Routledge
Taylor & Francis Group

Journal of Adventure Education and Outdoor Learning

ISSN: 1472-9679 (Print) 1754-0402 (Online) Journal homepage: www.tandfonline.com/journals/raol20

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To cite this article: Georgios Katsogridakis, Millie Chaston & Graham French (13 Nov 2025): The rise of the machines: a consideration of the cyborg adventure experience, Journal of Adventure Education and Outdoor Learning, DOI: 10.1080/14729679.2025.2585188

To link to this article: https://doi.org/10.1080/14729679.2025.2585188

Published online: 13 Nov 2025.

JOURNAL OF ADVENTURE EDUCATION AND OUTDOOR LEARNING
https://doi.org/10.1080/14729679.2025.2585188

The rise of the machines: a consideration of the cyborg adventure experience

Georgios Katsogridakis [a], Millie Chaston [a] and Graham French [b]

[a]Department of Human Sciences, Society & Culture, Plymouth Marjon University, Plymouth, UK; [b]School of education, Bangor University, Bangor, UK

ABSTRACT

This article examines how point-of-view (POV) cameras reshape outdoor adventure experiences, using the cyborg as a conceptual lens to explore how technology mediates being, knowledge, and engagement. Drawing on three reflective vignettes, we consider how wearable technologies influence temporality, spatiality, and subjectivity in adventure. The first vignette shows how POV cameras allow participants to revisit critical moments, prompting reflection on being in the moment and processes of becoming. The second explores how cameras act as technological extensions that reconfigure climbers' relationships with landscapes. The third examines how human–technology boundaries blur, producing cyborg identities. Collectively, these reflections highlight how technology co-constructs adventure, altering perceptions of time, space, and self. By framing outdoor adventure as cyborg practice, we provoke debate on how educators, practitioners, and participants engage with technology in experiential contexts and reflect on its implications for personal development and professional practice.

ARTICLE HISTORY
Received 20 May 2025
Accepted 30 September 2025

KEYWORDS
Point-of-view camera; adventure experience; being; technological mediation; epistemology

Introduction

Wearable technology is no longer the preserve of futuristic imagination but an established feature of everyday life, mediating how people measure performance, manage health, and document experience (Katsogridakis & Chaston, 2025; Reed, 2021). Outdoor and adventure activities are not exempt from these shifts: heart rate monitors, GPS trackers, and point-of-view cameras have become routine tools, prompting reflection on how such technologies influence human—nature interactions (French, 2016a, 2016b). The idea of the *cyborg*, popularised through cultural touchstones such as *The Terminator* (Cameron, 1984) and *The Matrix* (Wachowski & Wachowski, 1999), provides a familiar lens for considering how the boundaries between human and machine are being blurred. This paper examines the implications of wearable technologies for outdoor and adventure experiences, focusing on the ethical and philosophical debates they bring to the fore.

CONTACT Graham French g.k.french@bangor.ac.uk School of Education, Bangor University, College Road, Bangor, Gwynedd LL57 2DG, UK

The rise of wearable technology

The rapid advancement of technology has permeated every facet of modern life, fundamentally altering how we interact with the world around us. This technological evolution is increasingly evident outdoors, where digital tools and devices transform traditional experiences into hybrid interactions between nature and technology (Beames & Maher, 2025). The integration of sophisticated technologies continues to revolutionise experiences in the outdoors in a variety of ways.

Within the fields of outdoor adventure education, outdoor recreation and leisure, and nature-based tourism, research exploring the incorporation and the effects of technological developments is not new. From the extensively cited Cuthbertson's et al. (2004) double-edged sword, to the recently published *Routledge Handbook of Mobile Technology, Social Media and the Outdoors*, it is increasingly being recognised that the field of outdoor studies can be viewed as a world of intertwined socio-technical assemblages (Beames & Maher, 2025). First proposed in an outdoor context by Humberstone (2018), Haraway's (1985) cyborg concept was adapted to explore the complex relationships between humans, technology, and nature in outdoor education. Humberstone argues that the traditional binary opposition between nature and technology is increasingly untenable in our technologised world. Jack Reed's (2021) pioneering work on postdigital assemblages in outdoor contexts offers a compelling framework for understanding the interconnectedness of technology and nature. He examines how networked spaces, technological architectures, and direct engagement with nature, mutually influence each other in outdoor learning environments.

