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Doctoral students as emerging educators: Learning in the AI age

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ABSTRACT

Artificial intelligence (AI) is rapidly reshaping higher education, yet limited guidance leaves students uncertain about appropriate use and future implications. This qualitative study used critical realism and a Participatory Action Research (PAR)-informed methodology to examine how four doctoral students navigated AI-ambiguity and negotiated their identity. Three themes emerged, revealing a shift from perceiving AI as a threat to recognition as a cognitive partner. Theoretical implications demonstrate how PAR elucidates doctoral identity development within a small-N design, while practical implications show how institutions can ground academic policy in lived experiences, incorporate AI pedagogically, and use structured reflection to reposition students AI-ambivalence.

1. Introduction

The rapid emergence of artificial intelligence (AI) tools enabled by natural language processing (NLP) and large language models (LLMs) such as ChatGPT, Claude, and Google Gemini has transformed the higher education landscape for both students and instructors. While earlier tools like Grammarly and Microsoft's Copilot have gradually normalized digital learning support, the rise of more recent LLMs has left many instructors underprepared in AI literacy (Southworth et al., 2023), posing new threats to traditional teaching pedagogies and academic ethics.

This AI transition is particularly relevant to the hospitality industry and education. The hospitality industry has historically been slow to adopt emergent technologies (Huang et al., 2024) because it is deeply rooted in person-to-person engagement as a competitive differentiation strategy (Zhang et al., 2024; Zhu & Yu, 2025). However, recent AI development is rapidly transforming hospitality operations through chatbots for customer service, predictive analytics, and personalized guest experience platforms (Bilotta et al., 2021; Buhalis et al., 2024). Mirroring industry trends, AI is already facilitating significant change in hospitality higher education by enabling personalized learning tailored to individual student needs, creating realistic immersive simulations, facilitating data-driven decision-making through market analysis, and assisting instructors with content creation (Dalgıç et al., 2024; Huang et al., 2024; Keiper, 2023; Ray, 2024; Zhang et al., 2024; Zhu & Yu, 2025).

Doctoral students play an important role in hospitality education in the current AI digital transformation as emerging educators, positioned at the intersection of student and instructor roles. Since they directly will shape their future pedagogical approaches and the learning environments for their students (Renbarger et al., 2022; Xia et al., 2025), how they navigate both their own learning and their developing sense of what it means to be an authentic educator is critically important in this AI-enhanced academic environment

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(Blomberg, 2024; Bozkurt, 2024). If doctoral students develop adequate AI use and literacy, they are likely to carry the norm into their teaching roles. Conversely, if AI use remains ambiguous or stigmatized in academic settings, future educators may either avoid beneficial applications or adopt AI uncritically, unaware of its limitations. Understanding doctoral students' negotiation with AI is therefore not merely an academic concern; it represents a critical leverage point that will shape the future landscape (Oliveira et al., 2024) in both hospitality education and industry's adaptation to an increasingly AI-integrated future.

Leveraging an identity work perspective (Brown, 2022), this study posits doctoral students as identity entrepreneurs who are in a unique position to redefine institutional pedagogical norms while crafting updated academic identities in the AI era. Identity work refers to the ongoing process of shaping and adjusting one's sense of self (Caza et al., 2018), and this process often intensifies during periods of transition or uncertainty. Doctoral students, who often undergo profound identity transformation (Blomberg, 2024; Buss, 2022), therefore offer a valuable lens for understanding how individuals navigate emerging and evolving new roles particularly in AI-integrated academic and educational work environment (Lim et al., 2023; Oliveira et al., 2024). Although the population is small, doctoral students' perspectives provide analytic depth, capturing how individuals at this level interpret and navigate broader educational shifts in ways that can inform the collective experience (Renbarger et al., 2022), providing valuable insights into understanding innovation in hospitality education.

1.1. Purpose and objectives of the study

This qualitative study was philosophically grounded in critical realism, combining a realist ontology with a relativist and flexible approach to interpretation, an approach well-suited to the accelerated integration of LLMs in higher education (Al-Ababneh, 2020). Guided by this orientation, a Participatory Action Research (PAR)-informed methodological framework, used retroductive logic to draw inferences about doctoral students' AI use journey.

The purpose of this study was to explore how doctoral students used generative AI tools in their coursework and the extent to which institutional use and non-use mandates influenced their emergent academic identities within a hospitality higher education context. The objectives of the study were to: (1) Qualitatively analyze metacognitive reflections on participants' AI use in a hospitality doctoral course; (2) Apply retroductive reasoning to the data analyses by 'working backwards' to determine the underlying mechanisms and potential institutional interventions that lead to new identity formulation among emergent educators; and (3) Defend the rigor of a Small-N sample size utilizing a PAR-informed framework.

Theoretically, this study sheds light on doctoral students' AI-integrated identity formation processes and their underlying mechanisms, while also contributing methodological advancements through retroductive reasoning, a PAR-based, Small-N qualitative approach. Practically, this study offers guidance for how future hospitality educators can design curricula, construct learning experiences, and model an ethical, human-centered approach to technology integration.

2. Literature review

2.1. Identity work and doctoral identity

How individuals construct, negotiate, and sustain a sense of self within an organizational context is collectively known as identity theory, often combined with other variants and deemed as 'identity work' (Snow, 2001). Identity work is the ongoing process through which individuals form, repair, maintain, strengthen, or revise their sense of self in relation to their social and organizational environments (Caza et al., 2018). Research shows that identity work is relational and often occurs through storytelling and reflective practices, where individuals make sense of their experiences and negotiate their emerging professional selves (Patriotta & Lanzara, 2006).

For doctoral students, who simultaneously occupy the roles of student, researcher, and emerging educator, identity work becomes especially dynamic and complex (Buss, 2022). Identity work is often intensified during periods of change, uncertainty, or transition (Lim et al., 2023; Skulmowski, 2023), making it particularly salient when examining how emerging professionals navigate evolving role expectations (Patriotta & Lanzara, 2006). Doctoral students are actively engaged in forming their educator identities, often in tandem with their disciplinary identities, as they navigate multiple role expectations and professional development (Buss, 2022). Closely linked is the phenomenon of educators' identity, which involves adopting values, behaviors, and mindsets aligned with teaching roles while balancing expectations of being innovative educators and maintaining fidelity to traditional academic practices (Blomberg, 2024). The educators' identity formation processes are shaped by interactions with faculty mentors, academic norms, and peer networks (Renbarger et al., 2022; Xia et al., 2025). Taken together, this combined identity work perspective provides a lens for analyzing how doctoral students engage emotionally, intellectually, and socially as students while simultaneously forming their educator identity.

