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The impact of an artificial intelligence learning platform on the teaching efficacy, professional development and digital burnout of accounting educators

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Abstract. With the rapid development of educational Artificial Intelligence (AI) technology, the field of accounting education is undergoing significant transformations. This study examines the impact of educational AI applications on accounting teachers' self-efficacy, professional development, and burnout. A questionnaire survey was conducted with 400 accounting teachers from 30 universities in China, who were randomly assigned to either an experimental group or a control group. Teachers in the experimental group received training and guidance on the application of AI teaching tools, while those in the control group did not receive any relevant interventions. Data were collected using a self-efficacy scale, a professional development questionnaire, and a burnout scale, and were analysed through independent samples t-tests. The results indicated that the integration of AI technology significantly enhanced the self-efficacy and professional development of accounting teachers, while effectively reducing burnout. This study suggests that AI-assisted teaching tools not only foster teachers' professional growth but also enhance their teaching autonomy and innovation, thereby alleviating the professional fatigue associated with traditional teaching pressures. These findings provide a theoretical foundation and practical guidance for promoting the professional development of accounting teachers and improving teaching quality, highlighting the significant role of educational AI in the reform of accounting education in colleges and universities.

Keywords: educational artificial intelligence, accounting teachers, self-efficacy, professional development, occupational burnout

1. Introduction

The wave of information technology has profoundly impacted all areas of society, including education. Digitalization has not only transformed the dissemination of knowledge but also altered professional practices. The global pandemic caused by the 2019 Coronavirus (COVID-19) acted as a catalyst, accelerating the technological integration of the education sector at an unprecedented rate and necessitating a large-scale shift to online teaching practices [1, 2]. Consequently, technology has become an indispensable component of education, shaping a digital lifestyle that significantly influences teaching effectiveness and the psychological

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well-being of educators. This transformation is particularly evident in accounting education, where online teaching, virtual simulation experiments, and intelligent assessment tools have become widespread, thereby changing traditional classroom interactions and models for developing practical skills [3, 4]. However, this deep reliance on technology, especially in high-pressure and demanding professional education, also presents significant challenges, including increased work pressure, rising occupational fatigue, performance fluctuations, and the potential for career burnout.

As the core force in training future finance professionals, accounting teachers are highly specialized, practical, and dynamic in their work. They not only need to master in-depth accounting theory and stay abreast of both international and domestic accounting standards (e.g., IFRS, GAAP), but they also must be well-versed in practical operations to develop the competencies that students need to effectively navigate an increasingly complex business environment [5]. This characterization of the role exposes them to a heightened risk of burnout. In addition to common factors such as intense workloads, dual pressures from research and teaching, and administrative burdens, accounting faculty members face discipline-specific challenges. These include frequent updates to standards that necessitate continuous learning, difficulties in bridging practice and theory, managing student expectations and employment pressures, and ensuring the effectiveness of hands-on teaching and learning in online environments [6]. Burnout, defined as a state of occupational psychological exhaustion that adversely affects an individual's health [7, 8], manifests through emotional exhaustion, depersonalization, and a diminished sense of personal fulfilment [9]. It has become a critical issue threatening the stability of the accounting faculty and the quality of teaching.

In this context, Professional Development (PD) for teachers is of paramount importance. Richards and Farrell [10] define PD as a continuous growth process in which educators engage to achieve long-term goals focused on enhancing their understanding of the art of teaching and learning, as well as their roles as educators. For accounting faculty, PD encompasses not only the refinement of pedagogical skills but also the necessity of staying updated with cutting-edge accounting practices, emerging technologies, and evolving industry regulations [11]. PD manifests in various forms, ranging from self-directed learning initiatives, such as researching professional journals and attending industry conferences, to institutionally organized workshops and systematic training programs [12]. Effective PD serves as a critical mechanism for ensuring the quality of accounting education and empowering educators to adapt to changes in the field.

At the same time, the information age has given rise to a new form of burnout known as Digital Burnout. During the COVID-19 pandemic, the reliance of accounting faculty on technology reached unprecedented levels, characterized by remote lectures, online Q&A sessions, virtual lab management, and dependence on intelligent systems for grading assignments and ensuring academic integrity. This reliance has effectively 'immersed' faculty members in a digital environment for extended periods [1]. The resultant 'always-on' state transcends traditional boundaries of work time and space, leading to significant digital burnout. This condition manifests as increased stress associated with technology use, physical and mental exhaustion, feelings of indifference and detachment from digital interactions, loss of concentration, and subsequent health issues. Furthermore, this phenomenon may be exacerbated by the precision demands inherent in teaching accounting, along with the additional cognitive load imposed by online technologies, such as managing multiple platforms, addressing technological malfunctions, and adapting to new modes of interaction [13].