A significant aspect of this technological integration is the rise of wearable technology. Devices such as smartwatches, fitness trackers, point-of-view cameras and GPS-enabled gadgets have become ubiquitous among outdoor enthusiasts (French, 2016b), offering data logging and real-time data on physical activity, health metrics, and environmental conditions. This information empowers users to make informed decisions and optimise their performance. Katsogridakis and Chaston (2025) also draw on Haraway's (1985) concept of the cyborg and Merlau-Ponty's (1962/1945) phenomenology of perception, to explore the broader implications of technology in outdoor education and recreation. They focus on how digital tools and platforms can enhance or otherwise alter the nature of engagement and learning, while also discussing the impact of specific wearable devices on embodied experiences in outdoor settings.

In parallel with the proliferation of wearable tech is the explosive growth of social media, which has profoundly influenced being in, experience of, and engaging with, the outdoors. Social media platforms like Instagram, YouTube, and TikTok have become essential tools for content creation and sharing, spawning lifestyles and careers previously unimagined. Outdoor enthusiasts now document their adventures through high-quality photos, videos, and live streams, transforming personal experiences into digital stories that can be shared with a global audience. This trend has democratised storytelling, enabling individuals to inspire others, share knowledge, and foster a sense of community (Couldry, 2008) beyond that of traditional proximal shared interest groups. Social media acts as a powerful platform for self-expression, allowing users to craft their narratives and showcase their unique perspectives on outdoor experiences.

The content produced and shared on social media also plays a crucial role in building and sustaining social networks. Online communities of outdoor enthusiasts have emerged, providing spaces for individuals to connect, exchange knowledge and ideas, and seek inspiration. These digital networks can enhance the social aspect of outdoor activities, creating a sense of belonging and mutual support (Beames & Adams, 2025). Reed (2021) suggests that these communities are vital in promoting the use of technology in the outdoors, as they encourage the sharing of knowledge and experiences, which in turn drives further innovation and adoption of new tools. However, online communities focused on the outdoors often perpetuate an aestheticised and romanticised vision of nature, which can contribute to the maintenance and reproduction of exclusive outdoor cultures (Bell, 2016). Social media plays a significant role in shaping these spaces, influencing identity, power dynamics, marginalisation, and acts of resistance within the outdoor community (Andkjær & Larsen, 2025; Beames & Adams, 2025).

Despite the numerous purported benefits, the integration of technology into the outdoors also presents challenges. Hills et al. (2024) argue that the use of mobile technologies can pose barriers to both learners' and educators' presence, their social interactions, and their experience of place. Beames and Adams (2025), Katsogridakis and Chaston (2025) and French (2016a, 2016b) highlight ethical and social considerations, such as concerns related to equity, accessibility, diversity and data security. Furthermore, these authors stress the need for a critically considered approach that leverages technological advancements while preserving the intrinsic value of connecting with nature. They advocate for mindful integration, ensuring that digital tools complement (or perhaps enhance) rather than overshadow the natural experience (Beames & Adams, 2025).

As we delve deeper into this digital transformation, it becomes clear that the integration of technology in the outdoors is a multifaceted and evolving phenomenon. Henceforth, we seek to address the gap in understanding how wearable technology specifically, redefines not only the nature of outdoor experiences but also the epistemological constructs that underpin learning and knowledge creation in these contexts, and the implications of this transformation for adventure education and outdoor learning.