2.2. AI integration and influence on doctoral identity formation

The integration of AI tools into doctoral education creates unique tensions that activate identity work processes in specific ways. For example, AI use challenges traditional notions of authorship and authenticity in academic work (Bozkurt, 2024). AI tools such as ChatGPT directly engage with core academic activities, writing, analysis, and idea generation, that doctoral students use to demonstrate competence and develop expertise (Oliveira et al., 2024). This creates what can be understood as an identity threat (Blomberg, 2024; Bozkurt, 2024). If AI can perform tasks previously seen as evidence of scholarly ability, what does it mean to 'be' a scholar or

educator? Is using AI to assist with writing 'my' work? Or if AI helps me teach more efficiently, am I a 'real' educator? These questions strike at the heart of academic identity formation.

Moreover, doctoral students face inconsistent institutional messages that complicate identity formation. For example, some faculty embrace these tools, while others prohibit their use entirely, leaving doctoral students to navigate contradictory expectations (Xia et al., 2025) about what it means to be a 'good' student or 'legitimate' emerging educator. When respected faculty mandate non-use of AI, doctoral students may find themselves in precarious positions, having to navigate between their own experiences of AI's utility and the professional expectations of their mentors and disciplines. This creates identity work under constraint, where students must carefully manage multiple, sometimes conflicting, aspects of their emerging professional selves (Karalis Noel, 2021).

2.3. AI use in higher education from an educator's perspective

For students, AI's greatest advantage is observed in personalized learning. AI can answer students' questions and provide individualized feedback and support, thereby fulfilling diverse learning needs and styles (De La Mora Velasco et al., 2025). It can also enrich the educational experience for students by presenting real-world scenarios and fostering students' adaptability to innovative technologies, which are essential in the future technology-driven hospitality and tourism industry (Başer et al., 2025; Dogru et al., 2024; Huang, 2025). AI benefits not only students but also educators by enhancing instructional preparation. Educators use AI for brainstorming learning objectives, designing assignments, developing rubrics, and creating course modules and materials (Kumar et al., 2024). For academic research, faculty members can also leverage AI for idea development, literature review, data analysis, and grammar checking (Khalifa & Albadawy, 2024), offering significant time-saving advantages (Al-Mughairi & Bhaskar, 2025).

Despite these benefits, several concerns accompany the use of AI in higher education (Lim et al., 2023). For students, reliance on AI may lead to cognitive offloading (Grinschgl & Neubauer, 2022) and diminish their creativity and critical thinking (Al-Mughairi & Bhaskar, 2025), raising questions about dependency, competence, and what constitutes authentic practice (Lim et al., 2023). Moreover, in terms of instructional design, AI-generated responses are not always accurate, raising ethical concerns about the appropriate extent of AI integration (Al-Mughairi & Bhaskar, 2025; Chang et al., 2025).

In hospitality education, these concerns are amplified. The hospitality industry places strong emphasis on human-centered service, emotional intelligence, and interpersonal competence, making AI integration especially challenging in relation to authentic hospitality experiences (Buhalis et al., 2024). If future hospitality educators rely heavily on AI for course design or student interaction, tensions may arise in teaching students to provide genuine, empathetic service. Collectively, the appropriate and effective means of using AI in student learning and instructional design remain an open question. Understanding how doctoral students navigate these tensions provides insight into how the next generation of hospitality educators will integrate technology while preserving the field's core values (Zhang et al., 2024; Zhu & Yu, 2025).

3. Methodology

Rooted in critical realism, this qualitative study adopted a Participatory Action Research (PAR)-informed methodology to investigate how doctoral students engaged with mandated artificial intelligence (AI) use in a graduate course. Participation in this study emphasized shared reflection and interpretive collaboration rather than full co-ownership of institutional action as in traditional PAR, the methodology supported by prior higher education PAR-informed research (Bryant, 2023; Savin-Baden & Wimpenny, 2007). PAR is a type of exploratory procedure conducted by researchers by participating in an action-based activity that emphasizes reflection and collaboration with others in order to bring about a change that can make an impact (Guy et al., 2020). PAR is understood as a "practice-changing practice", that aims to change (1) people's practices; (2) their understandings of those practices; and (3) the conditions under which they practice (Kemmis et al., 2014; Kemmis & McTaggart, 1986). In higher education research, critical PAR provides a framework to inform instructors and students on how they each interpret, enact, and negotiate their roles in academic practice. In this study, the academic practice centered on the utilization of large language model (LLM) AI tools used in teaching and learning practices within a doctoral course.

The outcome of critical action research, a form of PAR, is to transform an unsustainable practice through collective inquiry and action (Kemmis et al., 2014). Transformational outcomes are possible when research is conducted 'with' people versus 'on' them, and when participants are actively involved in engaging and changing the practices of their lived experience (Kemmis et al., 2014). In this study, the intentional positioning of doctoral students as co-investigators was designed to understand how their AI use choices in one doctoral course impacted their learning across the entirety of their courses over a semester, and how their sense-making of disparate AI use policies among their instructors could guide a more intentional institution-wide pedagogical practice to include AI. The value of positioning doctoral students as co-investigators is an important component of PAR as it focuses on involving all the stakeholders in the overall research process (Goebel et al., 2020).

PAR has been implemented in tourism studies to involve communities in sustainable tourism decision-making (Goebel et al., 2020) and to responsibly organize business clusters to market a tourism destination (Perkins et al., 2021). A recent conceptual paper advocated action research to increase the societal impact of hospitality management studies (Pereira-Moliner & Molina-Azorin, 2024). PAR is uniquely situated for higher education research as a pedagogical tool that encapsulates new knowledge processes, belonging, globalization, and lifelong learning (Morales, 2019, pp. 317–341). In the context of graduate education, prior PAR research has demonstrated that an inclusive methodological inquiry can foster greater confidence in their learning and research capabilities (Call-Cummings et al., 2019).

3.1. Context & design

Four doctoral students with varying levels of prior AI use (see Table 1) were enrolled in a University Teaching course during the Fall 2024; Spring 2025 semester within a hospitality management college located in the Southeastern region of the United States. Over the duration of two 16-week semesters, students were assigned a variety of assignments wherein the use of AI was permitted according to the following parameters: (1) Students were required to share their iterative prompts, AI outputs, and rationale; (2) Students were required to disclose the percentage of AI content retained, and up to 100 % was allowed; and (3) Students were required to write a metacognitive reflection on their AI use, inclusive of their thoughts and feelings surrounding their internal dialogues related to their AI use behavior.

In total, ten assignments in the course allowed for the inclusion of AI: Class observation reports (2); Teaching workshop reflections (1); Short chapter presentation lectures from the book *Small Teaching* (Lang, 2021) (2); 30-min teaching presentation (1); Syllabus development (1); A professional development plan for teaching in higher education (1); Writing a teaching philosophy (1); and development of a case study (1). In addition, at the conclusion of the course, all four student participants submitted a final over-arching metacognitive reflection on their AI use journey. Each weekly class, lasting 3 h, provided space for students and their instructor to engage in an open dialogue, reflecting their assignments and thoughts on their AI usage. Throughout the course, these collaborative and reflective practices supported students in co-constructing their values, aligning with a PAR-informed methodology. Together, the robust in-class conversations and self-critiques, coupled with reflections, comprised the qualitative data for the analysis. The university's Institutional Review Board (IRB) approved the study (#0007433) in the Spring semester on January 7, 2025.

