



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Critical Perspectives on Accounting

journal homepage: [www.elsevier.com/locate/cpa](http://www.elsevier.com/locate/cpa)

## A critical review of AI in accounting education: Threat and opportunity

Joan Ballantine<sup>a</sup>, Gordon Boyce<sup>b</sup>, Greg Stoner<sup>c,\*</sup><sup>a</sup> *Ulster University Business School, University of Ulster, Belfast, Northern Ireland, UK*<sup>b</sup> *Unaffiliated / Independent Academic, Melbourne, Australia*<sup>c</sup> *Adam Smith Business School, University of Glasgow, Glasgow, Scotland, UK*

### ARTICLE INFO

#### Keywords:

Artificial Intelligence  
Accounting Education  
Curricular change  
Large language models

### ABSTRACT

In this essay, we contribute to the limited literature that has critically examined the potential implications of generative AI on the accounting academy and accounting education (AE). We argue that the recent accelerated growth of AI, especially large language models (LLMs) such as ChatGPT, raises significant issues and challenges that the accounting academy needs to urgently address to survive in the long term. Developments in AI have, we suggest, created a 'change-inducing crisis', presenting a unique opportunity for accounting academics to address the un-critical and problematic functionalist view of the discipline and the technical reductionism of accounting. Our arguments represent a call for action to embrace AI in learning and teaching practices in a way that brings about a renewed focus on the human dimension of accounting, incorporating broader social and critical perspectives, thereby addressing longstanding calls for change in AE to move beyond the technical, managerial, and financial focus (core of the AE curriculum) that has dominated the discipline for many decades. Accounting academics have a fundamental role to play in recognising the nature of the threats and the associated challenge of AI and to seize the opportunities available in ways that bring both critique and *being critical* to the fore. However, to bring about the sort of change we argue for in this essay, the accounting academy has to lead to 'take education back from the market' and provide the impetus that can make accounting education more relevant to our students *and* the needs of contemporary society.

### 1. Introduction

In this essay we critically review the potential threats, challenges and opportunities for accounting education (AE)<sup>1</sup> arising from the recent explosion of 'artificial intelligence' (AI), especially large language models (LLMs) such as ChatGPT. We see the potential threats as real, at least in some respects, but there is also a related opportunity to reinvigorate key aspects of AE. Such a reinvigoration is long-overdue, and we argue that the rise of AI has the potential to provide an impetus for much needed reform in AE.

Our commentary relates to how AI may impact on AE, representing a call for action for accounting academics to critically embrace generative AI in learning and teaching practices, and in so doing, make AE more relevant for today's society and for a broader constituency. In responding to AI, the academy has the potential to break the longstanding inertia and lack of reform in AE; doing almost

\* Corresponding author.

E-mail addresses: [Joan.Ballantine@ulster.ac.uk](mailto:Joan.Ballantine@ulster.ac.uk) (J. Ballantine), [gboyce.edu.au@gmail.com](mailto:gboyce.edu.au@gmail.com) (G. Boyce), [Greg.Stoner@Glasgow.ac.uk](mailto:Greg.Stoner@Glasgow.ac.uk) (G. Stoner).

<sup>1</sup> Our primary focus is on education offered and undertaken at university level.

<https://doi.org/10.1016/j.cpa.2024.102711>

Received 8 January 2024; Accepted 8 January 2024

Available online 18 January 2024

1045-2354/© 2024 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

nothing is no longer a viable response. Clearly, the impact of AI on accounting is an important new area within AE, but simply adding a topic or topics to the existing syllabus does not recognise either the scale of potential AI-induced change within accounting and AE, or the threats that rapid advances in AI could pose to the nature of AE and to education more broadly.

The remainder of this essay is structured as follows. The next section provides the contextual background, both of the current state of AE and of generative AI in education. This is followed by a detailed discussion of the potential emergence, or reemergence of threats, challenges and opportunities raised by AI in AE. In the final section, we outline the contribution of our discussion, highlighting that if opportunities are not taken up by the accounting academy as a discipline, we may become irrelevant. We argue that AI induced change and embracing AI in a critically informed way could improve AE in a way that makes it more relevant to the development of knowledgeable and critically informed graduates.

## 2. Context

### 2.1. The current state of accounting education

In order to discuss the potential implications of AI for AE, it is important to provide a (necessarily brief) overview of the current context in relation to the standing of AE. This is important because it may be argued that AE does not face the contemporary challenges posed by AI from a strong starting position. This problem has several dimensions, but high amongst them is that AE is often dominated by technical content; which is perceived to be exacerbated by pressures to conform to the largely technical and non-critical content of the curriculum mandated by regulatory or examining bodies from, or acting on behalf of, the accounting profession (Ellington & Williams, 2017; EAA, 2023).

The continuing debate in the US, for example, regarding problems with “the accounting student pipeline” is a visible testament to this problem (Holmes et al., 2022; Dawkins, 2023; Dennis, 2023); combining as it does the weak current state of AE, plus perceptions that accounting is a hard subject to succeed in and the very poor public views of accounting as a profession, particularly the Big 4 accounting firms (Bobek, Dalton, Daugherty, Hageman, & Radtke, 2017; Dillard & Vinnari, 2017; Boyce, Narayanan, Greer, & Blair, 2019; Toms, 2019; Hale & Truelson, 2023). One might suggest that this debate recently hit new levels of absurdity, with an American Accounting Association policy and campaign to have accounting accepted as a ‘STEM’<sup>2</sup> subject (American Accounting Association, 2021; Taylor, 2023), which effectively denies that accounting is a social science,<sup>3</sup> and seems more likely to further reinforce a technical approach to AE.

Concerns about AE have had a long history, which has been widely documented in a range of official reports from academic and professional bodies, and by academic researchers over the last fifty years, in the USA and elsewhere (Solomons & Berridge, 1974; Andersen et al., 1989; Accounting Education Change Commission, 1990; Review Committee of the Accounting Discipline in Higher Education. (1990), 1990; Albrecht & Sack, 2000; PricewaterhouseCoopers, 2003; Behn, Ezzell, Murphy, Stith, Rayburn, & Strawser, 2012). The main longstanding concerns about a lack of meaningful development and reform in AE are summarised by Boyce (2018, pp. 377–379). In the 1980s, it was shown that the substance of AE and its curriculum, teaching and assessment had remained unchanged for more than 50 years, despite frequent calls for change (Bedford et al., 1986, p. 169; Bedford & Shenkir, 1987; Needles & Powers, 1990). Some progress was made in the 1990s and early 2000s, but this was largely isolated to specific institutions and generally not “successfully transferred to other universities” (Sundem, 2014, p. 617). A persistent “crisis in accounting education” (Gabbins, 2002) continued.

To this day, there is no evidence of anything like the “major reorientation” that was called for in the 1980s (Bedford et al., 1986, p. 169) and further reiterated in the 2010s by the USA’s Pathways Commission (Behn et al., 2012). The result is a tendency in many university curricula to focus on technical content, including GAAP, financial accounting techniques, reporting standards, managerial accounting techniques, and “the perceived technical needs of professional practice” (Boyce, Greer, Blair, & Davids, 2012, p. 48). Simultaneously AE continues to omit studies explicitly designed to develop a critical understanding of accounting as a discipline situated in sociopolitical contexts (Boyce, 2018; Boyce et al., 2019).

The highly technical nature of much of AE has left little room in many university curricula to develop a critical understanding of accounting as a discipline, let alone to help create critical and creative individuals. Arguably, the wider purpose of university (higher) education has been neglected, with minimal consideration of the development of well-rounded graduates. This requires a focus on both technical accounting skills, as part of vocational or professional skill formation, and a student-centred humanistic and formative approach to individual development (Sangster & Wilson, 1991; Sangster, 1992; Sangster & Mulligan, 1997; Boyce, 1999; Tinker & Feknous, 2001, 2003; Saravanamuthu, 2004; Boyce, 2008; Boyce et al., 2012; Boritz & Stoner, 2014). The latter connects with the lived social experience of students, thereby making AE more engaging and relevant and engendering more awareness of public interest, which explicitly considers the role of accounting in creating a better society (Gramsci, 1971; Giroux, 1988; Cooper, Taylor, Smith, & Catchpole, 2005; Boyce, 2014b).

Fundamental questions relating to “the content, the objectives and the central intellectual and moral values needed in accounting

<sup>2</sup> Science, Technology, Engineering and Mathematics disciplines.

<sup>3</sup> At the same time, it could be argued that this demonstrated that it is not only the accounting profession that has dubious ethics – given that the driving reasons for this policy seems to be to circumvent visa regulations in the US and to protect university accounting departments and professors (see Journal of Accounting Education (2021) Call for Papers: Accounting as a STEM discipline: Perspectives and applications): <https://aaahq.org/sites/default/files/Documents/calls/2022/Accounting%20as%20a%20STEM%20disciplineupdated.pdf> (Accessed 12/10/2023).

education remain profoundly unresolved” (Gray & Collison, 2002, p. 827). In some ways, the current ‘crisis’ presented by ChatGPT and generative AI simply puts the moribund nature of much AE (if not its terminal decline) into sharper relief. AE’s survival *in spite of* a general lack of reform for 100 years (Merino, 2006; Carmona, 2013; Wilkinson & Durden, 2015; Ellington & Williams, 2017; Boyce, 2018) may well make AE vulnerable to external shocks now and in the future, and amplify the potential threat posed by current developments in AI.

