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Active Learning in Higher Education: Inheriting Pasts and Emerging Futures

Kristin Børte[1] and Sandris Zeivots[2]

Abstract

This paper examines active learning from a temporal perspective, reflecting on its historical influences, trajectories and future directions emerging in research. Rather than treating active learning as a fixed pedagogical approach, the paper situates it within longer educational traditions and ongoing debates about teaching and learning. Drawing on research in higher education, the paper discusses how active learning has been shaped by changing ontologies, relationships and understandings of activity and student participation. The paper concludes by identifying three interrelated matters of concern for future research on active learning: the conceptualisation of purposeful activity beyond mere "being active," questions of agency and authorship and human–AI entanglements, and the need for critically curious approaches to imagining and designing futures of active learning.

Keywords

active learning, higher education, generative artificial intelligence, agency, postdigital, futures thinking

Introduction

We are living through a kind of paralysis, as higher education is pulled into intersecting crises, often described as a polycrisis (Buckingham Shum, 2025). The pace of technological and institutional change is at times moving faster than our bodies, minds and educational practices can adapt. Technologies such as generative artificial intelligence (GenAI) intensify this condition, amplifying shifts in how we work, live and learn rather than standing apart from them. The developing connections between GenAI and education have raised concerns about pedagogical implications such

[1]University of Bergen, Norway
[2]The University of Sydney, NSW, Australia

Corresponding Author:
Kristin Børte, Centre for the Science of Learning and Technology (SLATE), University of Bergen, PO Box 7807, Bergen N-5020, Norway.
Email: kristin.borte@uib.no

as the dialogical dimension of teaching and learning, the impact of artificial intelligence (AI) on teacher and student agency and democratic participation (Holmes et al., 2025). How GenAI impacts higher education, particularly the experiences of students and teachers, remain poorly understood. Questions about what constitutes active learning in these changing and increasingly complex networks of learning and about the concerns and opportunities higher education will have in enabling more preferable active learning require attention. It is more vital than ever that learners are active participants and co-creators in educational activities while learning and working with GenAI (Giannakos et al., 2025; Holmes et al., 2025). Calls for more intentional integration of active learning in higher education have persisted for decades. Yet this implementation remains challenging due to barriers that are manifold and appear at different institutional levels (Børte et al., 2023; McCorkle, 2021) and that have been inherited and often reproduced through historical structures, practices and inequities (Oztok, 2025).

Looking back, decades of empirical research have illuminated the advantages of active learning (Freeman et al., 2014; Michael, 2006; Prince, 2004), and pockets of innovation exist where new forms of active learning have emerged over time reflecting constant developments in applied pedagogical practices. Similarly, the higher education sector is continuously changing. Digital technologies, artificial intelligence and global connectivity are impacting both teaching and learning practices as well as established active learning approaches forcing us to rethink active learning pedagogies: who is active, what counts as activity and how can we ensure we design active learning that promotes students' learning outcomes, experiences and participation?

This article explores these questions by examining active learning from a temporal perspective, reflecting on how inherited assumptions and practices continue to shape historical influences and trajectories (we call it "inheriting pasts") and exploring future directions that have traces emerging in the research (we call it "emerging futures"). Both of these approaches offer a wide and increasingly blurred spectrum of insights, challenges and opportunities. To capture these complexities, we finish the article by highlighting "matters of concern" that higher education institutions, academics and other stakeholders must navigate.

Inheriting Pasts: Active Learning

Forms of learning through activity and participation have been central to many communities' ability to exist, survive, generate and pass on knowledge. The notion of active learning has its roots in Western sociocultural theories of learning (Wertsch, 1995, 1998) which originated in the late 1800s and early 1900s. The two famous pedagogues John Dewey and Lev Vygotsky, though from different backgrounds, both emphasised *active inquiry* as central to learning. According to Glassman (2001), the two differed in how they positioned teachers in relation to students' learning. The pragmatist John Dewey, famous for his quote "learn to know by doing and to do by knowing" (Mclelland & Dewey, 1914, p. 182), viewed the learner as an autonomous agent achieving goals and advancing knowledge through their own interest in the activity. Vygotsky emphasised a guided process in which a more knowledgeable mentor structures tasks that progressively enable the learner to attain higher levels of competence (Glassman, 2001).