To enhance methodological transparency and trustworthiness, the research team maintained reflexive awareness of their roles throughout the PAR-informed process. The lead researcher, who was the course instructor, acted both as a facilitator and a co-learner, encouraging students to participate and contribute equally to in-class meaning-making and triangulation in the subsequent analysis. The dual role of the lead researcher required continuous attention to the team's power dynamics, ensuring that all participants' voices were represented in the coding of the data and the analytical discussions that followed. The research team engaged in frequent reflexive dialogue to check their own assumptions about AI, higher education, and academic integrity that could influence data interpretation. This methodology aligns with PAR's collaborative approach, treating scholarly inquiry as a shared learning process rather than a top-down hierarchical approach (Dickson & Green, 2001; Kemmis et al., 2014).

The PAR-informed process was organized across four iterative cycles of planning, action, observation, and reflection throughout two 16-week semesters, for a total of eight months. In the first two weeks of the first semester, in Cycle 1, the research team planned and discussed the parameters for their AI use and organized the framework for their reflections. Over the remaining 14 weeks of the first semester in Cycle 2, students prepared their metacognitive reflections, shared their perspectives in class, and discussed the ethical and pedagogical implications. Cycle 3 occurred over the first 8 weeks of the second semester, where student participants embarked upon the coding schema and refinement of the code book. The remaining 8 weeks of the second semester, in Cycle 4, student participants independently reviewed the themes over several iterations together with their instructor, who organized member checking and triangulation.

Decision-making was achieved collectively, and to minimize the instructor-student power asymmetry, discussions were based on anonymous and de-identified data. For example, one student suggested merging “AI benefit”, “AI idea development”, and “knowledge creation” with “AI as a cognitive assistant”. Likewise, another student recommended combining “summarizing AI recommendations” and “challenging ideas” with “blending human insight with AI's computational power”. Final themes were validated through joint sessions rather than through the instructor alone; thus, multiple iterative feedback sessions achieved PAR's principles of shared reflexivity.

3.2. Sample

Studies derived from single cases or Small-N samples are historically viewed as inferior within methodological positivist research, yet they are considered core research activities of the social sciences (Steinmetz, 2004). This study may not be immune to such critique; however, a recent 2023 editorial by the *Journal of Hospitality & Tourism Research* (Miao et al., 2022) advocated for increased theorizing as an emergent substantive process within the hospitality and tourism discipline. Furthermore, the editors supported kernel theorizing, an approach closely related to retroductive theorizing (Miao et al., 2023) as an initial stage of deconstructive research.

Consistent with this established guidance, the Small-N was deemed an appropriate sample for this research. The sample was selected for this qualitative study due to its focus on the theoretical contribution through the power of analytical depth (Crick, 2021). The researchers all had prior experience in teaching, mentoring, and/or research assistance within higher education. That unique combination positioned the doctoral students as both learners and future educators, providing a valuable lens through which to

Table 1
Participants’ experience with AI use prior to the course.

Participant [ID]	Experience with AI Prior to Course
Participant 1 [P1]	New user with no prior AI experience
Participant 2 [P2]	New user with little previous personal experience using AI
Participant 3 [P3]	6 months of prior AI use for academic research
Participant 4 [P4]	Advanced user with extensive prior AI experience for work

examine how they actively engaged with the evolving role of AI in higher education, how they experienced it within their coursework, and how they envisioned its future impact. Consistent with prior guidance on Small-N studies, this study prioritized analytic richness and iterative validation over numerical breadth, allowing the sample to produce meaningful and rigorous results under particular conditions (Young & Casey, 2019).

In this study, four participants were embedded throughout the entirety of the project through Participatory Action Research (PAR) and employed a retroductionist data analysis. Retroduction reasoning considers not only "what happened" to cause a phenomenon, but it also explains "what must be true for this to have happened" (Danermark et al., 2019; Easton, 2010). A retroductionist perspective is especially important for Small-N studies to yield robust explanations from data analysis (Cabote et al., 2024; McEwan et al., 2024). The Small-N sample in this study was advantageous to uncover more nuanced, contextual insights across the participants, tracing processes and interactions in more depth than would be possible with a large sample size. Particularly in cases where irregularities surface, Small-N samples are best suited for the iterative work of retroduction (Easton, 2010), which was the case in this study.

3.3. Analysis

The data analysis was conducted in retrospect according to a critical realist research process following retroductionist reasoning (Easton, 2010) as described above. The data were coded using MAXQDA v.24 qualitative data analysis software (VERBI Software, 2021) following an inductive process to allow emergent categories from empirical observations, which resulted in broader generalizations. While the coding process was initiated inductively, consistent with a PAR-informed emphasis on meaning-making, the latter analysis applied retroductive reasoning. This contrasts with deductive coding, which typically applies pre-existing theoretical frameworks to guide analysis from abstract concepts to specific data instances (Bingham & Witkowsky, 2022). Retroduction differs from induction in that it pursues the underlying structures and mechanisms that make patterns observable. This process thus moved the analysis from descriptive to explanatory, "working backwards" to infer how students' understanding of norms and their subsequent identity negotiations impacted their evolving relationship with AI use (Proudfoot, 2023). The analysis proceeded in several phases. First, the researchers plotted the development of students' thinking by constructing case-by-case descriptions of each student's reflections across assignments in chronological order. This step, informed by PAR methods, aimed to trace how students' perspectives evolved over time. Each member of the research team coded the data, and through an iterative process, consensus was built on the emergent coding structure. Next, the researchers used the Code Relations Browser feature in the software, creating a matrix to reveal intersections between coded segments (Kuckartz & Rädiker, 2019). This matrix facilitated the identification of code co-occurrences within a predefined textual range (i.e., within five rows of texts), which were visualized through the software's mapping function. The resulting map displayed nodes representing individual codes, with node size reflecting frequency (i.e., larger nodes signified more frequent occurrences).