Knowledge, being and experience outdoors

Traditional views of adventure education and outdoor learning have highlighted a constructivist approach to knowledge creation via the interpretation of, and/or reflection on direct experiences (Greenaway, 1996; Hopkins & Putnam, 1993; Leberman & Martin, 2004; Mortlock, 1984). Although the transferability of this constructed knowledge, be that psychomotor, cognitive or affective (from Bloom et al., 1956) has been challenged by Brookes (2003a, 2003b) it persists as a dominant narrative in, and purported benefit of, outdoor adventure experiences for educational purposes (Humberstone et al., 2016). Whether knowledge exists as a construction from a causal relationship between knower and knowledge (Goldman, 1967), as an interpretation of a direct experience (Dewey, 1938; Quay, 2013), or true belief combined with some form of evidence (Nagel, 2014) we argue that a cyborg experience will alter that knowledge by the fact that the experience and/or the relationship of the knower to the experience changes. To be clear, it is not just that the content of the experience that changes (although it may have done so because of the technology, for instance people 'playing to the [point-of-view] camera' (French, 2016a;

Sparrman, 2005)) but that the person undergoing the experience (the knower, from Goldman, *op. cit.*) themselves is altered by becoming cyborg. This alteration can be multifaceted and dependent on the characteristics of both the user and the technology being used, and whilst it may be hard to define the epistemological shifts occurring consequently, as educators we must be mindful of this process, and to interrogate it. Whatever the epistemological position initially adopted (a broader discussion that is somewhat beyond the scope of this article), there cannot fail to be an impact of the technological mediation of being cyborg on both the knowledge and the knower.

The genesis of our position expressed here is partly found in the aesthetic of being in the outdoors (Quay & Seaman 2016, based on the work of Heidegger) existing as a starting point for knowledge creation, precisely because it is the nature of being that is transformed by the wearable technology. A being wearing technological enhancements that can record, represent and analyse/process myriad data sources, (in some cases using external/artificial intelligences to interpret those data) is no longer the same being they were: they have become cyborg both physically and, crucially in this discussion, epistemologically.

Epistemology is further influenced in the chronokinetic ability that cyborg capacity bestows, combined with the opportunity for collaborative knowledge creation (via digitally sharing experiences in text, video or numerical data-based formats) where experiences can effectively be re-lived through the digital data captured by wearable technology. The simple post-course reflection to embed learning (Leberman & Martin, 2004) via discussion or facilitated circle time, has been surpassed, such that the role of the facilitator gatekeeper (Brown, 2002) may now require additional timeweaver skills (that is, a temporal dimension). Although video anthropology is not a new field, and thus temporal distortion is discussed in literature (see Sparrman, 2005), French (2016a) highlighted the implications of using point-of-view cameras as a special case when applied to adventure experiences. The opportunity for temporal dilation or chronological manipulation afforded by recorded images and sound are frequently used in learning activities (such as adventure sports coaching, see Hoare, 2006) but the epistemological implications of the cyborg as a temporal manipulator have to date received little attention (save the work of French and Jones (2025) in physical and outdoor adventure education teacher education programmes).

Although working in different institutions, we share a perspective (Posner, 2009): active participants, practitioners and thinkers whose day-to-day work in higher education presents us with a unique position for considering the epistemological impact of wearable technology on the nature of experience and the nature of our own and our students' being in the outdoors. Although we will present some practical vignettes of wearable tech in our teaching practice to provide a context for this discussion, we must acknowledge that our position as both active participants in adventure activities and adventure educators, our shared perspective cannot neatly separate practical application and philosophical discourse. Rather, the richness in the discussion reflects the fact that our positionality is not a matter of switching between two binary stances or views (Collins & Collins, 2018) but allows existence on a spectrum of being that can hold multiple perspectives concomitantly. Thus, whilst we hold to a constructivist epistemology in presenting this consideration, we recognise that writing about a constructivist epistemology from a constructivist point of view has an inherent bias. Even the co-authoring of this

article has transformed our cyborg-selves as we utilise document sharing and simultaneous editing, online video conferencing, and AI in the form of spelling and grammar checking software, as extensions and enhancements to our constructive/creative process. However, we have endeavoured to reserve judgement on the value of the cyborg framed experiences being presented herewith, to reduce this potential bias as much as possible. We seek only to present our experiences of the impact alongside asking the epistemological and philosophical questions to prompt a deeper consideration by the reader.