Different learning theories offer fundamentally different conceptualisations and ontologies of knowing and learning (Greeno et al., 1996). For instance, constructivism primarily views learning as internal cognitive activity in which learners actively construct knowledge by integrating new experiences with prior understanding, whereas sociocultural perspectives frame learning as participation in social practices in which learning is mediated through language, tools and cultural practices (Vygotsky, 1978). Regardless of theoretical positioning, the way learning is conceptualised influences the way we practice and teach, the instructional methods we use, how (and if) we

integrate student active learning and how we design learning environments and activities. An important contribution in this trajectory has been the recognition that learning in higher education cannot be reduced to knowledge acquisition, even in technology-rich environments. Laurillard's (2013) work reframed learning as a designed process involving multiple forms of activity, including inquiry, discussion, practice, collaboration and production, highlighting how these activities make distinct and complementary contributions to learning rather than serving as optional add-ons to content transmission. The boundaries between learning theories have become more fluid as newer perspectives and pedagogical practices emerge drawing on multiple intersecting theoretical traditions simultaneously.

Experiential learning has been shaping active learning by positioning learners' experience as the basis for meaningful engagement and change. Boud's work highlights that experience provides the foundation for learning and that learners make sense of experience through processes of reflection and reconstruction that draw on personal and social contexts (Andresen et al., 2000; Boud et al., 1985, 1993). Dewey's (1975) conception of education as continuous growth through experience reinforces the need to expose learners towards experiences that support further inquiry rather than restrict it. Similarly, Kolb (1984) advances these ideas by viewing learning as an iterative process that moves through specific experiences, reflective observations, abstract conceptualisations and active experimentations. Affective and embodied dimensions are essential in experiential learning, as learners interact with their internal sensations that are socially situated in a specific context (Beard & Wilson, 2013). A consistent message across this literature is that experience alone does not lead to active learning. As Boud et al. (1993) explain, "learning builds on and flows from experience . . . [and] learning can only occur if the experience of the learner is engaged, at least at some level" (p. 8). These ideas show the impact of experiential learning on active learning (and vice versa) with emphasis on, and care for, purposeful engagement, learners' lived experience and reflection as central to developing understanding.

Active Learning and Higher Education

The development of western modern higher education has origins in the early 1800s when Wilhelm von Humboldt established the Humboldt University in Berlin. Humboldt envisioned a learning environment uniting teaching and research, based on curiosity and motivation in which experienced professors and the inexperienced students participated in a community. Seminars were the preferred mode of teaching, which introduced students to the craft of knowledge production and writing and allowed students into the discourse practices of their respective disciplines (Dysthe & Webler, 2010). Humboldt's vision positioned the university as an institution dedicated not merely to transmitting established knowledge but to generate knowledge through scholarly inquiry and integrating students into a community in which writing was the central activity to develop independent and creative researchers (Kruse, 2006). The seminar mode of teaching can be considered the cornerstone of active learning in higher education, according to the Humboldtian model. However, this way of teaching faced significant challenges with the massification of higher education, as institutions had to accommodate a growing student population with fewer financial resources leading to lecture-based teaching being the preferred teaching method (Altbach, 1999; Hornsby & Osman, 2014).

It was not until the 1970s that active learning and the related notion of student-centred learning gained attention among educational researchers, cognitive scientists and instructional designers in higher education (Bonwell & Eison, 1991). Bonwell and Eison (1991) were one of the first to define the term active learning as "anything that involves students in doing things and thinking about the things they are doing" (p. 2). This definition links active learning to a range of