For decades there has been an understanding of the challenges and opportunities to both professional practice and AE posed by information and communication technologies (ICTs), including advanced technologies such as expert systems (Stoner, 1985; Sangster & Wilson, 1991; Sangster, 1992; Sangster & Mulligan, 1997; Boyce, 1999; Boritz & Stoner, 2014; Cong, Du, & Vasarhelyi, 2018; Moffitt, Rozario, & Vasarhelyi, 2018; Ballantine & Galliers, 2022). The contemporary challenge to AE, which may be termed a ‘crisis’ represented by the emergence of ChatGPT and generative AI, is arguably compounded by a lack of much change in response in AE to past threats and challenges arising from developing ICTs<sup>4</sup> – other than the increased use of online learning (Sangster, Stoner, & Flood, 2020; Cho, Senn, & Sobkowiak, 2022), recognition of the social nature of accounting, and the planetary environmental and sustainability crises.<sup>5</sup> This lack of change reflects a wider inertia within AE, which has tended to concentrate on the traditional aspects of accounting, despite pressures from both within the accounting academy and from outside (including potential employers and accrediting bodies), and the need to develop a broader understanding of the social role and available technologies of accounting.

The question today may be whether AE is at a crunch point that may not be so easy to avoid as past challenges. A combination of pre-existing and longstanding maladies is brought into sharp relief by the contemporary arrival of advanced AI and its capability to simulate intelligent discourses of accounting. We may now be at a cliff edge that cannot be simply avoided or defeated by ‘looking the other way’. Doing nothing and hoping for a return to ‘situation normal’ is unlikely to work this time!

We argue that a different approach is needed. We recognise that, as well as presenting a threat to AE, developments in AI present a unique and unparalleled opportunity to re-evaluate the purpose, form, and content of AE. AE will have to adapt to the threats of AI, particularly generative AI, due to their effects on education (especially assessment) and because of the need to address the use of AI in the processes of accounting (much of which is being affected by AI), and thereby on the skills and reflexivity required to understand accounting. This disruption and breaking of the inertia create an opportunity to (finally) reform AE to develop graduates who have both sound technical skills that are suitable to the contemporary situation *and* who have a solid understanding both of the nature of the accounting craft and its functioning in society. The latter can build on the existing recognised – but, so far, inadequately addressed – need to develop a range of generic or soft skills, including judgement and critical skills, that have long been called for, as well as a more critical understanding of accounting and accountability in the broader social context (Boyce, Williams, Kelly, & Yee, 2001; Dillard & Vinnari, 2017; Douglas & Gammie, 2019).

## 2.2. Background to generative AI in education

AI is rapidly becoming a transformative technology in higher education, presenting opportunities and challenges for teaching and learning, institutional efficiency, and research activities. A range of generative AI tools exist, including those supporting the production of human-like language (e.g., ChatGPT, Bing-AI, Writefull), image/art creation (e.g., Dall-E2, Stable Diffusion, NightCafe) and code generation (e.g., GitHub CoPilot, Replit GhostWriter). The growth in the user base of AI is staggering. For example, Chat GPT attracted 100 million users in the two months following its launch, making it the fastest growing consumer application in history (Hu, 2023).

Reflecting increasing hype on the implications of generative AI, the UK Quality Assurance Agency for Higher Education (QAA) recently published a range of guidance on the implications for both academic quality and standards (QAA, 2023a), and assessment (QAA, 2023b) and integrity (QAA, 2023c). Organisations in other countries are also debating the challenges and opportunities. For example, The Australian Government’s Tertiary Education Quality and Standards Agency (TEQSA, 2023) and the European University Association (2023) (representing some 850 universities in 49 countries) have issued guidance on the responsible use of AI tools in higher education. While a number of themes are addressed in recent guidance, they are largely presented in these reports and communications in an uncritical and unquestioning manner.

Key among the issues raised are the challenges that AI present for academic integrity. While recognising the potential benefits for learning, teaching and assessment, the various bodies are unanimous in their viewpoint that AI tools poses a significant problem for higher education providers if students use them to support the generation of assessment submissions that they pass off as their own work. The ethical and responsible use of generative AI is therefore of crucial importance to the current debate. In response, there is broad agreement that education providers should ensure effective communication with students regarding the potential to undermine confidence in the academic qualification they are working towards, and that student declarations of originality of their assessed work are fit for purpose.

A second theme relates to the need for education providers to develop transparent and agile policies and practices, which address the unethical use of AI. Ensuring clear messaging around policies is seen as key here, and in particular, how students might be allowed, or encouraged, to use AI tools in the preparation of their assessment.

<sup>4</sup> For example, the use of database technologies within ERP (Enterprise Resource Planning) systems. Further examples are provided in section 3.1.

<sup>5</sup> This line of argument could also extend to the accounting profession and the present crisis of consulting in its most prominent manifestation – the Big 4 consulting firms (Foy, 2023; Gow & Kells, 2023). Once again, despite decades of crisis-after-crisis for the profession (and corporations more generally), their power is such that scandal and crisis are quickly followed by rebound and return to ‘business as usual’ (Sikka, Willmott, & Lowe, 1989; Sykes, 1998; Clarke, Dean, & Oliver, 2003; Sikka, Haslam, Kyriacou, & Agrizzi, 2007; Jones, 2011; Clarke, Dean, & Egan, 2014).

A third theme in recent guidance is the need to (re)design assessment strategies to mitigate academic integrity risks. A range of strategies are suggested, including reducing the volume of assessment (for those susceptible to AI misuse), shifting to synoptic assessment to test programme level outcomes, and the use of more authentic assessment. Authentic assessment relates to real-life situations and “requires an *active demonstration* of the knowledge in question” by “directly engag[ing] the student with functioning knowledge in its context” (Biggs & Tang, 2007, pp. 181, 193, original emphasis).<sup>6</sup> The QAA guidance also highlights a range of assessment modes that providers might consider: invigilated in-person hand written exams (argued to be a regressive solution); invigilated digital exams, employing tools such as word processors or spreadsheets, using either lockdown browsers or proctoring software; oral exams; coursework that integrates AI by design; and hybrid submissions in which the contribution of AI is fully acknowledged.

Finally, the importance of developing students’ AI literacy in the new AI landscape is also highlighted in the guidance, key elements being the ability of students to communicate effectively with AI and to evaluate AI technologies. Again, it is notable that this guidance is generally uncritical, especially in terms of introducing critical debate on the broader effects of AI, on education, on work and on society and the economy, or in terms of the vested interests of technology companies and accounting practice.

AdvanceHE,<sup>7</sup> working with partners across the globe to improve higher education, are also actively involved in the current debate (Hack, 2023; Hack & Knight, 2023). They argue that universities are “entering a period where policies and regulations are lagging behind practice” and there is a need to address fundamental questions, including “what we teach and how we assess learning” in an AI world (Hack & Knight, 2023). More broadly, international bodies such as the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (Giannini, 2023) and the Organisation for Economic Co-operation and Development (OECD) (Baker, 2021), with responsibilities for addressing social, economic and environmental challenges, have entered the generative AI discourse, setting out their positions in the debate, but again in a largely uncritical way.

For AE, these developments emphasise the need for genuine reform that addresses the relevance of AE to its environment. Given the pace of current and future developments in AI (Althoff, 2023), it is imperative that educators respond from an informed standpoint to transform AE for the better. This implies taking advantage of the potential opportunities of new technologies, while at the same time addressing their threats and challenges (Cong et al., 2018). It is also important that AE educators are themselves aware of (and are critical of) the commercial and other imperatives and biases that drive both accounting practice, including its adoption of particular technologies, and the ICT industry. In the remainder of this essay, we provide a detailed discussion of the central issues relevant to developing an informed position to support and challenge the accounting academy.

### 3. (Re)emergence of AI: Threats, challenges and opportunities

#### 3.1. Threats

At various stages, AE has introduced particular ICT technologies, both in professional syllabi and into accounting degrees, normally reflecting the use of these technologies in accounting practice. For example, in the 1980s the professional bodies in the UK introduced aspects of computing or “Electronic Data Processing” into their own curriculum and required accredited accounting degrees to explicitly cover these topics.<sup>8</sup> Concurrently, there were calls from within the academy to introduce computing to AE (Bhaskar, 1982, 1983) with responses at various times to do so, including in North America (Armitage & Boritz, 1986), the UK (Shaoul, 1990), and Australia (Green & Buckby, 1995). Specific technologies included spreadsheets (Waller & Gallun, 1985; Shaoul, 1990), general or nominal ledger software (Holley, 1995), expert systems and AI (Baldwin-Morgan, 1995; Sangster, 1995), audit software (Dock, Guy, & Williams, 1974), systems process mapping and scripting (Jones & Lancaster, 2001), and Enterprise Resource Planning (ERP) systems (Tan, Fowler, & Hawkes, 2004). Within some jurisdictions, particularly the USA, accounting information systems (AIS) is now recognised as a linked discipline in the accounting academy (though one that struggles, in some respects, for respect from more mainstream accounting educators and researchers) (Boritz & Stoner, 2014).<sup>9</sup>

Beyond this general observation, history suggests that accounting has been able to weather the storm in the face of ostensible threats from developments in ICT, as noted in section 2. Indeed, the accounting profession and AE have proved to be very resilient to the threats posed by ICT. Automation and ICT have, to a significant degree, already changed the nature of accounting work and how accounting records are maintained (Williams & Spaul, 1991; Stoner, Wootton, & Kemmerer, 2020), and there is an increasing need for further changes (Cong et al., 2018). Recent developments in AI continue longer-running trends in relation to the automation of work. Increasing automation may challenge the very question of (the extent) of human involvement in conventional accounting and auditing

<sup>6</sup> A range of strategies are suggested for providers to engage in authentic assessment design: assessment where the emphasis is on the process of learning as opposed to the outcomes (e.g., self-reflection); assessment that requires students to demonstrate evaluative judgment (e.g., peer reviews); the use of authentic context-specific assessment; and assessment which uses a range of formats (e.g., podcasts, Vlogs, poster presentations).

<sup>7</sup> “Advance HE is a member-led charity of and for the sector that works with partners across the globe to improve higher education for staff, students and society.” (<https://www.advance-he.ac.uk/about-us>, accessed 4/1/2024).

<sup>8</sup> One of the authors was appointed to a lecturing position in Scotland in 1984 to explicitly fill this gap: to introduce courses on computers into the accounting degree to meet the then new accreditation requirements of ICAS (the Institute of Chartered Accountants of Scotland).