Tracing the idea of cyborg students

In Western philosophy, Descartes (1641/1986) described the subject as an immaterial mind that can think and be aware of its own existence. This idea that a subject can exist as a pure manifestation of the self that is distinct from the world it inhabits was later critiqued by other philosophers such as Kant (1781/2003), who went on to propose the idea of a *transcendental subjectivity*. Kant considered subjectivity to be the primary condition for any perception to occur; it is not *a thing* we can be aware of, but the underlying means by which we are aware of anything. This laid the foundations for exploring the fundamental relationship between the subject and the world-as-perceived, which gave rise to the field of phenomenology: the strand of philosophy focusing on the nature of experience and being. Husserl's (1913/2012/1913) transcendental phenomenology (which is considered to be the foundational iteration of the discipline and privileged the idea of a unified consciousness) focused on how a subjectivity constitutes meaning through *intentional acts* (the notion that consciousness is always a *consciousness of* something), whilst Heidegger's (1962/1927) and de Beauvoir's (1949/1997) phenomenological works posit the subject as *being in a concrete world* (*Dasein* - literally meaning *there-being*) and are geared towards understanding the nature of being itself.

In the context of this discussion, engaging with the nature of subjectivity and being is crucial, because in order to grasp the experience of outdoor adventure education students in times of rapid technological evolution, we need to first wrestle with how technology fundamentally alters what it means *to be* a student, a line of inquiry originating in Katsogridakis and Chaston's (2025) work. They attempted to better understand the nature of students' experience by drawing on the phenomenological musings of Merleau-Ponty (1962/1945) on the centrality of the body to subjective being, and Haraway's (1985) notion of *the cyborg* as a feminist critique of human essentialism. In their work, they considered the ways in which the student as an embodied subject acts as a unifying force by which technological objects and artifacts are assimilated into its bodily schema, essentially changing its way of being in the process. For example, once someone becomes familiar with things like walking sticks, ice axes, mountain bikes, or other forms of equipment, they cease to be objects *for* experience and become part of *how* someone experiences and operates within the world: they become an extension of the body, reflected in an altered proprioceptive awareness. Taking this argument a step further, the authors suggest that the same applies to forms of wearable digital technology (e.g. smartwatches) and suggest they can change the way in which students in the outdoors use and experience language, make sense of their physiological state through quantitative metrics, and alter how they experience space and time during fieldwork.

In this article we aim to build on that work by specifically focusing on space and time. We argue that these core dimensions of experience can be stretched or otherwise distorted when interacting with forms of wearable digital technology such as cameras or smartwatches. To support this argument, we draw inspiration from Derrida's (1967/1979, 1967/2001) work, which enables a more nuanced understanding of Merlau-Ponty's ideas on embodiment. Derrida is known for critiquing notions of the subject as a unified totality in that a subject is defined through its difference to ever-changing external structures such as language and culture. He also suggests that the subject is fragmented across time, constantly defined by traces of the past and future expectations, thus, further problematising the idea of a fully present self. In other words, the student as an embodied subject is always being (re)defined through their interaction with technology and, as this occurs, their ways of experiencing space and time (and the consequent knowledge constructed) also change.

Furthermore, we contend that this process needs to be understood as continuous and dynamic. That is to say, a student as subject does not switch between well-defined states of being, but rather, fluidly takes on new forms as their relationship with the environment and technology changes. The subject is, therefore, not some kind of totality, but rather, a product and part of an ever-changing, more-than-human web of relationships. With this, we find ourselves being guided towards an increasingly posthuman understanding of subjectivity. As argued by Braidotti (2013), human subjects are in a perpetual state of *becoming* through their relational being with non-human others. This non-hierarchical view critiques the notion of 'man' as the universal subject by emphasising that there exists no such thing as a subjectivity isolated from the very world it inhabits—the world it is fundamentally a part of. This idea even becomes tangible when one considers that humans are in a constant state of material exchange with the world. The idea of a strictly bounded body rips at the seams when scrutinised at a molecular level, as does the idea of a strictly bounded subjectivity (Neimanis, 2024).