learning methods and activities, instructional strategies and approaches with the goal of activating the students in the learning process and opens up for a range of interpretations grounded in different learning theories. Reviews on active learning illustrate that no universally accepted definition of active learning exists as researchers interpret the term differently (Prince, 2004). Explanations of the term are often contrasted to traditional lectures in which knowledge is transmitted to students who are primarily passive listeners. In active learning, the lecturer is perceived as a facilitator of students' knowledge construction as opposed to a lecturer imparting knowledge. Lombardi et al. (2021) argue that the concept of active learning is an umbrella term, and not particularly useful, in advancing research on teaching and learning. Recent efforts to clarify the concept (see Doolittle et al., 2023) have examined how active learning is variously defined across the literature, revealing that definitions tend to emphasise student-centred constructivist orientations, the promotion of higher order and deep learning and observable activity in the form of participation and engagement. These definitional variations point to deeper questions about what counts as activity, where agency is located and how learning is recognised and valued. Rather than resolving ambiguity, Doolittle et al. (2023) show how active learning continues to function as a broad, multi-layered construct that spans pedagogical orientation, intended outcomes and teaching strategies. Moreover, Cattaneo (2017) compared five active learning pedagogies (problem-based, discovery based, inquiry-based, project based and case-based learning) by analysing their theoretical foundations and practical applications and found that a common denominator was an emphasis on learner-centredness and perceiving students as *knowledge producers*. Active learning was often described as a method rather than a pedagogy, and different concepts were used interchangeably, meaning that what one researcher may describe as problem-based learning, others may call inquiry-based learning.

There are frequent calls for increased active learning in higher education coming from university leaders, researchers, students and policymakers. This indicates that even though active learning approaches are used in various disciplines, a significant portion of teaching in higher education is still implemented as primarily traditional and lecture based. Across Europe, the qualification framework promotes student-centred approaches as a quality shift in higher education (ESG, 2015). The OECD Learning Compass 2030 (OECD, 2019) emphasise that students should play an active role in their education, and active learning is perceived as the signature education for human flourishing (OECD, 2025). Research have shown that higher education institutions suffer from inertia and that technology is insufficiently used to innovate teaching and support active learning. In their interdisciplinary documentation of barriers to active learning, Børte et al. (2023) point to lack of scholarly approaches to teaching, lack of infrastructures for teaching and lack of pedagogical competences in learning design as key challenges in innovating teaching practices. These authors show that barriers appear at different institutional levels. They can be physical, institutional or pedagogical, some barriers are primarily related to teachers while others are related to students. In addition, there are a range of barriers associated with technology that are "deeply enmeshed" in higher education structures (Knox, 2025, p. 23).

Empirical research on active learning in higher education is often operationalised as flipped learning, collaborative learning, problem-based learning, case-based learning, experiential learning, inquiry-based learning or blended learning. These are approaches illustrating how teachers can organise activities and how students can participate, collaborate, experiment, interact, use, co-construct and produce. These concepts are frequently used to describe student activities and engagement expectations (Børte et al., 2024). GenAI can illuminate possibilities for creating engaging, active learning experiences but it also can introduce risks related to learning outcomes, teacher and student agency, data privacy and security, as well as the ethical and responsible use of this technology (Giannakos et al., 2025). Teachers can integrate GenAI into teaching by designing

engaging learning activities, assessments and feedback practices. This expands possibilities in designing *for* active learning. But how can we design active learning with GenAI ensuring students do not offload cognitive tasks to GenAI, risking surface learning at the expense of deep learning (Tian & Zhang, 2025) and how can we design GenAI supported activities that enhance students learning outcomes and ensure educators balance automation with human pedagogical judgement. Zawacki-Richter et al. (2019) pointed to a lack of critical reflection of challenges and risks of artificial intelligence in education and weak connection to theoretical pedagogical perspectives. The use of GenAI changes practices for students' learning and their relations to knowledge as they find new ways to exercise agency as learners (Kahn et al., 2025). It is therefore necessary to research and rethink teaching and learning practices that facilitate human-AI collaboration, allowing students to actively co-create and co-learn with AI (Pahi et al., 2024).

Emerging Futures: Changing Perspectives of Active Learning

Active learning in higher education is entering a period marked by significant shifts in technology, ontology and epistemology. These shifts move beyond adding new tools and activities. They reflect changes in assumptions about what learning is, who and what participates in it and how evidence of learning is understood. Looking ahead, active learning is likely to move further away from a stable, primary human-centred model towards configurations informed by postdigital, posthuman and sociotechnical perspectives. These trajectories open possibilities for design and practice and raise tensions that require critical attention.