<sup>9</sup> While there is some discussion of the ICT implications for the AE curriculum, this is largely located in specialist journals. As a result, the arguments around the disruptive implications of AI on AE from the perspective of professional firms are narrow in scope and not particularly visible to the broader accounting academy (e.g., Holmes & Douglass, 2022).

work, along with the ostensible ‘mastery’ of crafts such as auditing by “tech-savvy” professionals (Lajoie & Gendron, 2023). While the outcome of recent technological developments is yet to be determined, wider and now-established trends in automation of work and accompanying deskilling, deprofessionalisation, and downsizing (Aronowitz & DiFazio, 1994; Roslender, 1996; diFazio, 1998; Tinker & Koutsoumadi, 1998; Fogarty, 2014), along with increasing insecurity (Armstrong, 2000; Saravanamuthu & Tinker, 2003), lead to an expectation that the trajectory in relation to AI-induced changes is likely to be similar.

It is important for AE to recognise the challenges brought by ICT and particularly that organisational data is typically multifaceted and held in databases in a form much richer than the accounting (bookkeeping) model (Cong et al., 2018). These broader, and potentially more diverse, datasets are an essential element of the increasingly important sustainability and other additional reporting and assurance requirements. Despite this, apart from a range of (sometimes rhetorical) discussions of the opportunities and challenges of big data and the like (Warren, Moffitt, & Byrnes, 2015; Janvrin & Watson, 2017; McKinney, Yoos, & Snead, 2017; Sledgianowski, Gomaa, & Tan, 2017; Dzurainin, Jones, & Olvera, 2018), there is little evidence that AE has changed to reflect this new environment (Vasarhelyi, 2008; Boritz & Stoner, 2014; Boyce et al., 2019; Cheong, Duan, Huang, Vasarhelyi, & Zhang, 2022). Furthermore, there remain key concerns about how much ICT awareness has really absorbed into AE in universities, and whether and how much this has changed the fundamentals of both the core AE curriculum and the ways the discipline is taught (Stoner, 2009; Boritz & Stoner, 2014). For example, the ICT-aware accounting educators have not managed to ‘disrupt’ the notion at the centre of traditional AE that all transactions have two (significant) attributes – an account that is debited and an account that is credited. Unless this oversimplistic notion of the underlying transaction data modelling is changed<sup>10</sup> little else ever will, as it reinforces that only money, rational economics and neoliberal capitalism matter.

Recent developments in AI underscore the need for the AE community to address two urgent questions. First, do new forms of AI, and, in particular, LLMs and data-based models such as ChatGPT, pose a bigger threat than similar advances in technology have done in the past to the core of AE?

Second, is the accounting academy willing and capable of overcoming an apparently deeply ingrained inertia to respond to the current challenges posed by AI? The existing state of AE (focused on the learning of techniques) reflects remarkable stability in the face of constant contextual change. In various guises, AE reform has been talked about for decades, yet relatively little fundamental or systemic change has been evidenced (Boritz & Stoner, 2014; Boyce, 2018; Boyce et al., 2019). Current developments in AI make the renewal of the educative mission in accounting all the more important from a social perspective.

### 3.2. Challenges

Potentially transcending the current challenges posed by AI are a range of ongoing – and arguably more important – imperatives for improving both AE and practice to better address contemporary social and environmental issues. These challenges extend well beyond the financial challenges and themes that tend to dominate conventional discussions in accounting. Imperatives for action include the ethics of accounting and of the profession (always and still neglected), but surely more relevant than ever (Boyce, 2008, 2014a); the broader social relevance of the field; challenges related to the environment, climate and sustainability; critically addressing the social impacts and implications of accounting; and the very nature of accounting data and records in a world where accounting is moving beyond the purely financial (Boyce et al., 2015b, 2015a; Bebbington, Russell, & Thomson, 2017; Frémeaux, Puyou, & Michelson, 2020; Munoko, Brown-Liburud, & Vasarhelyi, 2020).

The particular issue we are confronted with at this juncture relates to how AI/ChatGPT impinges on this situation. We argue that it actually brings a pre-existing malaise in AE into sharper relief. The ostensible threat of (generative) AI might be taken more seriously as a challenge for AE, bringing potential opportunities to address the malaise that has set in over recent decades and to lift AE out of its moribund status. Thus, rather than taking a pessimistic approach that simply sees AI as a threat to AE, we more optimistically see it as a challenge that, creatively addressed, could provide an opportunity to bring many sedimented practices into question. This, in turn, could help educators, researchers, and the broader accounting profession to overcome the entrenched inertia that continues to hamper the development of the discipline.

Accounting educators, university accounting departments, and professional accreditation agencies all have a role to play in improving AE. The guiding ethos must be to make education in accounting more meaningful for all involved and to genuinely activate a reform agenda that makes AE more relevant to the times we live in, to the contemporary challenges we confront as educators (including, but not by any means limited to, the emergence of AI and its effects on education, accounting and the nature of accounting work), and to the broader social setting. The challenges before us create an opportunity to move AE on from the technical, managerial, and financial focus that has dominated the discipline for decades. While each of those dimensions remains important, we argue that the use of generative AI has the potential to prompt the accounting academy to address the meaning of *education* in a profound sense.

Education may be seen as comprising several dimensions that include, but are not limited to, preparing graduates for the world of work, a feature which dominates much of the present discourse of university education. If we expand our horizons, we can see that AE –

<sup>10</sup> This is a change that requires students, and therefore accounting educators, to understand the nature of data modelling and the ways that relational databases (for example, in ERP systems) can be used to store/retrieve multidimensional attributes of ‘transactions’ including, say, carbon values or welfare indicators of inputs, outputs and internal transfers (usage) (i.e., the types of data required for sustainability and social welfare reporting). Double entry bookkeeping was constrained by the recording technologies of 400+ years ago. These constraints no longer need to limit the practical or theoretical, technology of accounting. Further, AI is likely to be one of the ways that non-financial or easily measured data is extracted from broader/textual data.

like any meaningful education generally – could better embrace the need to balance the traditional emphasis on vocational, instructive, and technical approaches with humanistic, formative, and social dimensions of education. A good starting point would be a more liberal approach that recognises that education includes the whole person, one that encompasses education for citizenship that looks beyond the imperatives of training for work (or the profession) (Sangster, 2010; Sangster & Wilson, 2013; Boyce et al., 2019). A more critical approach would seek to inculcate capacities for reflection and reflexivity, and stronger connections to real life and real-world problems and issues, recognising the centrality of capacity for reasoned debate and judgement, particularly in the face of uncertainty and ambiguity.<sup>11</sup> This approach could involve seeking to develop practical skills and knowledge by examining real-world and actual life problems that relate to, but may initially seem beyond, the domain of accounting (Boyce, 2004). Taking a more critical approach also provides opportunities for reversing to some extent the fascination with technical competencies of accounting (Boyce, 2004; Lyotard, 1984; Nussbaum, 2010) by instilling or inculcating increasingly marginalized “humanities” skills in undergraduate accounting curricula.

Such a balanced approach could ameliorate the long-recognised “acute tension between [AE’s] role in including technical (vocational) expertise for future practice and its wider, critical, educational (transcendent) roles” (Gray & Collison, 2002, p. 800). This goes well beyond the inculcation of a conventional accounting ‘mind-set’, because “a key manifestation of transcendence would be the encouragement of students to make up their own minds as to the propriety and desirability of the vocational skills that teachers might seek to inculcate” (p. 799). Such approaches can be transformative and life-changing for students, and benefit society at large in terms of developing a critical and active citizenry (Barnett, 1997; Mezirow, 1997; Illeris, 2004, 2014).

The infusion and integration of such broader perspectives can make AE more meaningful to accounting students by “building the connections between accounting education and the *lived experience* of students” (Boyce & Greer, 2013, p. 111). This approach views education as “a continuous process of reconstruction of experience” (Dewey, 1997, p. 87 [first published in 1938]). Learning about the discipline in the wider context can also lead to learning about the self, if it is acknowledged that “[e]ducation proceeds by questioning and self-scrutiny” (Nussbaum, 2010, p. 62).

### 3.3. Some opportunities

The challenges outlined above suggest that moving to a broader and more holistic approach to AE would fundamentally change the way AE is practised. Here, we explore how generative AI may provide openings, and, indeed, imperatives, for such an approach. It will, at the very least, prompt *some* change. Further, given that many of the changes required to deal with AI are closely associated with the broader agenda for change that is necessary, AI provides significant opportunities to develop an AE that is more genuinely educative, in terms of the challenges outlined above. In what follows, we outline some of the potential opportunities of AI.

AI could be used to automate many mundane elements of traditional education, without undermining student learning. This mirrors the ways the adoption of ICTs in other forms have opened opportunities to enhance and improve AE (Shaoul, 1990; Sangster & Wilson, 1991; Sangster, 1992; Sangster & Mulligan, 1997). However, ICT including AI technologies can also be used as crude ‘efficiency’ tools to cut the cost of running AE programs by automating various dimensions of the ‘doing’ of AE without significant improvements to learning (yielding higher returns for the university, at least in the short term) (Boyce, 1999).<sup>12</sup> From an improvement perspective, as suggested by Boyce (1999), technologies, including now AI, *could* make AE more effective by using the efficiencies generated to create time within student studies and to create additional opportunities for greater attention to the quality dimensions of education – making AE *better*. When the focus moves from saving money to improving education, this can be taken a step further by seizing an opportunity to bring a renewed (or new!) focus on the human dimension of accounting, through social and critical perspectives that are based on alternatives to the status quo, thereby leveraging the accounting academy’s shared interests in improving society and developing students’ capacities for critical thinking (Barnett, 1997; Boyce, 2018).