The rise of Artificial Intelligence (AI) is particularly notable among various educational technologies. Educational AI aims to leverage intelligent algorithms to enhance the learning process, enable personalized content adaptation, and transform the interactions between teachers and students with knowledge [14]. In the realm of accounting education, AI demonstrates significant potential. For instance, intelligent tutoring systems can offer personalized practice and feedback targeting students' weak areas; automated tools can efficiently

manage fundamental accounting tasks, such as tax calculations and report generation, thereby freeing up educators' time; big data analytics platforms can simulate complex business scenarios to support case-based teaching; and intelligent assessment systems can provide immediate and objective formative evaluations [15, 16]. These applications are anticipated to reshape accounting teaching methodologies, enhance efficiency, and create a more immersive learning experience for students that closely resembles real-world practice [15].

However, the deep integration of technology presents a double-edged sword. While the value of AI in accounting education has been extensively examined [4, 14, 15], there remains a lack of comprehensive understanding regarding how AI adoption specifically influences the core psychological and professional states of accounting teachers, including self-efficacy, professional development experiences, and burnout levels. Self-efficacy, defined as teachers' beliefs in their ability to successfully perform specific teaching tasks —such as explaining complex guidelines, utilizing new technologies, and effectively assessing students' substantive competencies [17]—is a critical predictor of their motivation and effectiveness. It is essential to explore whether the introduction of AI empowers teachers and enhances their confidence in addressing complex teaching challenges (self-efficacy), or if it diminishes their sense of efficacy due to technological complexity or substitution anxiety. Furthermore, does the AI tool facilitate Professional Development (PD) for accounting teachers by promoting higher-order teaching and innovative practices, or does it hinder development due to a steep learning curve or its reduction to merely an operational tool? Additionally, does AI increase efficiency while alleviating the unique workload of accounting teachers, thereby reducing burnout, or does it exacerbate burnout—particularly digital burnout—due to new technological stressors, such as data anxiety, friction in human-computer collaboration, ethical considerations, and 'digital overload'? These questions are central to our inquiry.

This study focuses on the specific field of accounting education, aiming to explore the complex relationship between the introduction of educational AI applications and accounting teachers' self-efficacy, Professional Development (PD) experiences, and burnout, particularly digital burnout. It will provide significant empirical evidence and theoretical insights into the opportunities and challenges faced by accounting teachers in the AI era, optimizing teacher development strategies and promoting the healthy and sustainable advancement of accounting education.

2. Literature review

2.1. The transformative role of artificial intelligence applications in education

As a tool that mimics human intelligence, Artificial Intelligence (AI) has been widely utilized in adaptive learning, task automation, data analysis, and personalized feedback [15]. It aids educators in enhancing the quality and efficiency of teaching and learning [18]. In higher education, the advent of AI signifies a shift in the learning and teaching process from traditional knowledge transfer to intelligent, student-centered guidance and support. With the introduction of intelligent teaching platforms and virtual tutors in the classroom, educators can monitor students' learning statuses in real-time, identify learning challenges and weaknesses, and adjust teaching strategies promptly [19]. This capability for real-time feedback and adjustments not only increases the relevance of the teaching process but also significantly alleviates the professional burden on educators by minimizing repetitive tasks [20]. Consequently, this reduction in workload helps mitigate teacher burnout and fosters their focus on continuous professional development and self-improvement [21].

In addition, artificial intelligence provides accounting educators with a personalized professional development pathway by identifying knowledge and skill deficiencies through data analysis and recommendation algorithms. It subsequently suggests targeted learning resources and training opportunities

tailored to these needs [22]. By intelligently analyzing data from interactions between teachers and students, AI enables educators to reflect on their teaching strategies, fosters improvements in instructional practices, minimizes ineffective repetitive tasks, and facilitates a reciprocal enhancement of both teaching and learning [20, 22]. Overall, AI is fostering a more sustainable and rewarding work environment for accounting educators by optimizing the educational process, bolstering professional development support, and alleviating occupational stress, thereby promoting a virtuous cycle of professional growth and teaching effectiveness [20].

