby student-coaches felt better able to highlight areas of doubt or the conditional nature of an idea, also meant that a shift toward a learning focus was apparent. Where traditionally the 'grade' (i.e. outcome) may have been the primary focus for student-coaches when engaging in a task, the process of discussion now took centre stage.

It [Flipgrid] was a motivation; it drove a sense of wanting to learn and allowed you to express what you know (or didn't know!) and discuss what you were interested in, and there was flexibility rather than a lot of modules that tell you what to focus on. I would argue how much learning does a written assignment give you, in comparison to this it's just ticking a box, you are researching and discovering new themes in this module, there is more debate and disagreement and counter argument, so more learning was taking place. (Jack)

The way that the Flipgrid platform was structured, whereby student-coaches could include a hyper-link with each video-post, also meant that sharing relevant reading or resources was simple and straightforward. Likewise, the fact that only one link could be added per video meant that content overload was less likely. As such, student-coaches were able to underpin what they said in a video by providing evidence or directing the other members of their group toward some further reading (i.e. a journal article or book chapter). In that sense, the debate was critically informed, and student-coaches were developing each other's knowledge and understanding, which then informed the ongoing discussion in a snowball fashion.

I developed my knowledge about different subjects, I wouldn't obviously just go and read up about certain subjects, but it was really interesting to find out different things from people, I wouldn't have just gone and read about that topic otherwise, and they were quite interesting topics to be fair, that made it a big help to go and explore different things and understand the subject a lot more. (Ellie)

In line with earlier points above, the student-coaches also found they were much more able (and likely) to engage with relevant academic literature when verbalising their synthesis of it, rather than writing about it. It was no surprise then that they felt they were being exposed to a far broader range of sources than they otherwise would if they were writing or reading about the same content.

Flipgrid encourages further learning, you have to go and research and read prior to leaving a response. Develops knowledge. (SR)

It definitely sparked a deeper enjoyment for questioning coaching philosophy and theory and wanting to learn more. Being able to hear someone's view, read the reference they'd linked and then structure your counter argument back to them with another reference was great. By the end I must have looked at a hundred papers without even realising, I'd never do that normally! (Tony)

Discussion

This study was designed to evaluate how and why Flipgrid resulted in more analytical reflective discussion between student-coaches whilst on placement than in earlier studies that employ a text-based (i.e. written) group blog format (Stoszowski & Collins, 2014b, 2017). With critical thinking and reflection on professional practice playing a critical role in effective coach learning and development (Stoszowski & Collins, 2014a), not least in the online space, this study identified three important dimensions (convenience, connection and criticality) of the use of Flipgrid that can contribute to this important agenda.

The short sharp and electronically enabled verbal format provided by Flipgrid, which is an identified characteristic of Generation Z individuals (Gould et al., 2020), provided a degree of familiarity and resonated as a mode of communication with the participants. The app made it easy, convenient and enjoyable to initiate and maintain dialogic reflection and, as a result, Flipgrid in this context had a high level of suitability for the purposes of collaborative online learning and reflection. Indeed, McGrath and Hollingshead's (1993) 'task-media fit' hypothesis proposes a framework to predict the effectiveness of different communication media on performance for different task types. This theory states that the effectiveness of a medium of communication for a given task depends on the degree of fit between the 'richness' of information that can be transmitted and the information richness that is required for success (Sins et al., 2011). The richness of a medium is said to depend on four main attributes: (1) the immediacy of feedback; (2) the number of cues and channels available; (3) language variety; and (4) the degree to which intent is focused on the receiver. By these criteria, the face-to-face online communication that Flipgrid facilitated, despite users being separated by time and distance while on placement, can be considered a 'rich' medium, as evidenced in our findings.

The student-coaches developed a keen sense of social connection and felt able to quickly convey information and meaning both verbally and nonverbally, which led to greater levels of commitment and motivation to get involved in discussion and maintain this engagement over time (Abrami et al., 2011). In comparison, text-based, computer-mediated communications (i.e. written online blogs), which are reliant on the conveying of 'mere' textual information, might be said to be low in media richness when accomplishing tasks such as collaborative reflection (Kreijns et al., 2003; Sins et al., 2011). It was clear in this evaluation that the auditory, visual and nonverbal communication cues that Flipgrid permits helped the student-coaches to regulate their interactions, convey ideas and monitor feedback from their peers. The student-coaches were not constrained by the demands and complexity of text-based interaction and the expressive communication through cues transmitted through vision (e.g. facial expressions, posture, gaze and gestures) or sound (e.g.

voice volume, inflection and tone) played a key role facilitating dialogue that led to deeper learning (Gunawardena, 1995). Similarly, the student-coaches were better able to help each other move from states of perplexity, ambiguity, doubt, and incoherence toward a more clarified and coherent situation or viewpoint (Clarà, 2015), a key facet of more critical reflection and interaction, which requires participants to move beyond superficial and descriptive activities (Thompson & Pascal, 2012). This is particularly important given that tasks that require groups to 'negotiate and resolve conflicts of views or conflicts of interests may require the transmission of maximally rich information' (McGrath & Hollingshead, 1993, p. 92). As such, despite a small amount of social discomfort in a minority of students initially (LeFebvre et al., 2018), Flipgrid was capable of transmitting the types (and/or amount) of communication needed to facilitate effectual collaborative learning and more analytical reflection between these student-coaches (Mennecke et al., 2000). The result being that Flipgrid generated increased quality of interaction than online blogs did in the same educational setting.

Conclusion

By employing a realist evaluation framework in the current study, we were able to identify what worked, for whom and in which circumstances when using Flipgrid for collaborative coach learning and reflection on a bachelor's sports coaching degree module. Of course, by sharing the insight gained in the current study, we hope to help coach educators in related contexts and settings judge whether the use of Flipgrid may work (or not) for them and how (Pawson & Tilley, 1997). However, and although the use of Flipgrid has continued to work in the same way with subsequent cohorts since conducting this study, it is important to note the realist notion that 'nothing works unconditionally in all circumstances' (Tilley, 2000, p. 126) and education interventions are highly context dependent. As such, the impact of the same intervention will likely vary considerably depending on a range of interacting components, and our findings do not provide definitive predictions or a universally valid 'yes or no' answer about whether this educational intervention will be effective (Byng et al., 2005; Marchal et al., 2012; Ogrinc & Batalden, 2009). The causes of the outcomes we observed in the current study are likely not as simple, linear and deterministic as they may seem, although they may have been more likely in this context. Indeed, the generative mechanisms we devised for the more analytical student-coach interaction we observed compared to written blog posts illustrate characteristics of mechanisms more generally: they cannot be seen or measured directly (because they happen in people's heads); they are context-sensitive; they are multiple, and they are best expressed at a somewhat abstracted level so that they are not tied unnecessarily to particular people, places or things. Nevertheless, we believe this study IS useful to help bridge the gap between theory building and practical recommendations (Goicolea et al., 2013) and we hope to have provided deeper insights into how and why the use of Flipgrid worked and what contextual factors were associated with the observed outcomes so that other educators may draw transferable lessons about potential effective implementation strategies. Although realist evaluation is by no means a panacea, a good realist theory is open for further testing and iterative refinement against empirical data (Wong et al., 2012) and it represents one way to move the next generation of sport coach education research and evaluation to a position from which it can answer the next generation of questions.

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No potential conflict of interest was reported by the author(s).

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