Clusters of nodes denoted emergent themes in the data, and the spatial distance between these clusters provided insight into the relationships among themes (Kuckartz & Rädiker, 2019). The researchers determined the appropriate number of clusters by comparing several possible clusters ranging from two to five. The final decision was made by balancing inclusiveness and specificity, ensuring that each cluster was broad enough to capture the range of participants' AI use and navigation while remaining focused enough to represent distinct themes. In the final phase, the research team reflected on how and why certain patterns of thinking became consolidated, seeking underlying structures or mechanisms that could explain the students' observed developments of identities, consistent with retroductionism. To ensure reliability, this study followed the core principles of investigator triangulation suggested by Decrop (1999), represented by team collaboration, independent review, involving auditing, and member checking. First, three researchers on the team analyzed the data independently and interpreted the clustering results. Next, an auditing researcher who possesses extensive expertise in qualitative analysis with the software and in the field of hospitality education reviewed and discussed with the research team the

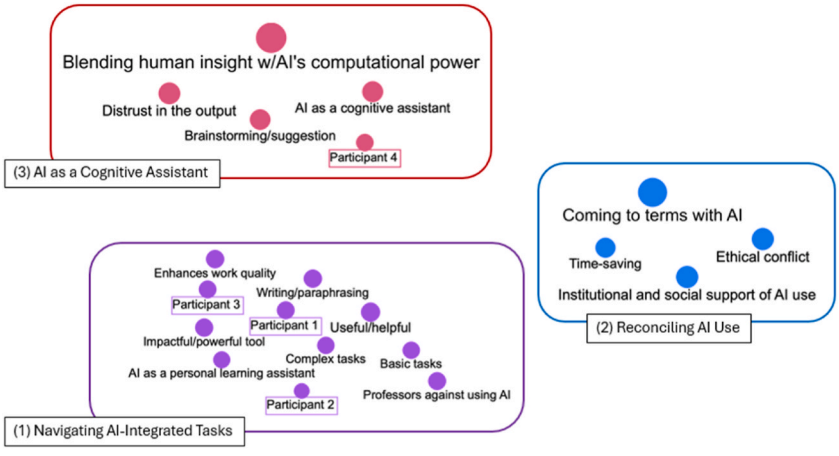

Fig. 1. Thematic results from the analysis of participants' use of AI in a graduate course. Note: Nodes represent individual codes and node size reflects code frequency (i.e., larger nodes signify more frequent occurrences).

independent findings. The auditing researcher provided critical feedback, and the team engaged in iterative and collaborative discussions to refine interpretations until a final well-informed model was achieved.

In the later stages of analysis, two researchers on the team examined the coded cluster proximity and frequency map generated in MAXQDA v.24, developing emerging interpretations of the coded clusters. These researchers then engaged with ChatGPT in an iterative dialogue, prompting the AI to suggest theme names of the coded clusters, and evaluating the AI output against their own developing understanding. The researchers iteratively refined or rejected the output theme names that failed to capture the meaning they perceived in the data.

Prior research has demonstrated that the use of generative AI in qualitative research is a helpful tool but must be applied within a larger analytic process involving human discernment and logic (Morgan, 2023; Saldaña, 2025). While generative AI was not employed to code the data in this study, it was used as a tool for its natural language processing to assist with name the themes, which is gaining momentum in transparent qualitative analysis (Hitch, 2024). Following Saldaña's (2025) caution that AI should corroborate findings rather than serve as a substitute for researcher interpretation, the researchers used ChatGPT as a thinking partner. The AI outputs sometimes resonated with the researchers and other times felt inadequate, opening new directions (See Appendix A for prompting sequence and decision rationale). This process was neither purely researcher-driven nor AI-driven, but rather the theme names emerged through dialogic exchange between the researchers and the AI. Once the preliminary labels were established, the remaining members on the research team engaged in additional rounds of discussion and coding analysis, which generated the final thematic results (See Fig. 1). Theme names were validated and finalized through collective reflexivity and consensus-building among all researchers.

It should be noted that the researcher-participants in this study did not code the data as detached analysts, but rather they lived the phenomenon under investigation for one semester prior to formal analysis. Thus, the coding was retrospective in an attempt to articulate what was experienced. The positionality and embeddedness of the research team shaped their interpretations of the coded clusters and resulting theme names. For example, when the AI-generated theme names felt inadequate or wrong, the researchers could not immediately articulate why, but all agreed that the output failed to capture what was experienced. This practice was consistent with the recommendations of qualitative researchers Lee (2025) and Hansen et al. (2025) who advocate for the inclusion of researcher subjectivity in qualitative analysis and thematic interpretation.

4. Findings

4.1. Thematic analysis

The qualitative data analysis returned 198 codes, which clustered around three major themes (see Fig. 1), reflecting how participants engaged with AI in a developmental trajectory from performing tasks to working with AI as a cognitive thought partner. The first cluster, *(1) Navigating AI-Integrated Tasks,* focused on how students applied AI in different types of assignments, ranging from "basic tasks" to "complex tasks," especially in "writing/paraphrasing." For instance, Participant 1 noted that AI "would give me a place to start," while Participant 2 described it as "a game-changer" for improving writing and brainstorming. Participant 3 similarly emphasized that "AI excels at refining professional writing into more concise forms." Terms like "useful/helpful," "impactful/powerful tool," and "enhances work quality" suggest students recognized AI's functional utility in completing distinct tasks. Moreover, the subtheme "AI as a personal learning assistant" captures the idea that AI can facilitate personalized learning, aligning with past studies (De La Mora Velasco et al., 2025). For example, Participant 3 shared that professors encouraged AI use "as a learning aid for generating commands and troubleshooting," At the same time, coexisting nodes such as "professors against using AI" reflect continued tension with academic norms. For instance, Participant 4 recalled that "some professors expressed strong reservations about its use," Participant 3 described AI as "a possible trap for potential grade penalties," Through their own experiences as future educators, the participants came to understand how students in higher education (including undergraduate and master's levels) can use AI for self-directed, personalized learning with appropriate instructor support, which in turn can inform how these participants design their own courses in the future.

The second cluster, *(2) Reconciling AI Use,* captured the emotional and ethical tensions students experienced in task engagement. While student participants recognized the practical benefits of AI as time-saving, many initially perceived its use as a form of academic dishonesty or "cheating," which created internal resistance to fully embracing the technology. For example, Participant 1 admitted being "pretty reluctant to use AI" because it felt "naughty or bad," and later reflected that they "initially felt like a cheater." However, as participants observed the rapid shift in institutional and social attitudes toward AI, along with encouragement from supportive faculty members, their perspectives gradually evolved. Participant 3 acknowledged that "AI is a force that couldn't be ignored in the modern academic landscape," and that "its adoption is inevitable to remain competitive." Exposure to peers using AI openly "without any negative consequences" and faculty members who "began showing us how AI could be used effectively" further normalized its use. Reflecting this progression, Participant 1 reported feeling "more comfortable with AI and bolder with edits" and ultimately stated, "I felt good about the usage of AI." The large node size for "Coming to terms with AI" reflects the growing awareness among students that AI adoption is unavoidable and increasingly central to academic practice. Interestingly, previous research has shown that instructors also experience similar ethical dilemmas regarding the use of AI in teaching and research. Although they recognize its time-saving benefits, they simultaneously struggle with concerns about academic ethics (Al-Mughairi & Bhaskar, 2025). Also, educators are concerned about students' cognitive offloading (Grinschgl & Neubauer, 2022) and diminishing the ability of creative and critical thinking. (Al-Mughairi & Bhaskar, 2025). Therefore, the participants' experience in how they come to terms with AI, being parallel with the instructor experience, would help them be mentally prepared and foster a process of acceptance and reconciliation

surrounding AI-related tasks.

