International Journal of TESOL Studies (2025)
250626, 1-25 https://doi.org/10.58304/ijts.250626

Article

Investing in Critical Digital Literacies Involving Generative AI: A Multiple-case Study of Second Language Novice Teachers

Yue Zhang*
The Education University of Hong Kong, Hong Kong, China

Kenan Dikilitaş
University of Bergen, Bergen, Norway

Received: 16 April, 2025 / Received in revised form: 20 May, 2025 / Accepted: 23 June, 2025 / Available online: 3 July, 2025

Abstract
Understanding teachers' digital literacies involving generative AI (GenAI) from a critical perspective, this article reports the findings of a multiple-case study of two Hong Kong novice teachers of different sociocultural and educational backgrounds. Drawing on the model of L2 investment, we triangulate the data from individual in-depth interviews and artifacts and examine the diverse critical digital literacies of two novice teachers, who acquire varying levels of symbolic and material resources and negotiate multiple teacher and social identities in their current and imagined teacher communities as different ideological spaces. A conceptual model that links the model of L2 investment and the notion of critical digital literacies involving GenAI is proposed to understand L2 teachers' investment in their learning-to-teach practices in the era of GenAI. The findings illustrate a need for stakeholders involved in L2 teacher education to include critical digital literacies involving GenAI as a pedagogical goal and recognize and support the complex development of novice teachers' intertwined identities, beliefs, and values as they engage with GenAI.

Keywords
Novice teacher, GenAI, GenAI literacies, critical digital literacies, teacher identity, generative AI, ideology

1 Introduction

The growing integration of generative AI (GenAI) into second language (L2) education underscores the need to explore the impacts of GenAI use on L2 teacher education. In Hong Kong, while GenAI has become a necessity of education at all levels, tensions exist surrounding novice teachers' (NTs') learning-to-teach practices that often involve GenAI, both in L2 learning and pedagogy learning contexts

*Corresponding author. Email: yuezhang@eduhk.hk

and may influence NTs' identity formation and their development of critical digital literacies. Research into GenAI practices among teachers is still in its early stages, and there is limited evidence regarding how it influences the process and practices in teacher education. This makes the present study a timely contribution to understanding how GenAI could be reshaping educational practices. Accordingly, we focus on the issues of professional teacher identity and the readiness of NTs to use GenAI ethically and responsibly and aim to provide theoretical and practical insights into teacher education in the age of GenAI.

The rapid development of GenAI might offer implications for language education, fundamentally reshaping both pedagogical practices and the very nature of what it means to be a language teacher (Huo & Siau, 2023). As GenAI tools such as ChatGPT gain widespread adoption in educational contexts, researchers and educators alike are increasingly concerned about their impact on teachers' views and beliefs about education (Chiu, 2024), teacher-student relations (Luo, 2025), and professional identities (Guan et al., 2024). On the one hand, these technologies offer opportunities for efficiency and innovation; on the other, they pose challenges that may disrupt teachers' sense of agency and self-efficacy and triggers the emergence of ethical issues. Even when experienced teachers incorporate GenAI into teaching, they often face ethical concerns related to data privacy, academic integrity, and the authenticity of student work (Fassbender, 2024). These issues raise important questions about how teachers, whether novice or experienced, position themselves in relation to GenAI-driven instruction and whether they perceive these tools as enhancing or diminishing their professional agency.

GenAI-powered tools like ChatGPT have the potential to streamline various instructional tasks, such as providing personalized feedback, automating grading, and assisting in lesson planning, thereby allowing teachers to focus on more complex aspects of student engagement, teacher-student interaction, and pedagogical design (Grassini, 2023; Guan et al., 2025; Markel et al., 2023; Perkins et al., 2024). Beyond practical efficiencies, these tools may also contribute to enhancing teachers' professional identity, fostering greater creativity and innovation in instructional strategies (Sharma & Yadav, 2022). However, despite these advantages, concerns persist regarding the potential consequences of integrating GenAI into PST education. Some studies suggest that teachers may experience feelings of incompetence or a diminished sense of control when using GenAI-driven tools, particularly if they lack sufficient training or familiarity with the technology (Hill & Uribe-Florez, 2020). Negotiating affordances and constraints of different GenAI tools, PSTs perform teacher, language, learner, content creator, and social identities simultaneously (Zhang et al., 2025). This multiple-case study of five Hong Kong undergraduate PSTs indicates that while GenAI tools provide a space for PSTs to engage with translanguaging practices in English-only EMI contexts, the tools can serve as the provider of native norms and knowledge. Integrating GenAI into teacher education without a critical lens can reinforce PSTs' over-reliance on the tools. NTs may also experience identity conflicts and crisis between their identities as L2 learners and teachers using GenAI (Guan et al., 2024).