> *When I place a cam [device used to secure a climber] in a fissure on the crag, I can feel the texture of the cam's cable on my hand and what is on the other end of the tool. I feel the crevice narrowing as I find myself unable to push the cam further and as the rock scratches the surface of my skin. I let go of the handle and, despite trying, I can't pull the cam out; it is safely locked in place. In that moment, my embodied state of being is not simply perceiving the rock, the cam, and the pain. It* is *the rock, the cam, and the pain—all in flux and giving rise to that singular fragment of lived experience.*

Framing students as cyborgs is to recognise their inherent capacity to undergo fundamental changes in their ways of being as a result of their complex and multifaceted relationships with technology and the surrounding world. To understand the mechanisms by which this happens along with the implications it bears for their educational experience is a crucial step towards understanding how they learn, what their needs are, and how those are constantly evolving. It is important to say here that we do not wish to reach or make value judgements about the human-technology assemblages in educational spaces. Aligning ourselves with the works of authors like Nashef (2016), we work under the premise that technology simultaneously enhances, hinders, and generally changes the nature of the educational experience. Our primary aim is to understand the nature of this change whilst acknowledging that epistemological and ontological configurations are highly complex and not something we can

necessarily grasp or define. This means that, whilst we can examine and discuss certain parameters and implications of this phenomenon that have stood out for us in our work as educators, we do so predominantly with the aim of promoting critical conversation, curiosity, and greater understanding of how students might learn in outdoor environments.

Space/time for thought

The following vignettes present examples of our own professional practice that have given rise to a philosophical consideration of the nature of cyborg activity outdoors. Each aims to present a context for further thought (attempting to avoid being overly descriptive), followed by the discussion of the nature of cyborg being we have engaged with. We have chosen to focus on the cyborg experience of wearing small point-of-view (POV) cameras (such as GoPro, Insta360 or DJI Osmo) to provide as much familiarity as possible with the context. There are perhaps few reading this who have not worn a POV camera, been with someone wearing one during an outdoor experience, or at least viewed someone else's footage on a video sharing platform after an event to find out about somewhere unknown. The vignettes consider three intersectional themes to frame the nature of the impact of being cyborg in outdoor experiences as follows:

- Temporality: Being in the moment, being in the moment again, being in the future.
- Spatiality: Does adventure necessarily require an unknown? Can this be an enabler for some people to experience a sense of adventure?
- Being human: Responding to the discussions around the nature of humanity, we consider how technology expands what it means to be human in an outdoor adventure education context (now revitalised by the emergence of artificial intelligence in mainstream culture (Jafari, 2024).

Vignette 1: 'is the red light flashing? Ok, do that again!'

Student outdoor adventure education teachers are reviewing their footage of the session on a big screen in a classroom, a week after a whitewater canoeing session. Members of the group have been tasked to identify critical incidents to learning and analyse what happened. The screen presents four different camera angles (synced to a common timeline), in a quarter of the screen each, many with a constantly changing horizon line, enough to induce a nauseous feeling in those watching. The viewing/editing app allows red flags to highlight some clips for review later, and there are several already present in the timeline display as boats cross eddy lines with unpredictable results. Although the noise of the water is loud, a conversation can be heard:

Paddler 1: 'Right, so was that one of those critical incident things? Did you get it?'

Paddler 2: 'I'm not sure it was on. Is the red light flashing? I can't see'

Paddler 1: 'Yeah, you're good. Well, do it again anyway to make sure we got it.'

Paddler 2: 'But is that going to be ok? He's [the teacher] always saying about things being authentic and if we set it up, it won't be.'

Paddler 1: 'Well maybe. Let's try and make it be the same and then we can compare it, we'll still be able to analyse it won't we?'

Paddler 2: 'Ok, is the red light flashing? Ok, do that again'

Paddler 1: 'I'm not sure that's worked. It wasn't the same, because you knew what was going to happen. Maybe we'll have to use the first clip anyway'

Paddler 2: 'OK well let's keep it running then and we'll definitely get anything else that happens.'