2.2. Professional development of teachers

Improving teacher quality is a fundamental prerequisite for ensuring the continuous enhancement of educational and teaching standards, particularly in the field of accounting education [23]. However, the professional development of accounting educators encounters challenges, including low participation rates and limited effectiveness. These issues arise from a lack of comprehensive understanding regarding various types of professional development and their effectiveness criteria, as well as the neglect of the specific professional needs of accounting teachers [24].

The COVID-19 pandemic has accelerated changes in teaching and learning paradigms, compelling faculty across disciplines, including accounting, to transition to online and blended teaching. This shift has imposed greater demands on accounting faculty [25]. To adapt to this trend, educators must continuously update their instructional designs and tools, master various information technologies and teaching resources, and modify assessment and feedback strategies to maintain student learning effectiveness and engagement [25].

Effective teacher training emphasizes the importance of continuous learning from individuals, colleagues, and various contexts to equip teachers with the skills necessary to navigate the pedagogical challenges presented by dynamic environments. This process is essential at every stage of a teacher's career [26]. For accounting educators, continuous professional development encompasses not only the updating of financial and accounting standards but also the enhancement of instructional skills and reflective practices. Such development requires robust support from institutional resources, professional networks, and policy frameworks [27].

Prior research indicates that a successful transition to online and smart teaching must be centered on teachers, emphasizing the provision of targeted support and feedback to facilitate the acquisition of new knowledge and skills. This approach encourages teachers to proactively experiment with new technologies and modalities [25]. Whether aimed at developing informational teaching skills or enhancing data-driven decision-making, effective PD enables accounting teachers to reshape their professional identity and sense of role within the new paradigm [28]. Furthermore, it enhances their self-efficacy and sense of professional mission as they navigate new challenges [29].

AI technology enablement offers accounting instructors a variety of PD pathways, including online courses, virtual seminars, and industry communication platforms. These formats facilitate knowledge and competency renewal without imposing excessive burdens [30]. However, to ensure the effectiveness of PD, it is crucial to concentrate on the design and integration of PD content and formats, rather than perceiving it merely as a collection of instructional technology tools [18]. By providing educators with personalized learning support and continuous professional guidance, educational AI has the potential to significantly enhance the professional growth of accounting instructors, equipping them with a robust foundation to navigate educational changes in the digital era [20, 22].

2.3. Digital burnout in teachers

During the COVID-19 pandemic, individuals increasingly relied on technology for various facets of work, communication, shopping, socializing, and accessing news. Sharma [13] observed that during the quarantine phase, many individuals spent nearly all their waking hours engaged in online activities. However, this excessive reliance on digital tools resulted in several adverse effects in both professional and daily life, including heightened stress, increased fatigue, reduced productivity, and the accumulation of burnout. The World Health Organization defines burnout as a syndrome related to occupational stress that adversely affects individual health. It is primarily characterized by energy depletion and a diminished motivation to exert effort [31].

Maslach and Jackson [32] posited that burnout is characterized by symptoms such as emotional exhaustion and affective apathy, particularly prevalent in occupations requiring continuous interpersonal interaction. Similarly, Pines and Aronson [33] highlighted that burnout represents a comprehensive breakdown encompassing physical, emotional, and spiritual dimensions, leading to a diminished sense of competence, energy, aspirations, and purpose, often accompanied by profound feelings of powerlessness and pessimism. Research has indicated that burnout is especially common among teachers [34], with occupational factors such as student discipline issues, overcrowded classrooms, communication challenges with parents, low job satisfaction, unfair management practices, and inadequate income serving as significant triggers for teacher burnout [9].

Burnout can manifest in various forms, both physical and psychological. In today's information-driven society, characterized by the extensive use of digital tools, teacher burnout has evolved into a new phenomenon—digital burnout. This form of burnout is increasingly prevalent and poses significant challenges to teachers' physical and mental health, as well as their professional well-being.

For accounting educators, the risk of digital burnout is particularly pronounced. Accounting education is inherently both theoretical and practical; thus, educators must not only possess solid professional knowledge but also be adept in utilizing various financial software and teaching platforms. While Artificial Intelligence (AI) enhances teaching efficiency, it may inadvertently increase teachers' dependence on technology, leading to a passive state characterized as 'technology-driven', which can undermine their autonomy and creativity in teaching [9]. Furthermore, an over-reliance on AI for assessment and feedback could diminish the emotional connection between teachers and students, adversely affecting the quality of teacher-student interactions [34]. Hence, it is crucial to prioritize the psychological health and professional well-being of educators while promoting the integration of educational AI. Educational institutions and administrators should offer necessary technical support and psychological counselling to assist teachers in managing their work rhythms effectively, balancing the use of technology with humanistic care, and mitigating the risk of burnout due to technological overload.