The third cluster, *(3) AI as a Cognitive Assistant*, reflects the most advanced and strategic integration of AI, making a shift from performing AI-related tasks to developing AI-related cognitive processes. Here, AI was no longer a tool solely for convenience or completion but was reframed as a cognitive assistant in idea generation. For example, Participant 2 explained, "I've started to see AI as more of a partner than a tool," while Participant 4 used AI intentionally to probe conceptual alignment, asking, "Do you see in my notes any reference with teaching theories?" These behaviors correspond to the codes "Blending human insight with AI's computational power" and "AI as a cognitive assistant," which collectively signal a paradigm shift where participants embraced AI as a co-creator while maintaining human judgment. However, the presence of "distrust in the output" reveals a critical awareness of AI's limitations, reinforcing that students were learning to balance innovation with skepticism. For example, Participant 1 emphasized selective use, noting "I knew I would not [use all the output]," and Participant 4 repeatedly cautioned against inaccuracies ("No hallucination please"). This awareness also aligns with instructors' perspectives. Prior research indicates that while educators use AI for brainstorming course content, assignments, and rubrics, they remain cautious about the accuracy of AI-generated information (Al-Mughairi & Bhaskar, 2025; Chang et al., 2025), suggesting that participants can leverage their experiences for adjustment in their use of AI for future teaching.

4.2. Case-by-case analysis

Consistent with PAR methodology, the participant's case-by-case comparison offers a nuanced view of engagement with AI over their 16 weeks of use. While each participant followed a unique pathway, their trajectories differed by prior experience levels, producing distinct identity shifts in how they came to terms with their own AI use.

These patterns are clarified when cases are viewed side by side in the heatmap comparison (Table 2), aligning with the emerged clusters. Participants 1 and 2, both AI beginners, displayed the strongest intensity in "Coming to terms with AI," marked by initial resistance and guilt. Over time, however, they began to recognize AI's time-saving benefits and moved toward cautious acceptance. Participant 3, with moderate experience, demonstrated broader and more intense engagement across all clusters, reflecting openness to AI's utility and a transitional identity phase characterized by exploration and adaptation. By contrast, Participant 4, an advanced user, strongly endorsed AI's computational power in "Blending human insight with AI's computational power," while also showing skepticism in "Distrust in the output." This pattern reflects a more stable and consolidated AI-related identity, marked by critical selectivity rather than experimentation. Collectively, these trajectories suggest students often undergo identity flexibility and reflexivity, with intermediate users most vividly balancing curiosity and critical awareness before progressing toward individualized integration.

4.2.1. Participant 1: navigating early experiences with AI

In the early weeks, Participant 1 was an early AI user and expressed strong hesitation, stating, "I have been pretty reluctant to use AI, because I feel like I am doing something naughty or bad." Despite this, Student 1 began experimenting after encouragement from the course instructor, who framed AI use as part of their professional development. Reflecting, the student noted, "AI would give me a place to start." While acknowledging that AI provided "some good ideas," the student added, "I knew I would not [use all the output]," signaling an early awareness of AI output limitations. By mid-semester, Participant 1 reported growing confidence: "I feel like I am getting more comfortable with AI and feeling bolder with edits." The instructor reinforced this trajectory, advising, "AI is going to be here, so you are better off finding effective ways to help you work." Participant 1 then described a more strategic process: "I decided to start with AI, then make prompt edits, then make my own edits, and then go back to AI." This signaled a transition from passively

Table 2
Heat map comparison of students vs. codes.

	P1	P2	P3	P4	Total
(1) Navigating AI-Integrated Tasks					
Useful/helpful	2	0	7	0	9
Enhances work quality	0	1	3	3	7
Writing/paraphrasing	1	1	4	1	7
Impactful/powerful tool	0	1	3	3	7
Professors against using AI	1	0	2	3	6
Complex tasks	0	2	3	0	5
Basic tasks	2	1	1	1	5
AI as a personal learning assistant	0	1	3	0	4
(2) Reconciling AI Use					
Coming to terms with AI	12	5	11	3	31
Ethical conflict	6	1	8	1	16
Institutional and social support of AI use	3	0	9	4	16
Time-saving	5	2	3	1	11
(3) AI as a Cognitive Assistant					
Blending human insight w/AI's computational power	7	5	7	15	34
Distrust in the output	3	2	6	4	15
AI as a cognitive assistant	2	3	3	5	13
Brainstorming/suggestion	4	1	6	1	12

accepting the AI output to shaping intentional input.

Later, Student 1 demonstrated enhanced digital literacy and discernment, stating, "I felt better this time because I was asking it the easiest of assignments that I am fully capable of doing, but it would just save me time," and noting that AI was "effectively able to provide the responses faster than I searching for them." Participant 1 also "played around with a few new tools," reflecting a growing curiosity about how to balance tasks best suited for AI with those requiring human input, as well as an eagerness to further explore emerging technologies. By the semester's end, Participant 1 appeared to have reached reconciliation: "I felt good about the usage of AI." They emphasized tasks where AI "adds some value" and "no capacity makes me feel guilty." As long as "my own content and that unique content AI never created" remained intact, Student 1 no longer felt like a "cheater." Ultimately, they embraced AI as "my assistant," signaling a reformed perspective.

4.2.2. Participant 2: developing a strategic approach as an emergent educator

As a first-time user of AI in academic work, Participant 2 highlighted the convenience and practical benefits: "AI has been a game-changer; it improved my writing, helped me brainstorm ideas, and even analyze early data, saving me a lot of time." The student further noted, "[AI] gave me more room to focus on the bigger picture of the program and my research." However, despite recognizing these advantages, Participant 2 also expressed discomfort about overreliance on AI, explaining, "I kept questioning whether I was using it too much or if it truly understood the complexity of my field." As the semester progressed, Participant 2 began to critically evaluate the limitations of AI, stating they were "figuring out its limits." Notably, the student mentioned, "I've started to see AI as more of a partner than a tool, learning how to use it effectively without losing the human touch in my work." This perspective reflects a strategic approach, emphasizing "extracting and using the essence [from the AI output]" to enhance their work without displacing originality.

By the end of the semester, Participant 2 articulated a forward-looking stance as a scholar and emergent educator. "The role of AI will likely continue to expand, becoming a central part of my research workflow." They planned to use AI for "advanced analysis and problem-solving," while stressing, "We have a responsibility to guide future students in using AI effectively and ethically." Participant 2 concluded, "AI is a tool to enhance critical thinking rather than replace it," underscoring the student's future educator's role in cultivating independent thought.

4.2.3. Participant 3: redefining AI as a professional learning tool

At the beginning of the semester, Participant 3 shared that they had been using AI for research purposes over the prior six months. They explained, "As a new STATA (statistical software package) user, I faced challenges with regression analyses. My professors encouraged me to use AI as a learning aid, for generating commands and troubleshooting." Through this experience, Participant 3 came to recognize AI's value. However, this student initially hesitated to disclose AI use for class assignments, feeling "unsure" about sharing this information with professors they had not previously interacted with. Participant 3 explained, "I remained skeptical, viewing it as a possible trap for potential grade penalties."