Conversation from ae student teacher group video clip, canoeing on the afon llugwy, October 2024, bangor University PGCE programme

Cyborg students' POV cameras have the ability to capture critical incidents (albeit from differing spatial perspectives) which allows them to be revisited and reviewed at points later in time. Teacher education programmes frequently devote much attention to modelling pedagogic practice with a view to student teachers repeating/mimicking, and then developing, their own modes of operating based on a deepening level of understanding (Boyd, 2014). The cyborg time dilation effect illustrated above highlights how student teachers can review critical incidents a short time after they occur, allowing the multiple perspectives to be considered. However, it also offers the possibility of further reviews at significantly later points in time (at *any* point in the future), such that student teachers can gain a new experience (and potentially therefore construct new meaning) watching footage, once they have moved on in their understanding of pedagogy and further developed their observation skills.

The potential for temporal alteration raises questions as to the impact of that knowledge on the wearer, others in their group and the authenticity of the experience (suggested as a significant factor in outdoor adventure teacher education (North, 2021)). This impact may be in terms of the footage itself (what is captured as wearers have control when to switch the camera on and off), the spatial relationship between the generated footage and the point of view of the wearer (providing a different spatial perspective), what things might look like when they become past (rather than the present), and how knowledge of the future changes the nature of the experience and the being of the wearer in the situation being recorded.

French and Jones (2025) highlight the practical advantages of reviewing authentic experiences in this context, but we question the impact on the nature of being in the moment (and their becoming (Braidotti, 2013) and the entangled constructivist processes. The knowledge that footage (hence some documentation) of any critical incident may be experienced again by the wearer or their group, or experienced anew by a third party, we suggest will not only change the way that the wearer deploys the camera in choosing what to capture and where from, but will change the nature of the experience itself for the wearer (and potentially their group). Beyond consideration of the nature of the knowledge constructed being affected by the time and perspective of the footage, we ask: What is the impact on being in the moment and subsequent becoming? How does this affect

the epistemology of the wearer, their group and any subsequent viewers of the footage? French (2016a) suggested that because of the widespread use of POV cameras in adventure activities, the impact on behaviour of subjects and wearers might be less noticeable than in Sparrman's (2005) work where subjects played to the camera (they were children faced with a larger camera on a tripod set up, so care must be taken in any comparison). However, he did not consider the impact of wearing the camera on the being of the wearer in the moment or activity, which we suggest is a more philosophical than practical issue to address, but worthy of consideration to fully understand the impact of becoming cyborg on the nature of outdoor and adventurous experiences.

Vignette 2: being in space, being as space: the in-between?

The granite wall is both familiar and foreign. Some of these undergraduate adventure education students have climbed here before, maybe in personal climbing time with friends or as part of as structured university session. They find comfort in its predictable holds and well-trodden routes. Others face it as an unfamiliar expanse, filled with the thrill and trepidation of the unknown.

Each student selects a route, their choices reflecting personal thresholds of comfort and risk-taking. Some choose the security of familiar paths, while others embrace uncharted routes. Their cameras, mounted on their helmets, record every handhold and moment of hesitation, and become extensions of their bodies, blending the human and the technological to form a cyborg assemblage (Haraway, 1991). As the students ascend, the POV cameras capture more than the technicalities of climbing. They document the shifting interplay between body, space, and technology. Spatiality here involves the climbers' embodied interaction with the wall. Movements, such as gripping holds and adjusting weight, highlight their negotiation with the physical space. The cameras add a layer of mediation, potentially amplifying their awareness of the rock face or influencing their choices.

Some students have noted how the camera heightened their focus on details, transforming familiar routes into spaces of rediscovery. Others describe the camera as an enabler, offering a sense of presence and connection that encouraged them to tackle unknown routes. Pink's (2007) analysis of video ethnography supports the notion that cameras can mediate and reshape participants' interactions with their environments.

In this vignette, spatiality refers to the way individuals experience, interact with, and conceptualise the physical and social space around them during outdoor activities. It is not merely about the physical environment but encompasses the relationship between the climber, the climbing route, the broader landscape, and the technological dimension introduced by POV cameras. Spatiality involves the direct, physical engagement with the rock face and body in relation to it. The climbers' movements—selecting handholds, shifting weight, and navigating the wall—highlight the intimate, moment-to-moment relationship with their immediate environment. Spatiality is shaped by this embodied interaction, where the body is in constant negotiation with the physical demands of the climb (Casey, 1997). The POV cameras alter spatial perception and engagement. They act as extensions of the climbers' bodies, influencing how they experience and interpret the space. The climbers analyse not only their physical actions but also their emotional responses and evolving relationship with the space. The recorded perspective allows

them to revisit and reinterpret their experience, deepening their understanding of how they engage with spatiality during adventure activities (Casey, 1997; Merlau-Ponty, 1962/1945).