In this context, AI presents opportunities for the accounting academy to engage in alternative critical pedagogy. For example, there is much to be gained from engagement in dialogical approaches to learning (Freire, 1970, 1973, 1998; Laurillard, 2001), which are important in moving students away from shallow (rote) learning (identified by Freire (1970) as the ‘banking model’ of education) and towards deeper learning (Entwistle, Skinner, Entwistle, & Orr, 2000; Entwistle & McCune, 2004; Entwistle, 2009). Critical, dialogic and questioning modes in AE are increasingly necessary in a world where ‘knowing’ or ‘knowledge’ is not enough (Thomson & Bebbington, 2004; Manochin & Cooper, 2015; Macias, Patiño-Jacinto, & Castro, 2021; Wong, George, & Tanima, 2021; Bérubé & Gendron, 2022; Cam & Ballantine, 2023). In addressing the significant challenges of generative AI, critical pedagogy therefore has huge potential to transform AE from its current predominantly technical focus to one that addresses the challenges that generative AI pose. Education for understanding this context should include an exploration of the nature of contemporary accounting work (including deskilling within such work) and of the capitalist organisations within which much of this work is located (including increasing trends towards market power and associated accumulation and exploitation) (Roslender, 1996; Harney, 2009; Roslender, 2018).

<sup>11</sup> For a fuller discussion of the importance of being a reflective practitioner see Schön (2016).

<sup>12</sup> For example, a number of universities are already promoting the use of AE Bots to support accounting, auditing, tax and finance teaching (<https://accountingeducation.co.za/>; accessed 14/10/2023), while academics themselves are considering using ChatGPT to generate assessment feedback for students in response to the “slashing” of the staff time (and dollar cost) allocated to marking and assessment (Moran, 2023). In the latter case, the overwhelming pressure on academic labour may force academics themselves to turn to AI in order to cope with the increasing pressures of academic work.

Engagement in critical pedagogy can also address concerns around the impact of AI for assessment (Bérubé & Gendron, 2022), some of which are outlined below.

If the focus is on enhancing learning rather than cost-cutting through AI adoption, there are opportunities to better integrate learning into processes of student assessment. The threat of generative AI (and ICT automation more generally) in generating student assignment work presents accounting academics with opportunities, indeed an imperative, to rethink their forms and modes of accounting assessment. In particular, it provides an opportunity to move away from assessment that relies on rote learning, regurgitation, and surface learning (for example, objective or multiple-choice assessment). The use of critical assessment (e.g., authentic scenario-based, case-based, real-life examples) can go a long way to addressing this threat provided they are carefully designed and implemented in the light of the ever-increasing sophistication and availability of AI systems. Doing so may not, however, be without costs, especially in relation to staff time, particularly if this leads towards a greater use of more individual or personal assessment, such as oral examinations. These time inputs will need to be recognised by departments and institutions to avoid the pressure on staff being overwhelming.

There are also opportunities, as well as imperatives, to redefine tasks such as ‘research and write an essay’ on a given topic. Generative AI could exacerbate the well-established problem of ‘cut-and-paste’ (plagiarism) in student work, with new opportunities for students (at all levels) to engage in academic misconduct in the form of ‘undetectable’ plagiarism. Unfortunately, the reliance on detection tools, including those developed to ensure reliability (e.g., to eliminate false positives in detection),<sup>13</sup> is unlikely to keep pace with ongoing developments in AI. Further, institutional policies to deal with academic misconduct are likely to never be sufficiently robust to address the implications of the dynamic nature of generative AI on integrity of assessment. Given this, it is imperative that the accounting academy rethinks how essay writing is used as a form of learning and assessment in AE. Some possibilities for the design of more suitable assessments for the new AI world are discussed in the rest of this section.

Generative AI has been demonstrated to be relatively good at answering accounting quizzes and objective test questions (Wood et al., 2023). It has also been shown to perform well (to varying degrees in different subject areas) in answering accounting case study tasks that demand ‘explanation, application of rules and regulations, and evaluation of ethical dilemmas’ (Cheng, Dunn, Holt, Inger, Jenkins, Jones, Long, Loraas, Mathis, Stanley, & Wood, 2023: 2).<sup>14</sup> However, AI performs less well on technical accounting problems, including journal entries and the creation of financial statements/accounting reports. To some extent, therefore, it could be argued, that AE might consider integrity of assessments of this latter type as relatively safe. However, AI is progressing rapidly (OECD, 2023) and the ‘stay of execution’ of such assessment types is likely to be short-lived, except perhaps in tightly controlled, closed and proctored examination environments.

The findings from studies (albeit limited) demonstrating the power of AI to answer what could be considered more traditional forms of AE assessment provide two opportunities at very different ends of a continuum. First, AI could be successfully harnessed by the accounting academy to support formative assessment in areas that it is particularly proficient at answering. For example, students could be asked to generate and critique outputs from AI as part of the assessment process, including discussions around the depth, or lack, of engagement with current thinking in the literature and theoretical arguments. Second, AI provides a departure point for AE to rethink existing and engrained forms of assessment and consider moving to more critical forms of authentic assessment as outlined earlier.

Thus, many of the difficult issues relating to the challenge of AI in assessment could be avoided, or minimised, if there was a move away from formulaic assignment setting (including for the writing of essays), towards treating the written essay (or other written work) or technical solution as just one step in the process of learning and assessment. For example, authentic forms of assessment might, for instance, *start* with an ‘essay’, rather than ending with it, thus providing opportunities to more deeply examine relevant themes and issues, in different ways including verbally and discursively. Similarly, embedding technical problem solutions into dynamic cases, experiential learning tasks, or other forms of authentic assessment creates opportunities to concentrate grading on more holistic and integrative aspects of the work, issues less easily derived from AI. Thus, generative AI could (and arguably should) provide the impetus to change traditional methods of assignment-setting and assessment. Given the pace of change, we argue that many (if not most) traditional forms of assessment *will have to change* – it is not a realistic alternative to ignore the effects of AI or to attempt to prohibit students using it. It will become ever more important that assessment is designed to evaluate the extent of student understanding of the roles, purposes and practices of accounting, their ability to be creative and to design appropriate systems of accountability, to be able to argue a case for proposed actions and choices in ambiguous circumstances, and to demonstrate that they have learnt how to learn to be able to do such things in the context of uncertainty and novel circumstances. This is a significant challenge, a challenge that we have begun to address in this essay.

We also argue that there are ways that AI could productively be incorporated into teaching, learning and assessment tasks in non-traditional ways. For example, AI presents opportunities for teaching and learning to become more interactive, thereby creating more opportunity for dialogic learning. To that end, active rather than passive learning could, at last, come to the fore (Lucas, 1997; Sugahara & Dellaportas, 2018; Riley & Ward, 2023). AI also presents an opening for the accounting academy to move beyond traditional forms of knowledge delivery through experiential (Van Akkeren & Tarr, 2022) and problem-based learning (Wyness & Dalton, 2018), with a renewed focus on the development of generic or soft skills. Further, generative AI has a potential role in

<sup>13</sup> Turnitin’s current false positive rate is 1% for documents with 20% or more AI writing and 4% for specific sentences (i.e., there is a 4% likelihood that a specific sentence highlighted as AI-written might be human-written) <https://www.turnitin.com/blog/understanding-the-false-positive-rate-for-sentences-of-our-ai-writing-detection-capability>.

<sup>14</sup> The studies of Wood et al. (2023) and Cheng et al. (2023) both adopt the use of ChatGPT as the primary AI tool.

delivering and enhancing the dialogue of learning, for example by providing essay-type answers for students to discuss and critique, and potentially as comparators for their own writing. This can be particularly powerful (and efficient in staff time) when employing ‘active inner feedback’ methodologies (Nicol, 2021; Nicol & McCallum, 2022).

In line with these approaches, it is important that accounting educators take on the difficult challenge to develop AE that moves students (further) to recognising the reality of ambiguity and the importance of judgement in the accounting field, particularly as AI will continue to automate even more of the practice of accounting. This is a global issue, but the diversity of cultures and approaches to education (and authority) will require local approaches. In this context, building students’ intellectual development away from dualistic notions of understanding (in which problems have only right and wrong answers) towards more enlightened relativistic perspectives (Perry, 1970) becomes even more important (as it should have been for many decades).

Finally, we argue that AI presents a renewed opportunity to meaningfully address the long-neglected ethical dimensions of accounting (Arrington & Francis, 1993; Boyce, 2008, 2014a), while considering the implications of AI. One of the potential dangers of AI (in most of its forms) is that it learns from existing text, decisions and actions. As such it has a tendency to propagate existing biases, including gender, race, social class and capitalist-rationale-based discrimination, unless somehow controlled or mitigated, which is itself likely to be biased.<sup>15</sup> In an accounting context, the Big 4<sup>16</sup> are very aware of and are highlighting the potential for AI to reinforce bias and discrimination. For example, Ernst & Ernst (2023) have recently produced guidance on mitigating AI bias and discrimination in the US financial sector to ensure that financial institutions adopt responsible practices. PwC are also contributing to this important debate, having recently developed a ‘Responsible AI framework’ which aims, among other things, to support organisations in curbing unintentional bias from the use of AI for particular groups (PwC, undated<sup>a</sup>). To further support organisations in mitigating the risks of AI and to develop responsible and ethical use of AI data, PwC have also developed a ‘Responsible AI Toolkit’ (PwC, undated<sup>b</sup>) and a ‘Bias Analyzer’ (PwC, undated<sup>c</sup>). KPMG (2019) and Deloitte (2021) are also actively involved in this space. The pace of change in AI and the role of the Big 4 provides the accounting academy with a significant opportunity to address some specific ethical challenges, and contribute to this important debate. In particular, AE has a role to play in highlighting and addressing the potential and existence of bias and discrimination in large data sets (including those used for data analytics purposes) which are used by organisations to make important financial and non-financial decisions. This, in turn, could open opportunities for broader examination of the ethics of the discipline of accounting itself (Boyce, 2008).