Participant 3's outlook began to shift after observing peers who "openly disclosed that they used AI to develop an entire [assignment] without any negative consequences." A closer reading of the syllabus revealed that AI use in one course was "encouraged," not merely "permitted." Following this realization, Participant 3 reported using AI selectively, explaining, "AI is useful when I need to expand my idea," while limiting its contribution to the total assignment to 10–15 percent, and at most, 50 percent. This selectivity reflected an awareness of AI's limitations: "The answer does not always fit the context or ideal format." Participant 3 stressed the importance of "using 'essence' to enhance my work." As the semester progressed, they increasingly used AI for proofreading, stating, "AI excels at refining professional writing into more concise forms," and reflected, "For those who are not native English speakers, AI proves to be an invaluable tool."

By the semester's end, Participant 3 reflected on a broader cultural shift, noting the influence of faculty seminars and practices. They described AI as "a force that couldn't be ignored in the modern academic landscape," concluding that its adoption is inevitable to remain competitive. Observing professors openly using AI was "particularly enlightening," prompting Student 3 to reconceptualize AI not as a shortcut but as a "smart strategy." Faculty modeling reinforced that "continuous learning and seeking support are natural aspects of professional development at any career stage," helping Participant 3 view purposeful, transparent, and strategic AI assistance not as "weakness," but as professional growth.

4.2.4. Participant 4: reaffirming human and AI roles amid institutional transition

As an experienced AI user in the hospitality industry, Participant 4 was most attentive to the institutional stance on AI in higher education. They recalled, "No clear AI policy was announced at the university, and some professors expressed strong reservations about its use." This uncertainty led Participant 4 to proceed cautiously, stating, "I was unsure how to approach it and decided to err on the side of caution." Over the 16-week semester, however, they observed "rapid advancements in AI tools and insights from university seminars, workshops, and Zoom meetings." A cultural shift soon followed, as "even professors who were initially hesitant began showing us how AI could be used effectively in research and teaching." From the outset, Student 4 demonstrated confidence and clarity in their use of AI. Rather than posing generic queries, they crafted task-specific prompts such as, "Do you see in my notes any reference/alignment with teaching theories?" They engaged in iterative refinement by asking, "Let me know if I need further progression on any parts." Their phrasing, including "No hallucination please," reflected strong digital literacy and awareness of AI's limitations. Student 4 consistently positioned AI as a tool to assist rather than dictate.

By semester's end, Participant 4 articulated a philosophy of balance, asserting, "AI should serve as a collaborative tool, not a shortcut." Drawing on over twenty years of industry experience, they emphasized human foresight and practical knowledge: "My industry experience allows me to contextualize AI outputs, challenge its suggestions, and refine them with practical insights." To

preserve originality, Student 4 called for integrating "personal knowledge, emotional intelligence, and practical experience" with AI support, stressing the importance of positioning themselves as an academic committed to innovative and responsible AI integration.

5. Conclusion

In this study, a critical realist lens can be used to uncover deeper dynamics, shaping students' engagement with AI. This study was unique in its focus on doctoral students transitioning into their future roles as emergent educators, an especially small and underrepresented group within hospitality and tourism education. Their positioning allowed for a small-N design that emphasized analytic depth over breadth, producing insights only possible through their dual perspective (Buss, 2022) as both current learners and emerging academics engaged in their own identity formation. Through a critical realist perspective, the findings can be understood across three layers: structure (real), mechanism (actual), and outcome (empirical) (Danermark et al., 2019; Lawani, 2021). *Structures* refer to enduring social, cultural, and institutional conditions that enable or constrain action, while *mechanisms* are latent forces that become activated under certain conditions to produce outcomes. *Outcomes* are events that are experienced or observable. In this study, structure was the drastic academic environmental change with the emergence of AI, and outcomes were our findings regarding how doctoral students, as emerging educators, navigated their AI integration and identity transformation, which were observed through the clusters: *(1) Navigating AI-Integrated Tasks, (2) Reconciling AI Use,* and *(3) AI as a Cognitive Assistant*. Thus, our aim was to determine the underlying mechanisms through which AI structural changes in the environment produced the three observed outcomes.

The first mechanism centered on how participants viewed their own capabilities, associated with *(1) Navigating AI-Integrated Tasks*. They described testing AI-generated outputs, refining prompts, comparing results, and using AI to scaffold their thinking. This process reflects the concept of possible selves as a mechanism of identity exploration (Dunkel, 2000). Possible selves are mental representations of who individuals might become, hope to become, or fear becoming (Markus & Nurius, 1986). Doctoral students, as highly motivated self-developers, often hold strong visions of their future selves. Such visions can support openness to integrating AI into emerging academic identities. Moreover, hospitality as a discipline is characterized by openness and adaptability, and doctoral students in this field must learn not only to understand these values but also to embody them as emerging educators (Lashley, 2015). In doing so, they position themselves as adaptable representatives of the discipline while constructing their own authentic educator identities. This suggests that educational institutions should recognize students' possible selves and create spaces that encourage exploration rather than foster hesitation in response to new technologies.

The second mechanism, which relates to *(2) Reconciling AI Use*, was epistemic authenticity, or what constitutes legitimate academic authority. Early on, students were uncertain about how much AI use was appropriate without feeling guilty. This reflected implicit expectations to conform to traditional norms of independence, originality, and self-reliance (Bartsch et al., 2025). Within such norms, relying on AI seemed inauthentic or even deceptive. Yet as students observed faculty's AI use and growing institutional acceptance, their perceptions evolved. Authenticity in the digital era came to be understood less as individual output and more as the capacity to critically engage with intelligent systems. This perspective aligns with the emerging notion of hybrid intelligence, which emphasizes the integration of human and artificial capabilities to enhance scholarly work (Bartsch et al., 2025). Looking ahead, academic institutions may benefit from embracing the concept of hybrid intelligence as part of professional development for students and early career scholars, fostering a more adaptive identity.

The last mechanism, resulting in *(3) AI as a Cognitive Assistant,* involved shifting perspectives on AI. Initially, students experienced tension between AI's functional utility and the emotional discomfort it triggered. They acknowledged significant time-saving benefits, but these were often coupled with feelings of guilt, discomfort, or perceived dishonesty. This conflict reflects the belief that education is a space for rigorous cognitive training (Cook, 2025). When AI appeared to enable cognitive offloading rather than cognitive effort, students felt a loss of autonomy, which diminished their feelings of academic integrity, echoing past findings (Bozkurt, 2024). Over time, however, many reframed AI as a strategic assistant that enhanced rather than undermined learning. Institutions can leverage this perspective in reframing by presenting advanced technologies not as threats of cognitive deterioration, but rather as resources for cognitive partnership (Grinschgl & Neubauer, 2022; Li et al., 2025).