In summary, educational AI is profoundly transforming accounting education, presenting unprecedented opportunities and challenges for teachers' instructional practices, professional development, and career experiences. Consequently, it is essential to further investigate the specific application scenarios of educational AI within accounting education and its potential impacts on teachers' autonomy, professional growth, and psychological well-being. Furthermore, establishing a human-centered AI educational ecosystem will be crucial for fostering the high-quality development of accounting education.

2.4. Research problem

The widespread application of Educational Artificial Intelligence (EAI) in higher education and its various impacts on teachers' pedagogical practices, psychological well-being, and career development have

increasingly emerged as significant topics in educational research. Accounting education, characterized by a high degree of integration between theory and practice, imposes stringent requirements on teachers regarding the professionalism, technical proficiency, and practicality of the teaching content. In this context, the potential of educational artificial intelligence to effectively enhance the teaching confidence of accounting educators, foster their professional development, and mitigate their professional stress has become a matter worthy of in-depth exploration.

The purpose of this study is to investigate the impact of educational Artificial Intelligence (AI) on accounting education, particularly focusing on its effects on teachers' self-efficacy, professional development, and burnout. Specifically, the study is structured around the following core questions: (1) Does the use of educational AI enhance the self-efficacy of accounting teachers? (2) How does the application of educational AI influence the trajectory and quality of professional development for accounting teachers? (3) Does the ongoing use of educational AI exacerbate or alleviate burnout among accounting teachers?

3. Research design

3.1. Methodology

This study utilized three sets of questionnaire scales, each demonstrating strong reliability and validity, to assess the self-efficacy, professional development level, and burnout level of university accounting teachers. All scales are based on internationally recognized and established instruments, with appropriate localization of language and content tailored to the context of accounting education and teaching in Chinese universities. The first scale employed is the Teachers' Sense of Efficacy Scale (TSES), adapted from the original TSES developed by Tschannen-Moran and Hoy [35]. This adaptation was revised to align with the specific teaching tasks of college accounting instructors. The final version comprises 12 items that encompass three core dimensions: Teaching Efficacy (e.g., designing effective instructional programs, explaining complex concepts), Classroom Management Efficacy (e.g., maintaining order in the classroom, addressing emergencies), and Student Engagement Efficacy (e.g., stimulating student interest, facilitating classroom interaction). Each item was evaluated using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores reflecting greater teacher self-efficacy. The second scale instrument employed in this study is the Professional Development Scale, which was adapted from the Teacher Professional Development Questionnaire developed by Atmojo [36]. In alignment with its comprehensive framework, eight items were selected to represent three key dimensions: knowledge updating, pedagogical innovation, and reflection and collaboration. This scale aims to evaluate the frequency and self-perception of teachers' involvement in various activities, including both in-school and out-of-school training, scholarly exchanges, teaching reflection, and AI teaching practices. The questionnaire utilizes a 5-point Likert scale (1 = never participate, 5 = frequently participate) to gauge teachers' initiatives for professional growth and the depth of their practice in the context of contemporary pedagogical transformations. The third scale instrument is the Burnout Scale, derived from the Digital Burnout Scale proposed by Erten and Özdemir [2], and has been semantically refined to specifically address the psychological experiences of accounting teachers in digital teaching environments. This scale comprises 16 items categorized into three sub-dimensions: "Emotional Exhaustion" (6 items focusing on persistent energy depletion and emotional fatigue), "Depersonalization" (5 items assessing teachers' feelings of detachment and emotional numbness towards their students), and "Decreased Sense of Fulfillment" (5 items reflecting a decline in teachers' sense of value and fulfillment in their teaching roles). Teachers rated their experiences over the past four months using a 5-point frequency scale (1 = never, 5 = always).

All scale instruments were pretested and subjected to reliability testing. The overall Cronbach's alpha coefficients for the three sets of questionnaire scales were 0.89 for the self-efficacy scale, 0.91 for the professional development scale, and 0.88 for the burnout scale, all of which indicate excellent reliability. Additionally, to ensure the stability and consistency of the measurements, we performed a retest reliability analysis on a subset of samples, which demonstrated that the scales maintained good reliability over time. The questionnaire underwent revisions based on peer reviews and two rounds of pretesting to ensure both content validity and semantic clarity. Final analyses were conducted using descriptive statistics and independent samples t-tests to assess the differences in scores between the two rounds of questionnaires and to evaluate the variance between the experimental and control groups.