The opportunities outlined above provide a renewed impetus for accounting academics to develop and apply skills to effectively move beyond technical rote-based, tick-the-box forms of teaching and assessment. The many pressures on academics, including time constraints, student evaluations, professional body accreditation and research pressures, have long worked together to reinforce the current system with its focus on technical content. AI provides new imperatives to (finally) address these issues. Universities and educators may well need to properly invest in AE (and business education more generally), dispensing the notion that accounting and business programs are institutionally attractive as ‘cash cows’ (Humphrey & Gendron, 2015) because they can be run on a ‘high revenue and low cost’ model. More effort, and more resources, are needed to make education more meaningful for all concerned. Thus, more of the AE ‘dollar’ needs to go to actual teaching and learning!

#### 4. Conclusion and contribution

This essay responds to the recent explosion of AI, especially LLMs such as ChatGPT, and their implications for AE and the accounting academy. While research on the impact of AI in accounting has increased over the last 20 years, this has largely focused on ICTs such as expert systems, intelligent and knowledge systems, and decision support systems (Sutton, Holt, & Arnold, 2016; Damerji & Salimi, 2021; Enholm, Papagiannidis, Mikalef, & Krogstie, 2022). This essay brings a focus on recent developments in AI, and in so doing, contributes to the limited literature that has critically examined the potential implications of generative AI on the accounting academy and AE.

Our essay provides a critical review of the issues, challenges and opportunities presented by generative AI set in the context of ongoing and longstanding calls for change in AE (Bedford et al., 1986; Accounting Education Change Commission, 1990; Humphrey, Lewis, & Owen, 1996; Albrecht & Sack, 2000; Bolt-Lee & Foster, 2003; Boyce et al., 2012; Dellaportas, 2015; Morales & Sponem, 2017). We argue that the current challenges of AI present a unique opportunity to move AE beyond the technical, managerial, and financial focus that has dominated the discipline for many decades. More importantly, recent developments in generative AI have produced a “change-inducing crisis” (Boyce, 2004, p. 569), which, we believe, the accounting academy needs to address in order to survive in the long term. AI in its current, and future, configuration presents the academy with significant opportunities to fundamentally change the way we engage in education to address the “functionalist view of the discipline” and the uncritical and problematic “technical reductionism” of accounting (Boyce, 2004, p. 569). Although AE – like university education more broadly – tends to cohere with the prevailing political and economic order (Boyce, 2002), there are always openings and fissures that present

<sup>15</sup> It is important to recognise that AI systems, and indeed other systems and output, are mainly developed and disseminated by the large capitalist institutions that dominate this field and that these institutions may well have vested interests in reinforcing and propagating these types of biases. Regulation of such systems in relation to bias, as well as privacy, are complex and potentially intractable issues of concern (as evidenced by the discussion at the recent AI Safety Summit in Bletchley Park in the UK, <https://www.gov.uk/government/topical-events/ai-safety-summit-2023>: accesses 21/11/2023).

<sup>16</sup> It is of course likely that this is, at least in part, driven by potential business opportunities, especially given the recent scandal-plagued record of the Big 4 in several jurisdictions.



opportunities for real change. The present juncture could, we suggest, present just such an opportunity, and it is one that accounting educators cannot afford to miss if they are to retain (or recover) relevance to a meaningful educative mission. The arguments we make in this essay are intended to represent a call for action for accounting academics to embrace generative AI in learning and teaching practices, but to do so in a way that brings about a renewed focus on the human dimension of accounting, incorporating broader social and critical perspectives.

The accounting academy, and indeed the professional accountancy bodies that certify competence of accountants, are unlikely to be able to 'ride out' the AI effect by doing little or nothing, as usual. Without change, the discipline and the profession will become increasingly irrelevant to the needs of business, organisations and government, as well as society and the broader public interest. AI presents a range of threats to AE, as it does to all education, but it also provides important opportunities for AE, both for learning and teaching, and to break the inertia of the past. The opportunities of AI to the accounting academy world led us to favour the inculcation of "humanities" skills in undergraduate curricula, which unfortunately have become increasingly marginalized and relegated to the periphery in an age that is fascinated by technical competencies (Lyotard, 1984; Nussbaum, 2010).

Turning the threats into an opportunity requires accounting academics to recognise the nature of the threat and the associated challenge, and to seize the opportunities available, and to utilise them in a way that brings both critique and *being critical* to the fore. This requires concerted action on the part of accounting academics, the departments and universities within which they are situated, and the governments that oversee the funding and resourcing of university education to 'take education back from the market' (and the tech giants) and provide the sort of impetus that can make AE more relevant to our students *and* the needs of contemporary society. This is a change that requires the accounting academy to lead educational change and to develop and use their agency for the long term good of students, accounting education, and the public interest.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Data availability

No data was used for the research described in the article.

### References

- Albrecht, W. S., & Sack, R. J. (2000). *Accounting Education: Charting the Course through a Perilous Future*. Fall Issue: Accounting Education Series.
- Althoff, J. (2023). The future of business is here: How industries are unlocking AI innovation and greater value with the Microsoft Cloud. *Microsoft*, 24<sup>th</sup> July. <https://blogs.microsoft.com/blog/2023/07/24/the-future-of-business-is-here-how-industries-are-unlocking-ai-innovation-and-greater-value-with-the-microsoft-cloud/>.
- Arthur Andersen & Co, Arthur Young, Coopers & Lybrand, Deloitte Haskins & Sells, Ernst & Whinney, Peat Marwick Main & Co, Price Waterhouse, & Touche Ross. (1989). *Perspectives on Education: Capabilities for Success in the Accounting Profession*.
- Armitage, H. M., & Boritz, J. E. (1986). Integrating computers into the accounting curriculum. *Issues in Accounting Education*, 1(1), 86–101.
- Armstrong, P. (2000). Accounting for insecurity. *Critical Perspectives on Accounting*, 11(4), 383–406.
- Aronowitz, S., & DiFazio, W. (1994). *The Jobless Future: Sci-Tech and the Dogma of Work*. University of Minnesota Press.
- Arrington, C. E., & Francis, J. R. (1993). Giving economic accounts: Accounting as a cultural practice. *Accounting, Organizations and Society*, 18(2/3), 107–124.
- American Accounting Association. (2021, July). Resolution in Support of Science, Technology, Engineering and Math (STEM) Designation for Accounting Programs. American Accounting Association [aaahq.org/portals/0/aaa%20stem%20resolution.pdf?ver=2021-07-30-105525-240](https://www.aahq.org/portals/0/aaa%20stem%20resolution.pdf?ver=2021-07-30-105525-240).
- Baker, R. S. (2021). Artificial intelligence in education: Bringing it all together. In *OECD Digital Education Outlook 2021: Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots*. OECD Publishing. <https://doi.org/10.1787/154ea644-en>.
- Baldwin-Morgan, A. A. (1995). Integrating artificial intelligence into the accounting curriculum. *Accounting Education*, 4(3), 217–229. <https://doi.org/10.1080/09639289500000026>
- Ballantine, J., & Galliers, R. D. (2022). New developments in digitisation: A further call for action. In E. Strauss & M. Quinn (Eds.), *The Routledge Handbook of Accounting Information Systems* (Second ed.). Taylor and Francis.
- Barnett, R. (1997). *Higher Education: A Critical Business*. Society for Research into Higher Education and Open University Press.
- Bebbington, J., Russell, S., & Thomson, I. (2017). Accounting and sustainable development: Reflections and propositions. *Critical Perspectives on Accounting*, 48, 21–34. <https://doi.org/10.1016/j.cpa.2017.06.002>
- Bedford, N., Batholemew, E. E., Bowsher, C. A., Brown, A. L., Davidson, S., Horngren, C. T., ... Wheeler, J. T. (1986). Future accounting education: Preparing for the expanding profession (the special report of the American accounting association committee on the future structure, content, and scope of accounting education). *Issues in Accounting Education*, 1(1), 168–195.
- Bedford, N. M., & Shenkir, W. G. (1987). Reorienting accounting education. *Journal of Accountancy*, 164(2), 84–91.
- Behn, B. K., Ezzell, W. F., Murphy, L. A., Stith, M., Rayburn, J., & Strawser, J. R. (2012). The pathways commission: Charting a national strategy for the next generation of accountants.
- Bérubé, J., & Gendron, Y. (2022). Through students' eyes: Case study of a critical pedagogy initiative in accounting education. *Accounting Education*, 31(4), 394–430. <https://doi.org/10.1080/09639284.2021.1997768>
- Bhaskar, K. N. (1982). Use of computers in accountancy courses. *Accounting and Business Research*, 12(45), 3–10.
- Bhaskar, K. N. (1983). Computers and the choice for accountancy syllabuses. *Accounting and Business Research*, 13(50), 83–93.
- Biggs, J., & Tang, C. (2007). *Teaching for Quality Learning at University: What the Student Does* (Third ed.). Society for Research into Higher Education and Open University Press.
- Bobek, D. D., Dalton, D. W., Daugherty, B. E., Hageman, A. M., & Radtke, R. R. (2017). An investigation of ethical environments of CPAs: Public accounting versus industry. *Behavioral Research in Accounting*, 29(1), 43–56. <https://doi.org/10.2308/bria-51561>
- Bolt-Lee, C., & Foster, S. (2003). The core competency framework: A new element in the continuing call for accounting education change in the United States. *Accounting Education*, 12(1), 33–47. <https://doi.org/10.1080/0963928031000074486>
- Boritz, J. E., & Stoner, G. N. (2014). Technology in accounting education. In R. M. S. Wilson (Ed.), *The Routledge Companion to Accounting Education* (pp. 347–375). Routledge.

