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How the Identity of Teachers Shifts in Generative Artificial Intelligence Teaching and Learning Environments

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Abstract. Since ChatGPT's 2022 launch, generative AI's influence on education has garnered global scholarly attention. It is regarded as a tool for personalized, interdisciplinary, and efficient learning, yet concerns about dehumanization and disruption of traditional roles persist. This study analyzes teacher identity transformation amid AI integration, based on relevant theories and secondary data. Structural changes include a triadic relationship among teachers, students, and AI as a meaning mediator. Frameworks by Gee and Watson reveal a threefold shift: from knowledge transmitters to tech-integrated educators, identity negotiators, and ethical guides. While AI fosters innovation, it also causes identity dissonance, technostress, and pedagogical autonomy challenges. Moreover, the digital divide and unequal access to AI training deepen professional inequality, particularly in under-resourced contexts. These dynamics suggest that teacher identity is being redefined in situated and complex ways. The paper concludes by calling for institutional support and reflective training to ensure that AI enhances rather than undermines the humanistic and ethical foundations of teaching. Teacher identity must be actively constructed, supported, and sustained in this context.

Keywords: Generative artificial intelligence, Teacher identity, Technostress, Educational transformation

1. Introduction

Since the release of ChatGPT in 2022, the impact of generative AI on education has become an emerging discourse, and a large amount of research has been conducted in this area. The discussion of this discourse is bifurcated, with generative AI bringing change to the education sector while raising several proble ms. Many researchers are passionate and positive about the impact of generative AI on educational aspects [1]. However, certain scholars express concerns regarding the dehumanization of pedagogical practices resulting from excessive reliance on technological integration [2].

Therefore, there are still many balance issues that need to be addressed. One of the foundations for addressing these issues is to identify the structural changes in education that have occurred due to the integration of generative AI into the field of education, including the transformation of the identities of teachers and students. According to Beijaard et al. [3], the role of the teacher is crucial

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in shaping students' learning experience, and the teacher's professional role is also one of the most important components of teachers.

This paper will focus on teachers' identity in the new generative AI discourse. Firstly, the paper will systematically explain the new discourse and review theories related to teacher identity. The paper will then integrate a range of secondary sources to discuss the transformation of teacher identity in higher education in the new context.

2. Generative AI and education

2.1. Generative AI

In 2022, U.S. tech giant OpenAI released ChatGPT, a groundbreaking generative AI product, and this pioneering chatbot spread rapidly around the world and quickly generated buzz. The deployment of ChatGPT represents a significant milestone in the advancement of generative artificial intelligence, constituting a pivotal breakthrough in the field of machine learning and natural language processing. It is quickly becoming disruptive in many industries, including education. Various powerful Generative AIs followed, including Claude, Midjourney, DeepSeek, etc.

In their work, Feuerriegel et al. [4] systematically define generative AI and suggest four current limitations. Generative AI refers to computational technologies that can generate seemingly innovative and meaningful content from training data, including text, images, or audio. This technology's widespread dissemination is revolutionising how people work and communicate. Generative AI systems can be used not only for artistic creation, such as creating new text that mimics a writer or new images that mimic an illustrator, but also as intelligent question-and-answer systems to assist humans. AI has evolved from primarily analytical decision-making applications to include generative content creation. Although generative processes remain probabilistic and thus analytical, they produce creative and artistic outputs by novelly combining elements.

However, there are still some limitations of generative AI; firstly, generative AI can create a degree of bias that can affect the fairness of decision-making [5]. Secondly, generative AI models may produce outputs with errors [4]. Furthermore, generative artificial intelligence models, systems, and applications may infringe upon intellectual property rights by producing derivative works or replicas of pre-existing content without obtaining authorization or providing remuneration to the original authors [6]. Finally, since generative AI development requires a lot of energy and power, this may pose a more serious environmental problem [7].

2.2. The impact of generative artificial intelligence on education

Yu & Guo [8] enumerate the current applications of generative AI within the field of education; firstly, generative AI may provide an intelligent teaching system, which generates personalised course content and teaching plans based on the students' learning process, enabling personalised teaching. Furthermore, the system can dynamically calibrate the pedagogical complexity and curriculum content based on the learner's academic metrics and proficiency level, thereby delivering tailored instructional activities and practice exercises aligned with the student's individual learning trajectory. Secondly, generative AI can provide intelligent homework correction, and the system can automatically analyse students' homework, judge its correctness and incorrectness, and provide corresponding scores and suggestions. The system can automatically detect various types of students' assignments, including multiple-choice, fill-in-the-blank, short-answer, and expository questions, to achieve efficient, accurate, and fair homework correction. Furthermore, there exists the

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potential for an intelligent tutoring system leveraging generative artificial intelligence, which autonomously synthesizes suitable instructional content and pedagogical strategies through the analysis of students' learning profiles and individualized requirements. The system can automatically adjust the tutoring content and difficulty according to students' learning performance and level, and provide students with appropriate tutoring tasks and practice questions.