3.2. Research program

In this study, we initially identified 450 accounting faculty members from 30 universities across five cities in China and invited them to participate in an online questionnaire. Of those invited, 425 accepted and completed the questionnaire, resulting in an effective response rate of 94.4%. To enhance the representativeness of the sample, we randomly selected 400 teachers (210 females and 190 males) from the respondents for further analysis.

Subsequently, 120 teachers were selected from a pool of 400 to participate in a two-day online seminar titled "Artificial Intelligence Applications in Education". The workshop consisted of two half-day sessions, focusing on specific applications of contemporary mainstream AI tools, including ChatGPT, DeepSeek, the Intelligent Financial Analysis System, and AI Teaching Platforms, in the context of accounting education. The conference aims to assist educators in comprehending how to effectively integrate AI technologies into course design, classroom instruction, and student assessment.

All participating teachers received institutional support and were encouraged to actively apply the AI teaching tools they learned in their subsequent teaching practices. Following the workshop, the teachers were divided into two groups for a four-month follow-up based on their participation. The experimental group consisted of teachers who actively participated in the workshop and experimented with AI tools in their teaching. In contrast, the control group was invited to the workshop but did not participate, continuing to use traditional teaching methods. Three rounds of identical questionnaires were administered to all 400 teachers at three time points: before the project commenced (baseline), at the end of the workshop (midterm), and four months later (final). These questionnaires assessed changes in self-efficacy, levels of professional development, and burnout. The collected data were systematically organized through digital coding, and the differences between the two groups were compared using descriptive statistical analysis and independent samples t-tests. This approach aimed to explore the impact of educational artificial intelligence on psychological and behavioural variables related to accounting teachers.

3.3. Data processing

All questionnaire data were statistically analysed after uniform coding. Missing values were addressed using multiple imputation techniques, and the reliability of the scales was assessed through Cronbach's alpha coefficient, Exploratory Factor Analysis (EFA), and Confirmatory Factor Analysis (CFA). The research process adhered to ethical review requirements, with all participants providing informed consent and their data being anonymized to ensure privacy and security.

Through the research procedures and data collection methods outlined in this study, we aim to thoroughly investigate the specific effects of educational AI on the self-efficacy, professional development, and burnout of

college accounting teachers. This research seeks to provide empirical support and a theoretical foundation for promoting the application of AI in the reform of accounting education and teaching.

4. Research results

Research question 1: The impact of educational AI applications on accounting teachers' self-efficacy. The results of t-tests are presented in Table 1.

Table 1. Groups' scores on autonomous behaviors (pretest and posttest)

Variable	Group	Pretest				Posttest		
		Mean	SD	*T*	*p-value*	Mean	*T*	*p-value*
Instructional Efficacy	E	3.4	0.75	1.02	> 0.05	4.8	5.07	< 0.01
	C	3.5	0.72			3.6		
Classroom Management Efficacy	E	3.1	0.80	1.1	> 0.05	4.3	4.85	< 0.01
	C	3.2	0.76			3.3		
Student Engagement Efficacy	E	3.3	0.77	0.95	> 0.05	4.1	3.69	< 0.01
	C	3.3	0.73			3.4		

Note. E = experimental; C = control.

Table 1 presents the effects of the pretest and posttest educational AI applications on various dimensions of accounting teachers' self-efficacy. The results indicate that, prior to the intervention, the mean score for teaching efficacy among teachers in the experimental group was 3.4 (SD = 0.75), which did not differ significantly from the control group's score of 3.5 (SD = 0.72) ($t = 1.02$, $p > 0.05$). This finding suggests that the two groups were comparable before the intervention. However, following the introduction of the AI teaching tool, the experimental group's score rose significantly to 4.8 ($t = 5.07$, $p < 0.01$), while the control group exhibited only a minimal increase from 3.5 to 3.6, which was not statistically significant. These results imply that the AI platform has a substantial positive effect on teachers' confidence and competence in instructional design and content delivery.

In terms of classroom management efficacy, teachers in the experimental group demonstrated a notable increase in their scores, rising from 3.1 in the pretest to 4.3 in the posttest, which was statistically significant ($t = 4.85$, $p < 0.01$). In contrast, teachers in the control group showed only a marginal increase from 3.2 to 3.3, a change that did not reach statistical significance. Moreover, teachers in the experimental group reported an enhanced sense of efficiency and control over classroom pace regulation, resource management, and student grouping and interaction, facilitated by the AI-assisted tool. This improvement contributed to a heightened perception of their self-efficacy in classroom management.