- Boyce, G. (1999). Computer-assisted teaching and learning in accounting: Pedagogy or product? *Journal of Accounting Education*, 17(2/3), 191–220. [https://doi.org/10.1016/S0748-5751\(99\)00016-0](https://doi.org/10.1016/S0748-5751(99)00016-0)
- Boyce, G. (2002). Now and then: Revolutions in higher learning. *Critical Perspectives on Accounting*, 13(5/6), 575–601. <https://doi.org/10.1006/cpac.2002.0533>
- Boyce, G. (2004). Critical accounting education: Teaching and learning outside the circle. *Critical Perspectives on Accounting*, 15(4–5), 565–586. [https://doi.org/10.1016/S1045-2354\(03\)00047-9](https://doi.org/10.1016/S1045-2354(03)00047-9)
- Boyce, G. (2008). The social relevance of ethics education in a global(ising) era: From individual dilemmas to system crises. *Critical Perspectives on Accounting*, 19(2), 255–290. <https://doi.org/10.1016/j.cpa.2006.09.008>
- Boyce, G. (2014a). Ethics in accounting education. In R. M. S. Wilson (Ed.), *The Routledge Companion to Accounting Education* (pp. 533–557). Routledge.
- Boyce, G. (2014b). Professionalism, the Public Interest, and Social Accounting. In S. M. Mintz (Ed.), *Accounting for the Public Interest: Perspectives on Accountability, Professionalism and Role in Society* (pp. 115–139). Springer.
- Boyce, G. (2018). Accounting education. In R. Roslender (Ed.), *The Routledge Companion to Critical Accounting* (pp. 376–393). Routledge.
- Boyce, G., Greer, S., Narayanan, V., & Blair, B. (2015a). Bringing the Social into Accounting Education: Student, Staff, and Professional Perspectives [OLT Project report ID12-2530]. [socialaccountingblog.wordpress.com](http://socialaccountingblog.wordpress.com).
- Boyce, G., Greer, S., Narayanan, V., & Blair, B. (2015b). Sociologically Reimagining Accounting: A Scaffolded Framework of Research and Resources [OLT Project report ID12-2530]. [socialaccountingblog.wordpress.com](http://socialaccountingblog.wordpress.com).
- Boyce, G., & Greer, S. (2013). More than imagination: Making social and critical accounting real. *Critical Perspectives on Accounting*, 24(2), 105–112. <https://doi.org/10.1016/j.cpa.2012.06.002>
- Boyce, G., Greer, S., Blair, B., & Davids, C. (2012). Expanding the horizons of accounting education: Incorporating social and critical perspectives. *Accounting Education: An International Journal*, 21(1), 47–74. <https://doi.org/10.1080/09639284.2011.586771>
- Boyce, G., Narayanan, V., Greer, S., & Blair, B. (2019). Taking the pulse of accounting education reform: Liberal education, sociological perspectives, and exploring ways forward. *Accounting Education*, 28(3), 274–303.
- Boyce, G., Williams, S., Kelly, A., & Yee, H. (2001). Fostering deep and elaborative learning and generic (soft) skill development: The strategic use of case studies in accounting education. *Accounting Education: An International Journal*, 10(1), 37–60. <https://doi.org/10.1080/09639280121889>
- Cam, O., & Ballantine, J. (2023). Rethinking accounting assessment in a COVID-19 world: Application of a dialogical approach. *Accounting Education*, 32(5), 578–595. <https://doi.org/10.1080/09639284.2023.2201274>
- Carmona, S. (2013). Accounting curriculum reform? The devil is in the detail. *Critical Perspectives on Accounting*, 24(2), 113–119.
- Cheng, X. J., Dunn, R., Holt, T., Inger, K., Jenkins, J. G., Jones, J., Long, J. H., Loraas, T. M., Mathis, M., Stanley, J. D., & Wood, D. A. (2023). Artificial intelligence's capabilities, limitations, and impact on accounting education: Investigating ChatGPT's performance on educational accounting cases. <https://doi.org/10.2139/ssrn.4431202>.
- Cheong, A., Duan, H. K., Huang, Q., Vasarhelyi, M. A., & Zhang, C. A. (2022). The rise of accounting: Making accounting information relevant again with exogenous data. *Journal of Emerging Technologies in Accounting*, 19(1), 1–20. <https://doi.org/10.2308/jeta-10812>
- Cho, C. H., Senn, J., & Sobkowiak, M. (2022). Sustainability at stake during COVID-19: Exploring the role of accounting in addressing environmental crises. *Critical Perspectives on Accounting*, 82, Article 102327. <https://doi.org/10.1016/j.cpa.2021.102327>
- Clarke, F., Dean, G., & Egan, M. (2014). *The Unaccountable & Ungovernable Corporation*. Routledge.
- Clarke, F. L., Dean, G. W., & Oliver, K. G. (2003). Corporate Collapse: Regulatory, Accounting and Ethical Failure (Second ed.). Cambridge University Press.
- Commission, A. E. C. (1990). Objectives of education for accountants: Position statement number one. *Issues in Accounting Education*, 5(2), 307–312.
- Cong, Y., Du, H., & Vasarhelyi, M. A. (2018). Technological disruption in accounting and auditing. *Journal of Emerging Technologies in Accounting*, 15(2), 1–10. <https://doi.org/10.2308/jeta-10640>
- Cooper, C., Taylor, P., Smith, N., & Catchpole, L. (2005). A discussion of the political potential of Social Accounting. *Critical Perspectives on Accounting*, 16(7), 951–974.
- Damerji, H., & Salimi, A. (2021). Mediating effect of use perceptions on technology readiness and adoption of artificial intelligence in accounting. *Accounting Education*, 30(2), 107–130. <https://doi.org/10.1080/09639284.2021.1872035>
- Dawkins, M. C. (2023). Declining enrollments—A call to action! *Issues in Accounting Education*, 38(1), 9–16. <https://doi.org/10.2308/ISSUES-2022-088>
- Dellaportas, S. (2015). Reclaiming 'sense' from 'cents' in accounting education. *Accounting Education: An International Journal*, 24(6), 445–460.
- Deloitte (2021). AI model bias can damage trust more than you may know. But it doesn't have to. [https://www2.deloitte.com/content/dam/insights/articles/US164503\\_CIR-AI-model-bias-within-the-internal-organization/DI\\_CIR-AI-model-bias-within-the-internal-organization.pdf](https://www2.deloitte.com/content/dam/insights/articles/US164503_CIR-AI-model-bias-within-the-internal-organization/DI_CIR-AI-model-bias-within-the-internal-organization.pdf).
- Dennis, A. (2023, 3 April). How universities are working to boost the CPA pipeline. *Journal of Accountancy*. [www.journalofaccountancy.com/news/2023/apr/how-universities-working-boost-cpa-pipeline.html](http://www.journalofaccountancy.com/news/2023/apr/how-universities-working-boost-cpa-pipeline.html).
- Dewey, J. (1997). *Experience and Education*. Touchstone/Simon & Schuster.
- diFazio, W. (1998). Poverty, the postmodern and the jobless future. *Critical Perspectives on Accounting*, 9(1), 57–74.
- Dillard, J., & Vinnari, E. (2017). A case study of critique: Critical perspectives on critical accounting. *Critical Perspectives on Accounting*, 43, 88–109. <https://doi.org/10.1016/j.cpa.2016.09.004>
- Dock, V. T., Guy, D. M., & Williams, D. Z. (1974). Integrating the computer in the classroom: An approach in auditing. *Accounting Review*, 49(1), 149–153.
- Douglas, S., & Gammie, E. (2019). An investigation into the development of non-technical skills by undergraduate accounting programmes. *Accounting Education*, 28(3), 304–332. <https://doi.org/10.1080/09639284.2019.1605532>
- Dzurarin, A. C., Jones, J. R., & Olvera, R. M. (2018). Infusing data analytics into the accounting curriculum: A framework and insights from faculty. *Journal of Accounting Education*, 43, 24–39.
- EAA (European Accounting Association) (2023). Symposium: The Balance Between Technical and Critical Content in Accounting Education, Helsinki 26 May 2023 (Gia Chevis, Nicola Beatson, Mirel Leino-Haltia, Jussi Siitonen & Greg Stoner), <https://eaa-online.org/congress-2023/symposia-programme/>.
- Ellington, P., & Williams, A. (2017). Accounting academics' perceptions of the effect of accreditation on UK accounting degrees. *Accounting Education*, 26(5–6), 501–521. <https://doi.org/10.1080/09639284.2017.1361845>
- Enholm, I. M., Papagiannidis, E., Mikalef, P., & Krogstie, J. (2022). Artificial intelligence and business value: A literature review. *Information Systems Frontiers*, 24(5), 1709–1734. <https://doi.org/10.1007/s10796-021-10186-w>
- Entwistle, N. (2009). *Teaching for Understanding at University: Deep Approaches and Distinctive Ways of Thinking*. Palgrave Macmillan.
- Entwistle, N., & McCune, V. (2004). The conceptual bases of study strategy inventories. *Educational Psychology Review*, 16(4), 325–345. <https://doi.org/10.1007/s10648-004-0003-0>
- Entwistle, N., Skinner, D., Entwistle, D., & Orr, S. (2000). Conceptions and beliefs about good teaching: An integration of contrasting research areas. *Higher Education Research and Development*, 19(1), 5–26.
- European University Association. (2023). Artificial intelligence tools and their responsible use in higher education learning and teaching. <https://eua.eu/resources/publications/1059:artificial-intelligence-tools-and-their-responsible-use-in-higher-education-learning-and-teaching.html>.
- Fogarty, T. J. (2014). The Bloom is Off the Rose: Deprofessionalization in Public Accounting. In S. M. Mintz (Ed.), *Accounting for the Public Interest: Perspectives on Accountability, Professionalism and Role in Society* (pp. 51–92). Springer.
- Foy, S. (2023, 8 July). City consulting giants brace for pain as advisory work dries up. *The Telegraph*. [www.telegraph.co.uk/business/2023/07/08/big-four-consultancy-pwc-ey-kpmg-deloitte-demand-falls](http://www.telegraph.co.uk/business/2023/07/08/big-four-consultancy-pwc-ey-kpmg-deloitte-demand-falls).
- Freire, P. (1970). Pedagogy of the oppressed. *Continuum*. M. B. Ramos, (Trans.).
- Freire, P. (1973). *Education for Critical Consciousness*. Seabury Press.
- Freire, P. (1998). Pedagogy of Freedom: Ethics, Democracy, and Civic Courage (P. Clarke, Trans.). Rowman & Littlefield.
- Frémeaux, S., Puyou, F.-R., & Michelson, G. (2020). Beyond accountants as technocrats: A common good perspective. *Critical Perspectives on Accounting*, 67–68, Article 102054. <https://doi.org/10.1016/j.cpa.2018.07.003>