2.3. Impact of generative AI on the reform of educational practices

In comparison to the role of generative AI in advancing educational technology, Watson's [9] research emphasizes the structural implications of generative AI on pedagogical frameworks and classroom dynamics. Watson [9] describes generative AI as a mediator of meaning, and as he likens it, generative AI is like a pottery wheel. The design of the potter's wheel - its rotating platform and motor - represents the technical design of the AI. However, the potter's wheel alone cannot create anything; the potter's hands are needed to shape the clay. This interaction mirrors the way generative AI works: the user provides cues (like the potter's hand), and the generative AI responds by shaping the output according to its internal processes. Importantly, this process is reciprocal - just as the potter adjusts his movements in response to the clay, the user adjusts their cues in response to feedback from the generative AI [9].

Therefore, generative AI can change the classroom or the structure of education, and the original dichotomy of teachers and students in the school becomes a triadic structure of teachers, generative AI and students. Generative AI is a mediator of meaning and a bridge between teachers and students. Moreover, according to Watson [9], identity is at the centre of an individual's relationship and interaction with generative AI through the mediation of meaning. The discussion of identity will be focused on in the second half of this article, but for now, let us focus on the policy changes that generative AI may bring to the education sector.

The study by Chiu [10] finds that ChatGPT and Midjourney have changed teachers' perceptions and beliefs about education in the GenAI domain. They have three separate impacts on school practice and policy. Firstly, ChatGPT provides some information or interdisciplinary knowledge that teachers were unaware of. Therefore, teachers should hold an attitude of continuous learning consistent with a growth mindset. Chiu [10] argues that teachers should be humble and willing to learn with their students. This means that teachers who know their students are more likely to facilitate student learning or use GenAI to facilitate interdisciplinary teaching. Additionally, the research found that the current required knowledge for teachers differs from the past, with artificial intelligence, digital and media literacy, and critical thinking skills being the main knowledge needed for learning GenAI [10]. To address GenAI's future needs, interdisciplinary teaching must overcome discipline-specific silos.

3. Generative AI and new teacher identity

3.1. Clarify traditional/old teacher identity

In the days before generative AI, people could intuitively feel what it meant to be a teacher, as this is perhaps what many contemporary people have experienced. In my personal experience, ten years ago, or before generative AI had a significant impact on the fields it does now, teachers meant a particular kind of authority; they were the transmitters of knowledge, whether indoctrinating or inspiring, and the students in the classroom could only get authoritative expertise from the teacher. In academia, teacher identity has also been defined in many ways. According to Gee [11], teacher

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identity is 'a particular kind of person' or several different kinds of person in a given situation. In contrast to this view, Hoffman-Kipp [12] suggests that teacher identity is not a fixed point at which an individual interacts with the world, but rather an intersection of individual, pedagogical, and political engagement in a broader socio-political context. This also aligns with Watson's [9] view that identity is dynamic, co-created through experience, and a process constructed and enacted over time rather than fixed.

Therefore, traditionally, teachers' identities are firstly influenced by the context in which they live, including culture, race, gender, etc. Secondly, another factor affecting teachers' identity is their teaching methods, which is the point we will discuss. At the traditional level, teachers' pedagogy is divided into two main categories: heuristics and indoctrination. However, these two influences have much in common, as the way knowledge is transmitted is from the teacher to the student.Generative AI and student interactions are reshaping teacher identity [13].

3.2. The transformation of teacher identity

The rapid integration of generative AI into education reshapes pedagogical methods and fundamentally transforms teachers' identities. Huo and Siau [13], through a mixed-methods study, investigated the evolving nature of teacher identity in an AI-mediated educational context. They identified a threefold transformation in the roles and self-perceptions of teachers, shaped by technological, social, and ethical dimensions.

Firstly, with the emergence of powerful generative AI tools like ChatGPT, teachers must adopt the role of Tech-integrated Educators. This means they must move beyond traditional content delivery and become proficient in using AI to assist instruction, assessment, and student engagement. A UK survey by the National Literacy Trust found that teacher use of generative AI rose from 31% in 2023 to 47.7% in 2024. Teachers must master prompt engineering, AI-supported grading tools, and platforms that facilitate adaptive learning. Huo and Siau [13] argue that this shift demands technical competence and a reconfiguration of pedagogical approaches. Teachers must learn to critically evaluate AI-generated content, mitigate AI biases, and design learning activities that complement rather than compete with AI capabilities. However, this new techno-centric identity may clash with the foundational beliefs of educators trained in human-centred pedagogies, creating internal and professional tension.