In terms of student engagement efficacy, the experimental group exhibited an improvement from a pretest score of 3.3 to a posttest score of 4.1, demonstrating a statistically significant difference ($t = 3.69$, $p < 0.01$). In contrast, the control group showed minimal change, with scores moving from 3.3 to 3.4. This indicates that the use of the AI teaching platform effectively enhances teachers' ability to stimulate students' interest and engagement in the classroom. The interactive feedback mechanism, data-driven analysis, and intelligent reminder functions of the AI system enhance teachers' capacity to monitor the dynamics of students' learning, thereby boosting their confidence in managing student engagement.

These findings align with previous studies that advocate for the intelligent design of educational AI, particularly in areas such as task support, classroom feedback, and assessment suggestions. Such design can

empower teachers to strengthen their pedagogical mastery, thereby enhancing their self-efficacy [18, 29]. This observation resonates with Bandura [37] theoretical model of efficacy-shaping mechanisms and corroborates the empirical findings of scholars like Borg [12], who examined the interplay between teacher autonomy and efficacy.

Research question 2: The impact of educational artificial intelligence applications on the professional development of accounting teachers. The results of t-tests are presented in Table 2.

Table 2. Groups' scores on professional development (pretest and posttest)

Variable	Pretest						Posttest		
	Group	Mean	SD	t	df	p	Mean	t	p
Knowledge Updating	E	3.3	0.8	1.12	398	> .05	4.2	3.1	< 0.01
	C	3.3	0.81				3.5		
Instructional Innovation	E	3.1	0.78	1.05	398	> .05	4.1	3.72	< 0.01
	C	3	0.79				3.4		
Reflection & Collaboration	E	3	0.76	1.01	398	> .05	3.8	2.99	< 0.01
	C	3	0.77				3.3		

Note. E = experimental; C = control.

Table 2 presents the impact of educational AI applications on the professional growth of teachers in both the experimental and control groups, assessed before and after the intervention. Regarding the knowledge updating dimension, the mean pre-test score for teachers in the experimental group was 3.3, identical to that of the control group, with no significant difference observed (t = 1.12, df = 398, p > 0.05). However, following the intervention, teachers in the experimental group significantly improved their scores to 4.2 (t = 3.10, p < 0.01), while the control group exhibited a minimal increase from 3.3 to 3.5, which was not statistically significant. This indicates that systematic engagement with AI teaching platforms, such as the Intelligent Accounting Simulation System (IAS) and the AI Financial Statement Analysis Tool (AFAST), substantially enhanced teachers' acquisition of cutting-edge knowledge, optimization of textbook content, and understanding of emerging technologies.

In terms of pedagogical innovation, teachers in the experimental group exhibited a significant increase in their scores, rising from 3.1 in the pre-test to 4.1 in the post-test (t = 3.72, p < 0.01). In contrast, the control group showed only a modest increase from 3.0 to 3.4, which was not statistically significant. AI-driven instructional tools, including adaptive instructional platforms and automated feedback systems, not only enhanced teachers' pedagogical versatility and flexibility but also stimulated their proactive explorations of instructional strategy reconfiguration, task design, and classroom interaction. These findings suggest that the integration of AI effectively fosters innovation in teachers' instructional methods and facilitates a transformation in their teaching philosophies.

In the reflection and collaboration dimension, teachers in the experimental group exhibited a statistically significant increase in their scores, rising from 3.0 to 3.8 (t = 2.99, p < 0.01). In contrast, the control group showed a modest improvement, with scores increasing from 3.0 to 3.3. This finding suggests that the integration of AI fosters enhanced communication and collaboration among teachers, facilitating activities such as sharing teaching cases, co-constructing data on the AI platform, and conducting collective workshop analyses. Furthermore, the process data and diagnostic feedback provided by AI enable teachers to engage in a more systematic reflection on their teaching practices, thereby assisting them in establishing a professional development trajectory for ongoing improvement.

These findings suggest that AI applications not only enhance accounting teachers' understanding of the latest educational tools but also facilitate their willingness and ability to implement new technologies in the classroom. The real-time data feedback and intelligent assessment features provided by the AI platform enable teachers to continuously optimize lesson design, fine-tune classroom interactions, and engage in in-depth post-instruction reflection, thereby promoting professional growth. This finding aligns with research by Parsons et al. [30] and Cirocki and Farrell [38] regarding the importance of personalized Professional Development (PD) strategies and broadens the theoretical implications of PD implementation pathways in the field of accounting education. Furthermore, this study demonstrates that Artificial Intelligence (AI) can serve as a crucial driver for teachers' professional growth, particularly in the increasingly digitalized and information-driven landscape of higher education accounting. AI tools provide learning analytics, intelligent teaching suggestions, and resource recommendations that facilitate the transition to data-driven teaching and learning, ultimately fostering proactive engagement in continuous professional development. These AI tools empower teachers to realize the transformation to data-driven instruction, encouraging their initiative to participate in ongoing professional growth.