Postdigital and Posthuman Turns

Postdigital research positions education within a world where digital and material activity are inseparable. The postdigital turn (Jandrić & Knox, 2022) and the posthuman turn (Barad, 2007) extend how we understand participation in learning. In these perspectives, active learning becomes part of wider assemblages of people, technologies and practices. Postdigital and posthuman perspectives differ from sociocultural and CHAT approaches as they view technologies less as tools that mediate human activity and more as co-agents that shape, participate in and transform active learning. Fundamentally, technology is understood as inseparable from learning activity. This orientation responds to concerns that active learning is often framed through relatively narrow accounts of cognition and interaction. It also aligns with research calling for broader conceptualisations that reflect complex learning environments and the relations that sustain them (Rapanta et al., 2021).

Postdigital and posthuman perspectives become increasingly relevant as GenAI and AI become embedded in learning activity. AI is now part of the everyday practices through which students communicate, create and think, which means active learning can no longer be understood as only human activity. The expansion of active learning as a term within AI research, for instance in automated systems that learn from human input (Ho et al., 2024), highlights the growing ambiguity surrounding agency in learning. This invites questions about what kinds of participation count as *active* and how human and non-human roles and contributions are negotiated.

As these shifts accelerate, active learning will likely become a key setting for developing critical literacies, including critical GenAI literacy. From a postdigital perspective, such literacy is more than technical competence and includes understanding how knowledge, agency and practice are shaped within entangled human-technology relations (Rapanta et al., 2025). This view emphasises ethical judgement and draws attention to how AI systems participate in active meaning making. These themes align with active learning's emphasis on interpretation, lived experiences and

shared inquiry and point to research opportunities that examine how students, alongside other stakeholders, engage with GenAI in ways that build awareness of how knowledge and work is co-produced, circulated and contested in postdigital and posthuman learning environments.

Changing Ontologies and Epistemologies

Looking ahead, active learning will likely be shaped by wider interest in learning as embodied, affective and relational. Research on activity tracing draws attention to how learning emerges through ongoing participation across people, technologies and settings (or particular ecologies) rather than isolated techniques (Fawns, 2022). At the same time, work on emotions and affect highlights how attention, engagement and meaning making are influenced by sensing and feeling (Gravett & Lygo-Baker, 2025). This is also reflected in studies of digital environments where instructors' non-verbal cues influence attention, cognitive load and student experience (Zhu et al., 2025). These lines of inquiry push active learning beyond traditional cognitive framings and towards richer understandings of deeper and meaningful engagement (or disengagement).

Posthuman perspectives reinforce this shift. Barad's (2007) concept of intra-action reframes learning as something that emerges through entanglement rather than through interaction between predefined individuals. This idea invites reconsideration of foundational questions in active learning such as what makes an activity active and how agency is configured. It also challenges solution-driven approaches that treat teachers and learners as individuals who merely need new skills to manage technology. Instead, teachers and students are shaped through ongoing relations with technologies, practices and contexts (Rapanta et al., 2025), which has implications for how active learning is designed and researched.

These changing assumptions also influence debates about longstanding practices. Discussions about the future of the lecture point to shifting expectations of presence, authority and value (Matthews, 2022). The question is less about replacing lectures than about understanding their role within evolving epistemic and material conditions in higher education. In active learning terms, the question is how the blurring of learning spaces enables or constrains active participation and connections (Bamford & Moschini, 2025; Vallis et al., 2025). There is also renewed attention to educational values that support more hopeful learning environments. Play is gaining prominence as an approach that encourages exploration, shared purpose and imaginative engagement, for example through creating spaces for experimentation, low-stakes failure and shared inquiry, offering possibilities for rethinking design and participation in active learning (Whitton et al., 2025).