Secondly, teachers must become Identity Negotiators. This role emerges from the conflict between educators' teaching philosophies and external expectations. Despite some educators' skepticism towards generative AI, pressures often drive AI adoption. This results in a conflict between what Higgins [14] terms the "ideal self" (what teachers personally aspire to be) and the "ought self" (what others expect them to be). This identity dissonance can be psychologically taxing, leading to emotional exhaustion or role confusion [15] In such circumstances, teachers must navigate complex identity landscapes, balancing their humanistic convictions with the pragmatic need to remain professionally relevant in a technologized world [16].

Thirdly, teachers are increasingly called upon to serve as human-centred guides. AI tools provide efficiency and information but lack empathy, ethical reasoning, and understanding of student well-being. Teachers must address the emotional and ethical gaps in AI systems. This means exercising moral judgement in the face of AI misuse, promoting academic integrity, and fostering a culture of critical thinking among students [17]. Teachers are no longer simply knowledge deliverers, but ethical agents who must interpret and contextualize AI outputs, and, more importantly, guide students in developing responsible and reflective AI use practices.

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Teacher identity transformation varies based on digital access, generational differences, and institutional support. Teachers in under-resourced settings may face disproportionate challenges due to limited AI training or infrastructure, leading to increased technostress and professional alienation [18]. Furthermore, this transformation also intersects with gender, age, and socioeconomic background, making identity negotiation a deeply situated and individualized process.

This evolving identity is not necessarily negative but requires systemic acknowledgement and support. Professional development should integrate reflective practice, ethical literacy, and emotional resilience, surpassing technical training. Teacher education must cultivate hybrid identities in educators, combining technological proficiency with humanistic principles. As Gabbiadini et al. [16] suggest, the future of education lies not in replacing teachers with AI, but in redefining what it means to be a teacher in partnership with AI.

In sum, the transformation of teacher identity under the influence of generative AI is multifaceted and complex.Teachers are redefining their roles amid technological advancements. Addressing the inherent tensions in this shift is crucial to ensure AI integration supports, rather than hinders, educational professionalism and teacher well-being.

3.3. Potential problems that a new identity may bring

While generative AI offers opportunities to enhance teaching and learning, the resulting shift in teacher identity brings several potential challenges. As educators transition from traditional knowledge transmitters to AI-integrated facilitators, they may experience significant self-discrepancies—conflicts between their actual, ideal, and ought selves [14]. Teachers may value human-centered pedagogy but face external expectations to integrate AI tools like ChatGPT. When their current capabilities (actual self) fail to meet these expectations, this mismatch can trigger technostress—defined as the psychological strain caused by adapting to technology—thereby reducing professional confidence and increasing emotional exhaustion [13].

One prominent issue is the erosion of pedagogical autonomy. With AI increasingly influencing lesson planning, feedback, and even assessment, there is a growing concern that teachers may become passive implementers of algorithmically generated content rather than active designers of learning [16]. This may undermine teachers' agency and diminish their professional role from a curriculum creator to an AI manager, a shift that some may find disempowering. Gabbiadini et al. [16] suggest that the integration of intelligent systems in education may induce "identity insecurity" among educators as they navigate their roles in technology-driven learning environments.

The digital divide refers to the gap between individuals or groups regarding their access to, use of, and ability to benefit from digital technologies—such as computers, the internet, and other information and communication technologies (ICTs). According to Selwyn [19], the digital divide should not be understood merely as a technological issue of access, but as a socially structured phenomenon. He argues that digital inequality is deeply connected to broader patterns of social exclusion and reflects existing power relations in society.

Additionally, disparities in technological access and training deepen professional inequality. Disparities in AI tool access and upskilling opportunities exist among educators, particularly in under-resourced educational settings. This digital divide can lead to uneven adaptation, reinforcing feelings of inadequacy among some educators [18]. As Tarafdar, Cooper, and Stich [15] further explain, while some teachers may experience “techno-eustress” that fosters growth, others may fall into “techno-distress,” characterized by burnout and withdrawal from innovation.

AI-mediated classrooms present novel ethical issues, including authorship, student misuse, and equitable AI-assisted evaluations. These unresolved tensions challenge educators' professional

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responsibility [17]. Without proper institutional support and space for critical reflection, the new AI-influenced identity may not empower teachers but create further fragmentation in understanding their roles.

4. Conclusion

Generative AI's integration into education reshapes teaching methods and teacher identity. While AI tools offer pedagogical innovation, they also present challenges beyond technical adaptation. Teachers must now navigate roles requiring emotional labor, critical thinking, and institutional support. However, this transformation risks amplifying inequalities, especially in under-resourced settings. Identity dissonance, techno-distress, and ethical ambiguity challenge professional responsibility. This study's limitations include a lack of empirical data. Policymakers, institutions, and educators must critically reflect on teacher identity to ensure meaningful AI integration without compromising the profession's core values.

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