- Gabbin, A. L. (2002). The crisis in accounting education. *Journal of Accountancy*, 193(4), 81–86.
- Giannini, S. (2023). Generative AI and the future of education. *UNESCO*. <https://unesdoc.unesco.org/ark:/48223/pf0000385877>.
- Giroux, H. A. (1988). *Teachers as Intellectuals: Toward a Critical Pedagogy of Learning*. Bergin and Garvey.
- Gow, I., & Kells, S. (2023, 4 June). The Big Four firms are incapable of unwinding their own deep-seated conflicts. *The Guardian* (online). [www.theguardian.com/commentisfree/2023/jun/04/the-big-four-firms-are-incapable-of-unwinding-their-own-deep-seated-conflicts](http://www.theguardian.com/commentisfree/2023/jun/04/the-big-four-firms-are-incapable-of-unwinding-their-own-deep-seated-conflicts).
- Gramsci, A. (1971). Selections from the Prison Notebooks (Q. Hoare & G. Nowell Smith, Ed. & Trans.). Lawrence and Wishart.
- Gray, R., & Collison, D. (2002). Can't see the wood for the trees, can't see the trees for the numbers? Accounting education, sustainability and the public interest. *Critical Perspectives on Accounting*, 13(5/6), 797–836.
- Green, P. F., & Buckley, S. (1995). *IT Knowledge and the Accounting Graduate: An investigation into the IT knowledge requirements of accounting and finance graduates in Australia*. Australian Society of CPAs Information Technology Centre of Excellence.
- Hack, K. (2023). 'Excited, concerned and curious': student perspectives on learning and working in the era of AI, 21<sup>st</sup> February. <https://www.advance-he.ac.uk/news-and-views/excited-concerned-and-curious-student-perspectives-learning-and-working-era-ai>.
- Hack, K. & C. Knight (2023). Higher education in the era of AI, 9<sup>th</sup> February 2023. Higher education in the era of AI | Advance HE ([advance-he.ac.uk](http://advance-he.ac.uk)).
- Hale, K., & Truelson, J. M. (2023). Client acquisition following an auditor's unethical behavior: An examination of reputational consequences following KPMG's "Steal the Exam" scandal. *Accounting Horizons*, 37(2), 85–104. <https://doi.org/10.2308/horizons-2021-086>
- Harney, S. (2009). Extreme neo-liberalism: An introduction. *Ephemeris: Theory and Politics Organization*, 9(4), 318–329.
- Holley, C. L. (1995). Using general ledger software in an accounting systems course. *Journal of Accounting and Computers*, XI(Fall).
- Holmes, A. F., & Douglass, A. (2022). Artificial intelligence: Reshaping the accounting profession and the disruption to accounting education. *Journal of Emerging Technologies in Accounting*, 19(1), 53–68. <https://doi.org/10.2308/JETA-2020-054>
- Holmes, A. F., Foshee, R., & de Jesus Elizondo Montemayor, T. (2022). Strengthening the accounting pipeline through diversity: Preference for Big 4 employment and intentions to change. *Accounting Education*, 31(4), 370–393. <https://doi.org/10.1080/09639284.2021.1998785>
- Hu, K. (2023). ChatGPT sets record for fastest-growing user base – analyst note, Reuters, 2<sup>nd</sup> February. <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>.
- Humphrey, C., & Gendron, Y. (2015). What is going on? The sustainability of accounting academia. *Critical Perspectives on Accounting*, 26(1), 47–66.
- Humphrey, C., Lewis, L., & Owen, D. (1996). Still too distant voices? Conversations and reflections on the social relevance of accounting education. *Critical Perspectives on Accounting*, 7(1), 77–99.
- Illeris, K. (2004). Transformative learning in the perspective of a comprehensive learning theory. *Journal of Transformative Education*, 2(2), 79–89.
- Illeris, K. (2014). *Transformative Learning and Identity*. Routledge.
- Janvrin, D. J., & Watson, M. W. (2017). "Big Data": A new twist to accounting. *Journal of Accounting Education*, 38, 3–8.
- Jones, M. J. (2011). *Creative Accounting*. Fraud and International Accounting Standards: John Wiley & Sons.
- Jones, R. A., & Lancaster, K. A. S. (2001). Process mapping and scripting in the Accounting Information Systems (AIS) curriculum. *Accounting Education: An International Journal*, 10(3), 263–278.
- KPMG (2019). Controlling AI: the imperative for transparency and explainability. June. <https://info.kpmg.us/content/dam/advisory/en/pdfs/kpmg-controlling-ai.pdf>.
- Lajoie, P.-L., & Gendron, Y. (2023). From "audit machines" to tech-savvy auditors: Auditors' quest for professional security in respect to digital transformation 38th Annual Contemporary Accounting Research Conference. British Columbia: Vancouver.
- Laurillard, D. (2001). *Rethinking University Teaching: A Conversational Framework for the Effective Use of Learning Technologies*. Taylor and Francis.
- Lucas, U. (1997). Active learning and accounting educators. *Accounting Education: An International Journal*, 6(3), 189–190.
- Lyotard, J. F. (1984). *The postmodern condition: A report on knowledge*. University of Minnesota Press, 10.
- Macias, H. A., Patiño-Jacinto, R. A., & Castro, M.-F. (2021). Accounting education in a Latin American country during COVID-19: Proximity at a distance. *Pacific Accounting Review*, 33(5), 636–651. <https://doi.org/10.1108/PAR-11-2020-0198>
- Manochin, M. M., & Cooper, S. (2015). Dialogic education: Reflections from an accounting course. *International Journal of Critical Accounting*, 7(1), 49–72.
- McKinney, E., Yoos, C. J., & Snead, K. (2017). The need for 'skeptical' accountants in the era of Big Data. *Journal of Accounting Education*, 38, 63–80.
- Merino, B. (2006). Financial scandals: Another clarion call for educational reform—A historical perspective. *Issues in Accounting Education*, 21(4), 363–381.
- Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education*, 74, 2–12. <https://doi.org/10.1002/ace.7401>
- Moffitt, K. C., Rozario, A. M., & Vasarhelyi, M. A. (2018). Robotic process automation for auditing. *Journal of Emerging Technologies in Accounting*, 15(2), 1–10. <https://doi.org/10.2308/jeta-10640>
- Morales, J., & Spone, S. (2017). You too can have a critical perspective! 25 years of Critical Perspectives on Accounting. *Critical Perspectives on Accounting*, 43, 149–166.
- Moran, J. (2023, 21 November). Academics consider using ChatGPT to generate feedback, with marking time at University of Tasmania college slashed. ABC News online. <https://www.abc.net.au/news/2023-11-21/tas-utas-marking-time-cuts-chatgpt-assignments-students/103125634>.
- Munoko, I., Brown-Liburd, H. L., & Vasarhelyi, M. (2020). The ethical implications of using artificial intelligence in auditing. *Journal of Business Ethics*, 167(2), 209–234. <https://doi.org/10.1007/s10551-019-04407-1>
- Needles, B. E., & Powers, M. (1990). A comparative study of models for accounting education. *Issues in Accounting Education*, 5(2), 250–267.
- Nicol, D. (2021). The power of internal feedback: Exploiting natural comparison processes. *Assessment and Evaluation in Higher Education*, 46(5), 756–778. <https://doi.org/10.1080/02602938.2020.1823314>
- Nicol, D., & McCallum, S. (2022). Making internal feedback explicit: Exploiting the multiple comparisons that occur during peer review. *Assessment and Evaluation in Higher Education*, 47(3), 424–443. <https://doi.org/10.1080/02602938.2021.1924620>
- Nussbaum, M. C. (2010). *Not For Profit: Why Democracy Needs the Humanities*. Princeton University Press. ISBN: 978-0-691-14064-3 hardcover.
- OECD. (2023). *Is Education Losing the Race with Technology? AI's progress in maths and reading*. *OECD Publishing*. <https://doi.org/10.1787/73105f99-en>
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years*. (New York: Holt, Rinehart and Winston). Republished 1999 by John Wiley and Sons Inc. with Introduction by Kniefelkamp, L.
- PricewaterhouseCoopers. (2003). *Educating for the Public Trust: The PricewaterhouseCoopers Position on Accounting Education*.
- PwC. (undated<sup>a</sup>). The responsible AI framework. <https://www.pwc.co.uk/services/risk/insights/accelerating-innovation-through-responsible-ai/responsible-ai-framework.html>.
- PwC. (undated<sup>b</sup>). PwC's Responsible AI: AI you can trust. <https://www.pwc.com/gx/en/issues/data-and-analytics/artificial-intelligence/what-is-responsible-ai.html>.
- PwC. (undated<sup>c</sup>). Bias Analyzer. <https://www.pwc.com/us/en/services/consulting/cloud-digital/data-analytics/artificial-intelligence/bias-analyzer.html>.
- QAA. (2023a). Maintaining quality and standards in the ChatGPT era: QAA advice on the opportunities and challenges posed by Generative Artificial Intelligence. [https://www.qaa.ac.uk/docs/qaa/members/maintaining-quality-and-standards-in-the-chatgpt-era.pdf?sfvrsn=2408aa81\\_10](https://www.qaa.ac.uk/docs/qaa/members/maintaining-quality-and-standards-in-the-chatgpt-era.pdf?sfvrsn=2408aa81_10).
- QAA. (2023b). Reconsidering assessment for the ChatGPT era: QAA advice on developing sustainable assessment strategies. [https://www.qaa.ac.uk/docs/qaa/members/reconsidering-assessment-for-the-chat-gpt-era.pdf?sfvrsn=38d3af81\\_6](https://www.qaa.ac.uk/docs/qaa/members/reconsidering-assessment-for-the-chat-gpt-era.pdf?sfvrsn=38d3af81_6).
- QAA. (2023c). The rise of artificial intelligence software and potential risks for academic integrity: A QAA briefing paper for higher education providers. [https://www.qaa.ac.uk/docs/qaa/members/the-rise-of-artificial-intelligence-software-and-potential-risks-for-academic-integrity.pdf?sfvrsn=ebb0a981\\_6](https://www.qaa.ac.uk/docs/qaa/members/the-rise-of-artificial-intelligence-software-and-potential-risks-for-academic-integrity.pdf?sfvrsn=ebb0a981_6).
- Review Committee of the Accounting Discipline in Higher Education. (1990). *Accounting in Higher Education: Report of the Review of the Accounting Discipline in Higher Education*. Volume 1: Main Report and Recommendations. Australian Government Publishing Service.
- Riley, J., & Ward, K. (2023). Active learning, cooperative active learning, and passive learning methods in an accounting information systems course. *Issues in Accounting Education*, 32(2), 1–16. <https://doi.org/10.2308/iace-51366>
- Roslender, R. (1996). Critical accounting and the labour of accountants. *Critical Perspectives on Accounting*, 7(4), 461–484.
- Roslender, R. (2018). Structural Marxism. In R. Roslender (Ed.), *The Routledge Companion to Critical Accounting* (pp. 37–54). Routledge.