Research question 3: The impact of educational artificial intelligence applications on accounting teacher burnout. The results of *t*-tests are presented in Table 3.

Table 3. Groups' scores on digital burnout (pretest and posttest)

Variable	Pretest						Posttest		
	Group	Mean	SD	t	df	p	Mean	t	p
Emotional Exhaustion	E	3.2	0.85	1.21	398	> .05	2	3.42	< 0.01
	C	3.2	0.87				2.9		
Depersonalization	E	2.9	0.8	1.17	398	> .05	1.8	3.1	< 0.01
	C	2.8	0.79				2.5		
Reduced Personal Accomplishment	E	3.1	0.78	1.09	398	> .05	2.4	2.97	< 0.01
	C	3	0.77				2.8		

Note. E = experimental; C = control.

Table 3 presents the effects of the educational AI application on reducing teachers' stress and psychological load, comparing data from both the experimental and control groups before and after the intervention. In the dimension of emotional exhaustion, the experimental group reported a mean score of 3.2 in the pre-test, which aligned with the control group's score, indicating no statistically significant difference between the two groups at baseline (t = 1.21, df = 398, p > 0.05). However, following a four-month intervention utilizing the AI teaching platform, the experimental group's score significantly decreased to 2.0 (t = 3.42, p < 0.01). In contrast, the control group's score showed only a modest decrease from 3.2 to 2.9. These findings suggest that the implementation of AI tools effectively alleviated the emotional burden associated with repetitive and transactional tasks in teachers' daily routines, enabling them to regain their enthusiasm and energy for teaching.

In terms of depersonalization, the score of teachers in the experimental group decreased from 2.9 to 1.8, reaching a statistically significant level (t = 3.10, p < 0.01). In contrast, the control group exhibited a minor decrease from 2.8 to 2.5, indicating a relatively small difference. These findings suggest that the AI teaching platform enhances both the frequency and quality of interactions between teachers and students. Furthermore, it assists teachers in recognizing and addressing students' individual differences and needs through its

intelligent recommendation and instant feedback features. Consequently, this reduces teachers' sense of detachment from students and fosters a stronger interpersonal connection during the teaching process.

In the dimension of reduced sense of achievement, the experimental group's pre-test score decreased from 3.1 to 2.4 in the post-test, indicating a significant improvement ($t = 2.97$, $p < 0.01$). In contrast, the control group's score decreased from 3.0 to 2.8. Teachers in the experimental group reported that the AI tools effectively supported improvements in teaching efficiency, optimized learning outcomes, and facilitated personalized teaching. This support enabled them to receive positive feedback and experience a greater sense of achievement in their actual teaching practice, thereby alleviating feelings of incompetence or lack of value.

These findings align with existing studies on educational burnout, particularly those by Sharma [13] and Erten and Özdemir [2], which provide significant theoretical support for exploring the dimensions of digital burnout. The implementation of artificial intelligence-assisted smart correction, along with automated data analysis and feedback systems, effectively reduces the mechanical labour of teachers and enhances their productivity. This, in turn, alleviates their emotional exhaustion stemming from the stress associated with information technology use. Moreover, the findings resonate with Jamal's [18] investigation into the positive implications of AI in teacher education, suggesting that teachers who integrate AI technology in a rational manner are more likely to experience lower levels of burnout and achieve a healthy symbiosis with technology.

5. Conclusion

This study provides significant empirical evidence regarding the practical value of Artificial Intelligence (AI) applications in the realm of accounting education within higher education. Specifically, it highlights the enhancement of accounting teachers' self-efficacy, the promotion of their professional development, and the alleviation of burnout.

In terms of the first research question, the results indicated that teachers who integrated AI tools into their teaching practices exhibited significantly higher levels of self-efficacy across several dimensions, including instructional control, classroom interaction, technology utilization, and student feedback. The results of the second research question further illuminate the potential of AI platforms in facilitating the professional development of accounting educators. Teachers in the experimental group exhibited significant enhancements in three key areas: knowledge updating, innovation in teaching practices, and collaboration in teaching reflection. Addressing the third research question, this study found that AI applications significantly reduce teacher burnout. Improvements in teachers' emotional exhaustion, depersonalization, and sense of accomplishment indicate that AI effectively alleviates the repetitive labour burden, thereby enhancing productivity and reducing the occupational stress associated with the technological environment.