Thus, spatiality in this vignette is a multidimensional concept, encompassing physical interaction, emotional response, technological mediation, and reflective reinterpretation of the outdoor environment. It emphasises that the essence of adventure lies not just in the spaces explored, but in the ways we engage with and perceive those spaces, especially when augmented by technology. The influence of POV cameras extends beyond the climbers themselves. When shared, perhaps on social media platforms, the footage becomes a window into their experience, allowing others to engage vicariously with the adventure. For viewers, this can evoke a sense of exploration and connection to the climbing environment, even from afar (Burgess & Green, 2018).

By watching these recordings, viewers might feel inspired to imagine themselves in similar scenarios or experience a mediated form of adventure. The footage, with its immersive perspective, provides access to the embodied dynamics of climbing—the tension, effort, and triumph—offering an opportunity for others to engage with the space and its challenges in ways that might not otherwise be accessible (Ormrod & Wheaton, 2009).

However, this sharing also raises questions about authenticity and representation. How do such recordings shape collective perceptions of outdoor spaces? Does the framing of these experiences for an audience alter the climbers' own engagement with spatiality? These considerations offer further avenues for reflection on the intersection of technology, adventure, and the shared human experience of space.

Vignette 3: becoming a cyborg subjectivity

At the bottom of the crag, amongst a group of bachelor's adventure education students, the POV camera is passed around. After each climb, another student wants the opportunity to capture their experience in a way that they themselves and others can revisit later as they relate and interpret their experiences in a module focussed on personal development through adventure education. Arguably, students' behaviour changes depending on whether they are wearing the camera or not, but what about the students themselves? Is the student wearing a camera on their helmet or chest fundamentally the same as the student they were before they put it on? Do they revert back to being the same or maybe a version closer to their authentic self when they take it off again? If we abide by some of the earlier ideas surrounding subjectivity, then we could perhaps say that, whilst the content or mode of their experience is changing depending on their use of technology, the core of their subjectivity remains the same. Indeed, there may be some comfort in the thought that there is a fundamental part of the people we work with (and of ourselves) that remains fixed; it makes the idea of knowing or connecting with someone more tangible. What happens, though, when we intentionally unsettle that thought? What happens when we decide to wear our technological augmentations and follow in the footsteps of those who have argued that subjectivity is radically fluid (Braidotti, 2013; Derrida, 1967/2001; Haraway, 1985)?

The thing about subjectivity as being in a perpetual state of becoming, is that it is necessarily indeterminate. Whilst we may attempt to make sense of people at certain

moments, the self does not exist in a snapshot, but within the continuously unfolding sphere of relations it is a part of. The idea of students as cyborgs is an attempt to embrace this fluidity and challenge how educators think about the learning of students (Katsogridakis & Chaston, 2025), teacher-student relationships (Katsogridakis & Leather, 2024), and the very concept of a student itself. We are not proposing an alternative definition for students, nor do we claim to fully grasp what a cyborg experience is. We can, however, begin to muse over how a student wearing a camera on their chest is a fluid embodiment of their past (all of their knowledge and meaningful associations to the device they are wearing and context in which it is being used), potential futures (all things that might come to pass that are directing their choices, movement and feelings), and the spaces and networks they form a part of, all in flux in an ever-unfolding present. We can also begin to consider how different forms of technology (all with their own unique agency) (Benjamin, 2019) might impact students' ways of being. The distortion of time, space, and self that arises from the use of a POV camera will not be the same as that of a smartwatch, an augmented reality headset, a smart phone, or a drone. In essence we cease to see these devices as mere tools to be used and begin to think of them as appendages or extensions of the self that can uniquely and profoundly change what it means to be a human experiencing the outdoors.