- Sangster, A. (1992). Computer-based instruction in accounting. *Accounting Education: An International Journal*, 1(1), 13–32.
- Sangster, A. (1995). The integration of expert systems within the accounting curriculum. *Accounting Education*, 4(3), 211–216. <https://doi.org/10.1080/09639289500000025>
- Sangster, A. (2010). Liberalising the accounting curriculum. *Accounting Education: An International Journal*, 19(4), 323–327. <https://doi.org/10.1080/09639284.2010.501674>
- Sangster, A., & Mulligan, C. (1997). Integrating the World Wide Web into an accounting systems course. *Accounting Education: An International Journal*, 6(1), 53–62.
- Sangster, A., Stoner, G., & Flood, B. (2020). Insights into accounting education in a COVID-19 world. *Accounting Education*, 29(5), 431–562. <https://doi.org/10.1080/09639284.2020.1808487>
- Sangster, A., & Wilson, R. A. (1991). Knowledge-based learning within the accounting curriculum. *British Accounting Review*, 23(3), 243–261.
- Sangster, A., & Wilson, R. M. S. (Eds.). (2013). *Liberalising the Accounting Curriculum in University Education*. Routledge.
- Saravanamuthu, K. (2004). Gold-collarism in the Academy: The dilemma in transforming bean-counters into knowledge consultants. *Critical Perspectives on Accounting*, 15(4–5), 587–607. <http://www.sciencedirect.com/science/article/B6WD4-48F5GJ2-2/2/cf291abaf6ddf5f3d51ad31bc413de81>.
- Saravanamuthu, K., & Tinker, T. (2003). Politics of managing: The dialectic of control. *Accounting, Organizations and Society*, 28(1), 37–64.
- Schön, D. A. (2016). The reflective practitioner: how professionals think in action. Routledge. <https://doi.org/10.4324/9781315237473>
- Shaoul, J. (1990). Innovations in an accounting information systems course. *British Accounting Review*, 22(4), 331–342. [https://doi.org/10.1016/0890-8389\(90\)90092-V](https://doi.org/10.1016/0890-8389(90)90092-V)
- Sikka, P., Haslam, C., Kyriacou, O., & Agrizzi, D. (2007). Professionalizing claims and the state of UK professional accounting education: Some evidence. *Accounting Education: An International Journal*, 16(1), 3–21.
- Sikka, P., Willmott, H., & Lowe, T. (1989). Guardians of knowledge and public interest: Evidence and issues of accountability in the UK accountancy profession. *Accounting, Auditing and Accountability Journal*, 2(2), 47–71.
- Sledgianowski, D., Goma, M., & Tan, C. (2017). Toward integration of Big Data, technology and information systems competencies into the accounting curriculum. *Journal of Accounting Education*, 38, 81–93.
- Solomons, D., & Berridge, T. M. (1974). *Prospectus for a Profession: The Report of the Long Range Enquiry into Education and Training for the Accountancy Profession*. Advisory Board of Accountancy Education.
- Stoner, G. (1985). Expert systems: Jargon or challenge? *Accountancy*, 96(1098), 142–145.
- Stoner, G. (2009). Accounting students' IT application skills over a 10-year period. *Accounting Education: An International Journal*, 18(1), 7–31.
- Stoner, G., Wootton, C. W., & Kemmerer, B. E. (2020). Mechanisation, computerisation and information systems. In J. R. Edwards, & S. P. Walker (Eds.), *Routledge Companion to Accounting History* (pp. 136–155). Routledge.
- Sugahara, S., & Dellaportas, S. (2018). Bringing active learning into the accounting classroom. *Meditari Accountancy Research*, 26(4), 576–597. <https://doi.org/10.1108/MEDAR-01-2017-0109>
- Sundem, G. L. (2014). Fifty years of change in accounting education: The influence of institutions. In R. M. S. Wilson (Ed.), *The Routledge Companion to Accounting Education* (pp. 611–631). Routledge.
- Sutton, S. G., Holt, M., & Arnold, V. (2016). "The reports of my death are greatly exaggerated"—Artificial intelligence research in accounting. *International Journal of Accounting Information Systems*, 22, 60–73. <https://doi.org/10.1016/j.accinf.2016.07.005>
- Sykes, T. (1998). *Two Centuries of Panic: A history of corporate collapses in Australia* ((Second ed.)). Allen & Unwin.
- Tan, L. M., Fowler, M. B., & Hawkes, L. (2004). Management accounting curricula: Striking a balance between the views of educators and practitioners. *Accounting Education*, 13(1), 51–67. <https://doi.org/10.1080/0963928042000201293>
- Taylor, M. H. (2023). President-Elect Plenary: Revolutionizing Accounting Education: Rebuilding the Pipeline, American Accounting Association Annual Meeting (Conference), 4-9 August, 2023, Denver. (Video available to AAA members at <https://aaahq.org/Meetings/2023/Annual-Meeting/Session-Recordings>, 6/10/2023).
- TEQSA. (2023). Artificial Intelligence, 4th August. <https://www.teqsa.gov.au/guides-resources/higher-education-good-practice-hub/artificial-intelligence>.
- Thomson, I., & Bebbington, J. (2004). It doesn't matter what you teach? *Critical Perspectives on Accounting*, 15(4–5), 609–628.
- Tinker, T., & Feknous, B. (2001). Developing the socio-political skills of accounting students: A mixed synchronous and asynchronous learning strategy. *Pacific Accounting Review*, 13(1), 19–32.
- Tinker, T., & Feknous, B. (2003). The politics of the new courseware: Resisting the real subsumption of asynchronous educational technology. *International Journal of Accounting Information Systems*, 4, 141–164.
- Tinker, T., & Koutsoumadi, A. (1998). The accounting workplace: A joyless future? *Accounting Forum*, 21(3 & 4), 289–316.
- Toms, S. (2019). Financial scandals: A historical overview. *Accounting and Business Research*, 49(5), 477–499. <https://doi.org/10.1080/00014788.2019.1610591>
- Van Akkeren, J. K., & Tarr, J.-A. (2022). The application of experiential learning for forensic accounting students: The Mock trial. *Accounting Education*, 31(1), 39–66. <https://doi.org/10.1080/09639284.2021.1960573>
- Vasarhelyi, M. A. (2008). Evolving accounting systems research with business measurement practice—A Letter from the Editor. *Journal of Emerging Technologies in Accounting*, 5(1), 1–10.
- Waller, T. C., & Gallun, R. A. (1985). Microcomputer competency requirements in the accounting industry: A pilot study. *Journal of Accounting Education*, 3(2), 31–40. [https://doi.org/10.1016/0748-5751\(85\)90004-1](https://doi.org/10.1016/0748-5751(85)90004-1)
- Warren, J. D., Moffitt, K. C., & Byrnes, P. (2015). How big data will change accounting. *Accounting Horizons*, 29(2), 397–407.
- Wilkinson, B. R., & Durden, C. H. (2015). Inducing structural change in academic accounting research. *Critical Perspectives on Accounting*, 26, 2336. <https://doi.org/10.1016/j.cpa.2014.03.002>
- Williams, B. C., & Spaul, B. J. (Eds.). (1991). *IT and Accounting: The impact of information technology*. Chapman & Hall.
- Wong, A., George, S., & Tanima, F. A. (2021). Operationalising dialogic accounting education through praxis and social and environmental accounting: Exploring student perspectives. *Accounting Education*, 30(5), 525–550. <https://doi.org/10.1080/09639284.2021.1919531>
- Wood, D. A., Achhpilia, M. P., Adams, M. T., Aghazadeh, S., Akinyele, K., Akpan, M., ... Zoet, E. (2023). The ChatGPT artificial intelligence chatbot: How well does it answer accounting assessment questions? *Issues in Accounting Education*, 38(4), 1–28. <https://doi.org/10.2308/ISSUES-2023-013>
- Wyness, L., & Dalton, F. (2018). The value of problem-based learning in learning for sustainability: Undergraduate accounting student perspectives. *Journal of Accounting Education*, 45, 1–19. <https://doi.org/10.1016/j.jaccedu.2018.09.001>
- Ernst & Young. (2023). The Consumer Financial Protection Bureau is cracking down on AI practices in consumer financial products and services. 17<sup>th</sup> March. [https://www.ey.com/en\\_us/forensic-integrity-services/ai-discrimination-and-bias-in-financial-services](https://www.ey.com/en_us/forensic-integrity-services/ai-discrimination-and-bias-in-financial-services).