Collectively, these mechanisms directly reflected the doctoral students' identity work, as they sought to understand how AI was evolving alongside them and influencing their future roles as emergent educators within higher education. This self-examination not only elucidated their current positionality as doctoral students but also shaped how they envisioned applying these insights to teach the next generation within hospitality education (Caza et al., 2018). In hospitality and tourism management education, the integration of technology is critical (Başer et al., 2025; Busulwa et al., 2024; Huang, 2025), given the field's strong humanistic foundations, where adaptability, ethics, and service innovation remain central (Lashley, 2015). As emergent educators, these doctoral students bridge a unique gap, experiencing AI both as learners and as developing instructors, which mirrors the challenges hospitality institutions face in balancing technological advancement with authentic guest experience.

Insights from this study can inform hospitality curriculum design by encouraging students to use AI as a tool for deeper cognitive inquiry and critical reflection, or by incorporating AI-generated guest interaction cases for student assessment, while enabling educators to design reflective rubrics that scaffold this process. Together, these findings highlight a pathway for hospitality education where AI enhances, rather than replaces, human development, recognizing that as AI evolves, so do the students and educators.

5.1. Theoretical implications

This study examined how a critical realist approach, combined with Participatory Action Research (PAR), created space for students to explore their emerging educator identities by engaging with both observed experiences and deeper, often-unseen structures

through retroductive reasoning. Critical realism provided a guiding framework for students to examine their experiences within a multi-layered reality composed of the empirical (what is observed), the actual (what occurs), and the real (the underlying structures and mechanisms) (Lawani, 2021). Over time, students began to perceive, through their engagement with AI, not only their own development but also the subtle changes manifesting within themselves and the broader institutional environment.

As critical realism holds that social phenomena, such as actions, texts, and institutions, are shaped by underlying concepts and require both explanation of their material impacts and interpretation of their embedded meanings, students engaged in identity work by self-questioning and examining how they might enact personal change through reflective practice (Caza, 2018; Easton, 2010). What began as surface-level observations of AI use evolved into recognition of deeper structural and conceptual forces at work, illustrating Bhaskar's distinction between the intransitive (reality independent of belief) and transitive (conceptual) dimensions of knowledge, wherein iterative engagement with the real can lead to a revised understanding (Bhaskar, 2008; Elder-Vass, 2022; Zhang, 2023).

Retroduction as an analytical process extends the collaborative reflection of PAR. As inductive reasoning allowed student participant voices to shape the emergent categories, applying retroductive reasoning in this study revealed the institutional ambiguity and shifting norms within academic authenticity. This parallel reasoning demonstrates how critical realism enhances PAR by linking authentic lived experiences to the causation of underlying conditions in academia. Building through PAR, students were able to examine the impact of AI not only on higher education institutions but also within themselves, recognizing how they were contributing to change within the structural fabrics of academia through active learning (Parades-Chi & Castillo-Burguete, 2018). This co-creation process between students and AI-enabled PAR's self-reflective component to focus on internal examination through identity work, allowing individuals to question these shared capabilities and limitations of students and AI (Caza et al., 2018; Katoppo & Sudradjat, 2015).

While this research was conducted utilizing PAR to provide a collaborative framework for students 'reflective engagement and evaluation, retroduction offered the reasoning pathway to discover why certain phenomena emerged and how they can be interpreted (Belfrage & Hauf, 2017; Savin-Baden & Wimpenny, 2007). At its core, retroduction seeks to uncover the underlying conditions necessary for a situation to exist in its present form, while identifying the factors that enable the observed patterns to emerge (Boost et al., 2022). This study focused on uncovering the indivisible mechanisms shaping graduate students' experiences with AI, emphasizing the need for students to understand how and why they reached their conclusions.

Prior studies have largely described observable patterns or taken a macro-level perspective on AI use in academic writing (Chan & Hu, 2023; Malik et al., 2023), but this study extended the literature by linking students' micro-level reflective identity work to macro-level institutional norms and structures influencing AI's role in higher education. This connection illustrates how the integration of critical realism and PAR can bridge personal and institutional dimensions of technological acquisition, revealing deeper mechanics often overlooked in similar research.

By incorporating a PAR framework, this study was uniquely positioned to move beyond surface descriptions, revealing the structural and conceptual forces shaping graduate students' engagement with AI in higher education, an approach that was further reinforced by the Small-N sample size. Consisting of four graduate students, the sample, while a limitation for generalizability, aligned with PAR's emphasis on depth of engagement rather than breadth of perception. The group was purposefully selected to scaffold themselves through reflection-in-action (Savin-Baden & Wimpenny, 2007). Prior research indicates that small samples can still yield meaningful results under specific conditions, particularly when findings are triangulated and verified collaboratively (Young & Casey, 2019). In this study, all participants engaged in cross-checking emergent themes, ensuring validity despite the small sample. This approach demonstrated how PAR can illuminate the hidden mechanisms within critical realism, producing a richer contextual understanding of AI in higher education that would be possible through broader, but shallower inquiry, which offers a distinctively novel theoretical contribution.

5.2. Practical implications

AI, or artificial intelligence, has fundamentally altered how students and faculty produce and evaluate academic work. AI usage, as a whole, is enveloped in ambiguity and inconsistencies, lacking coherent guidance from macro-level governmental policies down to structured implementation at the school level (Lee et al., 2024). The absence of clearly defined structures, policies, and guidance on incorporating AI in educational settings has created a sense of uncertainty (Chan & Hu, 2024). While prior studies have examined struggles, comfort, and trust in AI collaborations, few studies have extended this to large language models (LLMs) in academic contexts (Kim & Cho, 2025). This research builds directly on that gap, showing how graduate students' reflective engagement revealed not only their evolving academic practices but also how institutional ambiguity intensified their uncertainty. In doing so, the findings highlight the diverse emotional responses students experienced and emphasize the urgent need for well-established frameworks governing AI use within academia and educational institutions.

This study was examined through ten assignments with differing goals and objectives, allowing student engagement with AI in varying ways and degrees, which enabled them to critically examine not only how, but why AI could be useful. As students continue to engage with AI through coursework, daily tasks, brainstorming, and reflection, their perceptions evolve. In this study, the initial fear and uncertainty surrounding AI transformed into a sense of empowerment (Chang & Sun, 2024). Depending on the user's familiarity and perspective, AI shifted from being seen as a cheating tool to a pedagogical assistant supporting critical and creative thinking. This developmental process, in which students reflected on why and how AI could reshape not only their own work but also practices across faculty and the wider academic institution, provides a clear instance of how PAR could create a replicable process for institutions to collaborate with students and harness their perspectives as a means of refining policy design.