Concluding thoughts

The above vignettes act as reflections on, but also performances of, cyborg ways of being. Whilst sitting behind our laptops, reviewing content from our cameras and talking to each other within virtual meeting spaces, we collectively consider the nature of cyborg being, whilst also fully embodying it. Ultimately, and as a result of this process, we decline to provide concrete assertions on the nature of cyborg being. We have, however, aimed to initiate a critical conversation on how the integration of technological tools (including wearable tech) fundamentally changes the nature of our work with students in the outdoors. As such, we conclude this work with some prompts for the outdoor adventure education community so that this discussion deepens and broadens within future research, published work, and the spaces in which we educate.

Firstly, we pose the questions: what does it mean to care for cyborg others? How do cyborg ways of being change the nature of teacher-student relationships? The notion of care in teacher-student relationships has long been discussed within education scholarship (Noddings, 2013) and specifically outdoor adventure education (Katsogridakis & Leather, 2024) as it forms a foundational pillar of student-centred work. However, as students' and educators' needs and capacities (and to some extent, being) fundamentally change through the use of technology, everyone involved in the educational process must remain attuned to the fact that caring for one another is an evolving idea that requires questioning, adaptation, and reflexivity. This becomes even more pertinent when considered through an intersectional lens (Collins & Bilge, 2020; Crenshaw, 2005) as people's complex identity features will ultimately govern the ways and reasons for which they become cyborg, meaning that a sensitivity to wider issues of social justice is crucial.

Secondly, we urge readers to continue contemplating the nature of being, learning and knowledge through a cyborg lens. Different technological tools, such as the wearable tech considered above, will elicit different cyborg qualities. This means

that educators will often be in a prime position to reflect on how the particular technology they (or their students) use in their practice gives rise to cyborg ways of learning (knowledge construction).

Thirdly, with the rise of a deeper consideration of what can be taught by, and learned from, the more-than-human through the touchstones of wild pedagogies (Jickling et al., 2018), should we consider the interaction of a more-than-human natural world with the other-than-human-technological world? Although this article opened with a somewhat tongue in cheek reference to science fiction on the silver screen, there is perhaps a commonality with those films surfacing the question of the impact the other-than-human technological world has on the nature of being. Holding that consideration as metaphysical prod from creative art, how then is a cyborg's being and its concomitant interaction with the more-than-human natural world to be integrated into an appropriate epistemological framework?

Finally, we must acknowledge what has arguably been the most significant technological development at the time of writing this piece: generative artificial intelligence entering mainstream society, eliciting important questions on the nature of intelligence and humanity itself. Whilst a far cry from the fictional *Skynet* AI mentioned in the introduction, the use of this technological development is gradually entering the sphere of outdoor adventure education, with different perspectives already being applied to understanding the possible implications and challenges it will bring (North et al., 2024). We trust that this present article will contribute to this effort by offering an original perspective with which to approach this issue. Artificial intelligence is a technological tool that contributes new ways of being and learning to the cyborg pallet. It is also, arguably, the closest any technological tool has ever come to being a subjectivity itself, which, as our final provocation, presents unique opportunities for considering educators' and students' experiences with technology in the outdoors as increasingly intersubjective.

Disclosure statement

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

Notes on contributors

Georgios Katsogridakis is a senior lecturer and programme leader in the department of Human Sciences, Society & Culture at Plymouth Marjon University.

Millie Chaston is a lecturer in Adventure Education & Outdoor Learning in the department of Human Sciences, Society & Culture at Plymouth Marjon University.. She has a breadth of experience in the areas of climbing and mountaineering. Having worked and trained in a range of outdoor adventure contexts, enabling others to experience the outdoor environment through sustainable forms of adventure has become her passion! Her research centres on gender equality in the outdoors which reflects her wider desire for a field of outdoor adventure education that welcomes everyone.

Graham French is a senior lecturer in education in the School of Education at Bangor University, Wales, UK. His research covers the pedagogy of adventure education, outdoor learning in initial teacher education, poverty and education and the use of digital technology in adventure education.

ORCID

Georgios Katsogridakis http://orcid.org/0000-0003-4802-5330
Millie Chaston http://orcid.org/0009-0005-3688-3516
Graham French http://orcid.org/0000-0001-6607-2208

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