5.1. Implications

Above findings have significant practical implications for educational administrators, policymakers, and faculty development departments at universities. First, the strategic integration of AI applications into teacher training and professional development systems can enhance teachers' confidence and professional competence. Second, AI serves as a vital tool for improving teaching quality and innovating pedagogical methods, particularly in data analysis, intelligent feedback, and classroom assistance, where it offers considerable advantages. Furthermore, recognizing the positive impact of AI technology in mitigating burnout underscores the necessity for educational institutions to prioritize teachers' mental health and professional well-being when implementing technological solutions.

As educational technology continues to evolve, exploring and integrating innovative tools such as artificial intelligence to support teachers' professional growth, optimize the teaching process, and maintain mental health will be an important direction for future higher education reform. This study emphasizes the need for continuous enhancement of humanistic care, systematic training, and institutional safeguards to establish a more supportive, interactive, and sustainable teaching ecology for educators in the context of promoting educational intelligence.

5.2. Limitations and recommendations for further research

This study investigates the effects of educational artificial intelligence on accounting education within higher education, specifically focusing on its impact on teachers' self-efficacy, professional development, and burnout. It provides significant empirical support for understanding the transformation of teachers' roles in the context of technological empowerment. The findings reveal not only how AI enhances the teaching confidence and professional growth trajectories of accounting educators but also highlight its potential value in alleviating professional stress. These insights are instructive for teacher development, teaching reform, and the optimization of educational technology application strategies in higher education.

However, like any empirical study, this study has some limitations that deserve attention and improvement in future research. First, the AI tools used in this study have some limitations, mainly focusing on the current mainstream AI teaching platforms, smart financial analysis tools, and assisted assessment systems, and have not yet covered a wider range of AI application scenarios, such as predicting student behaviour based on natural language processing, virtual teaching assistants, and immersive learning systems. Future research should further expand the types and functions of AI tools and explore the differentiated impact of different AI technologies on teachers' teaching behaviours, sense of efficacy construction, and psychological well-being, so as to more comprehensively understand the role of AI in reshaping the education ecosystem.

This study relied on self-reported questionnaire data from teachers, which may have been influenced by subjective perceptions, social desirability effects, or memory bias. Although the questionnaire was designed based on established scales and included three rounds of surveys to enhance reliability, future research could benefit from a mixed-method design that integrates qualitative data—such as interviews, classroom observations, and teaching journals—with quantitative data. This approach would provide a richer and more nuanced understanding of teachers' experiences and feedback regarding the use of AI instructional tools.

Third, the study sample was primarily drawn from 30 colleges and universities in central and western China. Although it encompasses both undergraduate and higher education teachers, limitations in regional representativeness, disciplinary specificity, and cultural context may still exist. These limitations restrict the extrapolation of the findings to broader educational contexts. Future research should consider expanding the sample to include teachers from diverse regions and types of universities, particularly focusing on accounting education practices in less developed western regions and international contexts. This would enhance the generalizability and comparative value of the study.

The intervention period utilized in this study spans four months, emphasizing the short-term effects of AI application. While some variables have shown statistically significant changes, a comprehensive assessment of the medium- and long-term effects of AI on teachers' professional behaviours and psychological states remains unattainable. Consequently, future research should consider longitudinal studies to monitor the sustained effects of AI technology throughout the professional life cycle of teachers, as well as to investigate its dynamic influence on teachers' teaching beliefs, career trajectories, ongoing professional development, and job satisfaction.

Finally, although this study has preliminarily explored the mechanism by which Artificial Intelligence (AI) enhances teachers' self-efficacy, the related psychological processes—such as achievement motivation, teaching beliefs, and technology acceptance attitudes—have yet to be analysed in depth. Future research should consider introducing mediating and moderating variables based on frameworks such as social cognitive theory and the technology acceptance model. This approach will further elucidate how AI applications influence teacher behaviour and developmental trajectories through complex psychological mechanisms.

Author contribution

Both authors made substantial contributions to the conception and design of the study. Material preparation, data collection, and empirical analysis were conducted by Lu Wang and Hongmin Jin. Both authors critically reviewed the manuscript and approved the final version for publication.

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