Practice-Oriented and Relational Directions

Relational approaches will likely play an important role in the future considerations of active learning. These approaches consider how learning is co-created through ongoing connections between people, ideas and learning environments. Research on relational pedagogy shows how the quality of these connections influences how students engage and how teachers design and adapt their practice (Bovill, 2020; Gravett et al., 2024). This focus on relations aligns with emerging questions about collaboration and active co-presence in hybrid and digital learning environments.

Interdisciplinarity is likely to become increasingly central. As higher education grapples with complex technological and societal challenges, for example, AI and ecological sustainability, multidisciplinary work will contribute to more plural-perspective ways of framing problems and designing active learning environments (Jaldemark et al., 2025). This trend is evident in co-design and co-creation approaches (see Örnekoğlu-Selçuk et al., 2024; Zeivots et al., 2025) where students, educators, third space professionals (Whitchurch, 2015), industry partners and other

stakeholders collaborate on curriculum and learning activity design. GenAI will increasingly influence the co-design processes as an (un)reliable collaborator, which further unsettles assumptions about authorship, decision-making and knowing (Zeivots et al., 2025). This does not necessarily suggest completely new directions for research, but more about how it is understood, designed and enacted, including attempts to illuminate activity, complexity, relationality and agency in active learning.

Designing learning environments will likely remain a focus as institutions continue to reconfigure physical and digital spaces (and everything in-between) together. Research shows the value of aligning pedagogical, spatial and technological considerations when designing active learning spaces that support varied forms of activity, including discussion, collaboration and collective sense-making (Lee et al., 2025). Studies of postdigital learning spaces examine how teachers experience new active learning environments and how movement, spatial variation and material features shape teaching practice (Wilson et al., 2025). This work indicates that established and safe methodological approaches will no longer be sufficient for understanding or evidencing the complexities of emerging active learning environments. Future research will need to adopt and develop methods that can capture embodied experience, shifting relations and sociotechnical configurations to understand how design decisions influence activity, engagement, moods and atmospheres across interconnected learning spaces that extend beyond the formal and physical.

Relational and hybrid approaches also intersect with interest in combining human and artificial intelligence. Emerging work in hybrid intelligence (Banihashem et al., 2026; Mollick, 2024) and augmented intelligence (Petricini, 2026) suggest possibilities for distributing tasks to support collaborative knowing and collaborative inquiry in reconfigured ways. This has implications for how students, teachers and other stakeholders negotiate agency, trust and their own contribution in active learning. Research in this area will need to address (or at least deal with the) issues of equity, access, power and possibly creativity as these systems become more common and mundane.

Speculative and Future-Making Approaches

Active learning research is increasingly adopting speculative and futuring approaches that help educators and researchers explore alternative potentials and futures (Ehret & Čiklovan, 2020). These approaches operate as broader perspectives for working with uncertainty and imagining how educational practices, including those associated with active learning, might unfold (Ross, 2022). They extend beyond one-off teaching activities, such as scenario thinking (see, e.g. Schoemaker, 1995), by examining the assumptions, values and imaginaries that offer ways of moving towards preferred futures (Nørgård, 2022). Speculative methodologies offer opportunities to hold "space open for that which cannot be yet imagined and which is always yet- to- come" (Amsler & Facer, 2017, p. 8). This orientation supports reflection on how current trajectories in technology and pedagogy shape the future conditions for active learning and what higher education might become without reproducing present-day inequalities (e.g. see Oztok, 2025).

Speculative inquiry also appears in research that examines how teachers encounter future possibilities within existing prototypes of learning spaces. Some studies extend this investigation by analysing how teachers navigate tensions between everyday routines now and imagined futures (Wilson et al., 2025). This highlights the importance of understanding how educators interpret possible futures through embodied practice and how speculative approaches function as emerging research orientations.

Broader discussions about the future of AI also influence these speculative directions. Recent expert forecasting work identifies substantial variation in expectations and significant uncertainty about AI capabilities and adoption over the next decade (Murphy et al., 2025). For active learning,

this illuminates the need for research that is willing to engage with uncertainty and that acknowledges that active learning is a complex matter of balancing past, present and future. Framing speculative and futures-making work as a research perspective helps future studies approach active learning as an evolving set of practices shaped by social, technological and material change.