Academics in institutional establishments have long been the driving force behind student educational growth, playing a crucial

role in the scaffolding process of student knowledge (McKay & Macomber, 2023). With AI's increasing presence in higher education, faculty now have the opportunity to guide students' perceptions through structured exposure and metacognitive experiences, allowing students to undergo the metamorphosis of AI alongside them while learning how and why to use these tools to further their knowledge. This transformation occurs when students gain repeated exposure, training, and opportunities to explore AI's capabilities, underscoring the importance of practice to build confidence and competence (Yeomans et al., 2025; Zulkosky et al., 2021). However, in order for students to grow and develop, faculty must not only be trained in AI but also encouraged to (a) foster experimentation with AI paired with reflective assignments, and (b) integrate AI pedagogically to support student growth and identity work, positioning AI as a scaffold rather than a shortcut. As educators provide this essential step, their efforts become foundational for broader institutional and policy implications.

In hospitality practice, the formation of AI-informed pedagogical identities among doctoral students is critical for cultivating future-ready leaders who can navigate and shape AI-enhanced service environments. As hotels increasingly adopt AI-enabled customer-service systems, predictive analytics, and personalized guest experience platforms, and as guests become more accustomed to interacting with these tools, the next generation of educators must be prepared to design learning experiences that mirror and anticipate these realities (Bilotta et al., 2021; Buhalis et al., 2024; Zhang et al., 2024; Zhu & Yu, 2025). When emerging educators learn to position AI as a cognitive assistant and ethical pedagogical partner, they are better equipped to embed AI into service-training curricula, simulated guest interaction scenarios, and experiential learning projects that foster students' adaptability to innovative technologies (Başer et al., 2025; Busulwa et al., 2024; De La Mora Velasco et al., 2025; Huang, 2025). Graduates who have repeatedly practiced working with AI in these ways are likely to adapt more quickly to AI-integrated roles in industry, supporting hospitality organizations' efforts to enhance employees' individual competitiveness and productivity through AI-supported job crafting and meaningful work, and potentially reducing turnover linked to difficulty adapting to new systems (Busulwa et al., 2024; Dogru et al., 2024; Tan et al., 2025).

The reality is that while institutions and policymakers are ultimately responsible for determining how AI is implemented in higher education, the absence of clear guidance and ongoing ambiguity will continue to erode both student and faculty trust over time. At the same time, students have the capacity to act as mediators, actively questioning societal norms and negotiating the place of emerging tools like AI in their academic and personal lives. While emotions regarding AI vary, students can serve as identity entrepreneurs, making intentional decisions that shape their evolving identities as they transition from student to future educators. This study revealed that unclear policies amplified students' confusion, directly shaping their identity work. This demonstrates the need to develop policies crafted through the lived experiences of students, not just technological functions (Agaton & Cueto, 2021). As shown in this study, PAR highlights how student voices can meaningfully inform institutional learning and guide policy development. Student voices are essential because they provide a foundation for balancing AI with human creativity and critical thinking while fostering policies rooted in shared responsibility across stakeholders (Boubker, 2024; Malik et al., 2023).

The integration of PAR-informed methodology in this academic context highlights its function as a reflective and analytic tool, where retroduction and critical realism together illuminate pathways for change. Students, through engaging with content co-created with AI, were able to propose recommendations for ethical and pedagogical integration. These recommendations can help institutions operationalize findings through initiatives such as reflective AI-labs, faculty-student working groups, or embedding PAR cycles into curriculum design. Moreover, they participated in shaping institutional narratives, positioning themselves uniquely as contributors to educational transformation.

5.3. Limitations & future research

There are limitations in this study, primarily related to questioning the small-N sample size of four individual doctoral students. While this presented an engaging and novel form of inquiry, the sample could be expanded in future research to include additional doctoral students and students at other educational levels, such as undergraduate and master's students. In addition, it would be beneficial to examine similar themes from the perspective of current professors or educators. A comparative study could offer greater depth and complexity if this research were replicated. Findings from such studies could be further developed by testing causal models in quantitative research designs, thus providing greater generalizability.

The student work analyzed in this study also revealed a strong willingness to engage in critical self-reflection. However, this may not represent the broader student population, particularly for those unfamiliar with AI or uncertain about its use. While this study provided a rich collection of qualitative data, identity work is inherently complex and multifaceted, often requiring analysis across different layers or dimensions (Caza et al., 2018). Reflection also has inherent constraints in capturing subconscious inferred dimensions of identity work, meaning that the process of asking students to self-report may not fully capture the depth of identity transformation.

Furthermore, the use of PAR-informed method challenges the line between researchers and students. Although PAR is strengthened by its collaborative nature, this same feature raises questions about the boundaries between researchers and participants. Interpretative bias may arise as researchers involved in PAR inevitably bring their philosophies, experiences, and ideologies into the process, factors that can influence everything from research design to data interpretation and reporting (Dickson & Green, 2001).

AI technologies continue to evolve rapidly, and with that, policies must also adapt swiftly to align with contemporary needs. AI-related policies, guidelines, and ethical frameworks are still being developed at this stage, placing us in a transitional period (Filguerias, 2022). Over time, as these tools mature, there may be a more transparent structure and established norms within educational institutions, potentially transforming the broader academic landscape.

Future research could assess these themes on a broader scale by evaluating students from various national and cultural

backgrounds. This would provide insight into how different institutional structures and policies influence students' and educators' engagement with AI. The degree of involvement, or lack thereof, within departments could significantly shape individuals' perceptions, attitudes, and positioning regarding AI (Li et al., 2025). Such a comparative inquiry could offer new insights into institutional logic.

Doctoral students provide a unique window into academia, representing both the student experience and an emerging educator's perspective. Their transition highlights the importance of understanding not only how to utilize AI effectively but also how to guide others in developing confidence and competence in its use to support deeper learning. Faculty, in turn, can incorporate AI within curriculum design to nurture students' AI literacy and reflective pedagogical growth. Beyond hospitality, these findings can be extended to leisure, sport, and tourism education, where AI's continued integration in service, experience management, and event design underscores the need for scaffolded approaches to teaching and applying AI in professional contexts (Charles et al., 2025).

From a longitudinal perspective, future studies could follow students throughout their doctoral journey and into their transitions as professional educators. This approach would provide valuable insight into their development and relationship with AI technologies over time. Additionally, future research could focus on specific AI tools to better understand how different platforms impact users, particularly in terms of cognitive load, ethical concerns, writing and grammar production, and shifts in behavior and acceptance (Burger et al., 2023). Examining how specific AI tools uniquely affect students and educators would further inform pedagogical and institutional frameworks.

CRediT authorship contribution statement

Midori Yamazaki: Writing – review & editing, Writing – original draft, Visualization, Validation, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Burcin Turkkan Zencirli:** Writing – review & editing, Writing – original draft, Validation, Investigation, Formal analysis, Data curation, Conceptualization. **Natasha Cruz Millheim:** Writing – review & editing, Writing – original draft, Validation, Investigation, Formal analysis, Data curation, Conceptualization. **Cynthia Mejia:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Conceptualization.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jhlste.2026.100599.

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