The extent to which teachers embrace or resist GenAI reflects not only NTs' comfort with technology but also their broader conceptions of what it means to be a teacher in a GenAI-mediated world. Thus, adopting the model of L2 investment (Darvin & Norton, 2015), and Darvin's (in press) understanding of critical digital literacies (CDL) involving GenAI, this study aims to explore two NTs' investment in CDL practices involving GenAI by addressing two questions based on their recounted stories:

1. To what extent do novice teachers invest in their teacher identities in their learning and teaching practices involving GenAI?
2. How does their investment create opportunities for the development of critical digital literacies involving GenAI?

2 Literature Review

Understanding the need to research NTs' use of GenAI tools, we first introduce NTs' CDL involving GenAI using a multiple and critical lens in section 2.1. These two lenses are particularly important given the development of GenAI with unpredictable outcomes based on the Internet, social media, and large language models in unique social contexts. Then, section 2.2 proposes the model of L2 investment as the theoretical framework to explore NTs' critical digital literacies. It ends with two research questions that unfold ways in which NTs engage with GenAI-facilitated learning-to-teach practices and how identity, capital, and ideology, three core components in the model, shape NTs' investment in L2 learning and teaching practices involving GenAI to develop critical digital literacies.

2.1 Developing NTs' critical digital literacies involving GenAI

This section reviews existing theoretical and empirical work on the development of digital literacies involving GenAI. It outlines two core aspects of such development as the pedagogical goal for NTs: multiplicity and criticality.

2.1.1 Multiplicity

A binary understanding of literacy can be found in existing literature. First, the singular form of literacy refers to "a uniform set of techniques and uses of language, with identifiable stages of development and clear, predictable consequences for culture and cognition" (Collins & Blot, 2003, pp. 3-4). This definition has been widely adopted in literacy development of NTs to obtain skills and knowledge, influencing most teacher education programs to be largely oriented towards such acquisition, with a lack of focus on critical aspects such as professional identity construction (De Costa & Norton, 2017). This definition fits the use of regular curation AI, which uses machine learning to label patterns in source data and produce programmed responses reliably, consistently, and predictably, and produces consistent and predictable results (Lim, 2024).

On the other hand, "literacies" are "intrinsically diverse, historically and culturally variable, practices with (AI) texts (and multimodal output)" (Collins & Blot, 2003, p. 4). As an umbrella term that includes the "communicating, relating, thinking and 'being' associated with digital media", digital literacies highlight ways in which people draw on technological tools such as GenAI tools in relation to each other in digital technological practices (Jones & Hafner, 2012, p. 13). This notion has transformed the epistemological and social landscape and identifications of citizenship (Darvin & Hafner, 2022). The social origin of literacies can be traced to Kaplan's (1995) work on "e-literacies" that underpins the unequal power relations between people of various socioeconomic status and their varied access to electronic texts and reading and writing resources. These notions are particularly appropriate to understand GenAI, which includes a multitude of parameters with unpredictable results that are uniquely reconstituted digital artifacts (e.g., texts, images, or in multimodal combination) in social contexts (Lim, 2024).

The increasing diversity of communication channels, along with the growing cultural and linguistic complexity of the constantly changing world, necessitates a more expansive understanding of literacy beyond traditional language-based approaches and addresses the importance of navigating diverse linguistic and cultural contexts as a fundamental aspect of students' professional, civic, and personal lives in multiliteracies (Cope & Kalantzis, 2010; New London Group, 1996). Integrating multiliteracies into pedagogy allows NTs to meet two key objectives of literacy education: gaining access to the evolving discourses of work, power, and community, and developing the critical awareness needed to shape their social futures and attain meaningful career opportunities. The second goal points to the second lens: criticality.

2.1.2 Criticality

In addition to the multiplicity, a critical approach to education was originally built on critical theory which challenges constructs such as neutrality and celebrates subjectivity, sociality, and various ways in which individuals' understandings of the world can be constructed and co-constructed by contexts shaped by ideologies in a given society (Habermas, 1976). "Critical" in a critical approach then refers to "a focus on how dominant ideologies in society drive the construction of understandings and meanings in ways that privilege certain groups of people, while marginalizing others" (Hawkins & Norton, 2009, p. 31). This lens is crucial in L2 teacher education because L2 teachers, as the first contacts that newcomers (e.g., immigrants) have in the target language community, are the social mediators of communication. As critical L2 teachers can make transparent the complex relationships between majority and minority speakers and cultural groups (Hawkins & Norton, 2009), a lack of critical awareness may prevent teachers under unfair ideological impositions from exerting their agency (Canagarajah, 1999). Critical awareness is a necessity for teachers to become agents of change in their own classrooms and communities.