Matters of Concern: Towards the Futures of Active Learning

Reflecting on the historical trajectories and emerging futures of active learning, we argue that future research must move beyond reaffirming its value and instead engage more directly with what is at stake when active learning is invoked, enacted and institutionalised. Instead of offering solutions, we frame this final section around *matters of concern* (Latour, 2008) that demand sustained critical attention, including questions of equity and whose knowledge counts. These concerns do not signal shortcomings of active learning as such, but point to unresolved questions about purpose, agency and design that shape how active learning is understood and practised in higher education.

Purposeful Activity and Rethinking "Being Active"

A first matter of concern relates to how activity itself is conceptualised. Active learning is frequently invoked as a desirable quality of teaching, yet research often remains vague about who or what is active, in what ways and to what ends. Activity risks becoming a descriptive label rather than an analytic category, obscuring differences between participation, engagement, cognitive/affective effort, social interaction, meaning making and knowledge production. Without careful attention to purpose, activity can be reduced to "visible busyness" rather than meaningful learning. Future research therefore needs to interrogate how activity is framed, whose activity is (and is not) prioritised and how learning is traced across different moments, sites and institutional contexts. This also raises questions about comparability and transferability: what counts as active learning in one disciplinary, cultural or institutional setting may not translate straightforwardly to another.

Agency, Authorship and Human-AI Entanglements

A second matter of concern emerges from the growing presence of GenAI in higher education. While GenAI tools are increasingly positioned as enablers of active learning, their integration unsettles established assumptions about agency, authorship and responsibility. The use of GenAI does not in itself constitute active learning and may at times reconfigure activity in ways that displace rather than support learning. This raises critical questions about where agency resides when tasks are shared, delegated or automated and how students, teachers (and technology) negotiate own contribution, accountability and ethical judgement in human-AI collaborations. Research on active learning should grapple with shifting ontological and epistemological assumptions about learning, knowing and collaborating, rather than treating technology as a neutral addition to existing pedagogies.

Designing Futures With Critical Curiosity

A third matter of concern relates to how futures of active learning are imagined and designed. Active learning is often mobilised as a response to change, whether technological, institutional or societal, yet futures-oriented discourse can prematurely stabilise what active learning should become. This risks narrowing rather than expanding pedagogical possibilities. Research needs to

attend to how learning environments, curricula and assessment practices are designed in ways that open space for uncertainty, experimentation and contestation, rather than seeking optimisation or alignment. Importantly, this includes questioning whose futures are being designed for, whose values shape design decisions and how active learning is connected to broader institutional agendas of performance, efficiency and accountability in higher education.

Taken together, these matters of concern invite a shift in how active learning is researched and discussed. As the journal marks its 25th anniversary, we suggest that the task ahead is not to further defend active learning as inherently beneficial, but to critically examine how it is defined, valued and enacted across changing and blurring learning environments. By holding open questions of purpose, agency and design, future research can contribute to more reflexive, context-sensitive and theoretically insightful understandings of active learning in higher education.

ORCID iDs

Kristin Børte https://orcid.org/0000-0002-9905-8602
Sandris Zeivots https://orcid.org/0000-0001-5450-2530

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Author Biographies

Kristin Børte, PhD, is a Senior Researcher at SLATE, The Centre for the Sciences of Learning & Technology and cluster 4 leader at AI LEARN: AI Centre for the Empowerment of Human Learning at the University of Bergen, Norway. Her research interests are technology and learning, professional learning, student active learning, learning design, school leadership, school development, and research and data use. Her work has been published in international journals, including *Teaching in Higher Education: Critical Perspectives, Educational Research Review, Journal of Educational Change* and Teaching and Teacher Education.

Sandris Zeivots is a Senior Lecturer at the University of Sydney Business School. His work specialises in co-design, Generative AI and futures thinking that drive transformative development and promote purposeful and meaningful work and learning. His research has been published in international journals, including *Academy of Management Learning & Education, Computers and Education: Artificial Intelligence* and *Studies in Higher Education*.