Following critical theory, literacy is thus neither neutral nor singular. As a convergence of both digital and critical literacies, Critical Digital Literacies (CDL) provides a new lens for investigating how power operates in the process of digital production, consumption, and socialization.

> As a convergence of both digital and critical literacies, critical digital literacy examines how the operation of power within digital contexts shapes knowledge, identities, social relations, and formations in ways that privilege some and marginalize others. It equips learners with the tools to examine the linguistic and nonlinguistic features of digital media, to identify their embedded biases and assumptions, in order to access the truth. (Darvin, 2017, p.18)

This conceptualization is particularly useful to understand the use of GenAI. Acknowledging CDL as "the practice of questioning and challenging how power functions in the perpetuation of ideologies, inequalities, and exclusion within digitally mediated spaces", Darvin (2025a) proposed three key dimensions of CDL that might emerge in relation to GenAI (p. 45).

The first, *materiality*, refers to the physical and technological attributes of digital devices that influence learners' access to and interaction with GenAI tools. This aspect is particularly significant in language education, as disparities in technological access, both between the Global North and the Global South (O'Regan & Ferri, 2025) and within regions of the South itself (Zhang & Liu, 2023), can create economic divides among learners. These disparities, in turn, shape their language development and literacy practices.

The second dimension, *indexicality*, captures how GenAI-generated data encodes specific representations of voices and positioning that may not necessarily align with users' identities. As technologies produce and circulate discourse in an implicit manner, GenAI tools based on large language models can be used in a way that reproduce stereotypes and biases, making it crucial to scrutinize various ways in which GenAI tools are used in learning and teaching (Jenks, 2025). Without a foundational understanding of GenAI principles and ethical considerations, NTs may struggle with identity tensions or conflicts when integrating GenAI into their teaching (Guan et al., 2024; You & Zhang, 2025).

Finally, GenAI outputs inherently reflect dominant *ideologies*, as they are shaped by the underlying datasets that define what is recognized as legitimate knowledge. For NTs, ideology plays a crucial role in their professional development, significantly influencing their learning-to-teach experiences and identity formation across varied educational contexts (Zhang, 2025; Zhang & Darvin, 2025). By framing CDL through these three interconnected dimensions, this paper underscores the need for critical engagement with GenAI in education. It adds a critical lens to GenAI literacies as multiple to explore the extent to which NTs have a critical awareness of the power structures embedded in GenAI-driven literacy practices.

2.2 Theoretical framework: the model of L2 investment

Having discussed the lenses of criticality and multiplicity to develop CDL involving GenAI, we now introduce how we understand NTs' GenAI-facilitated CDL (GenAI-CDLs) using the model of L2 investment as the theoretical framework. We synthesize and elaborate on the definitions of terms and the intersection of identity, capital, and ideology.

2.2.1 Conceptualization of L2 investment

Norton's (2013) concept of investment explains how learners engage in language and literacy practices to enhance their social and cultural capital. Originally introduced as a socially situated construct, investment was intended to capture the learner's relationship with "the changing social world" (Norton, 1995, p. 17). Given that GenAI tools also serve as a bridge connecting NTs with their imagined teaching communities through language and literacy practices, this concept of investment provides a framework for understanding how NTs commit to these practices and construct their professional identities. In doing so, they position themselves as both GenAI users and educators who have the authority to integrate GenAI into their teaching critically (You & Zhang, 2025).

Drawing on Norton's theoretical foundation, investment is defined as "the commitment to the goals, practices, and identities that constitute the learning process and that are continually negotiated in different relations of power," a process that is neither linear nor fixed but constantly evolving across different power structures (Darvin, 2019, p. 245). This perspective aligns with the objectives of this study, which seeks to explore the extent to which NTs develop potentially different GenAI-CDLs. Investment, in this context, encompasses both learners' participation in identity-negotiating practices and their awareness of these engagements as a means of asserting legitimacy. Just as L2 learners acquire diverse digital literacies and multiple identities (Darvin & Norton, 2015), L2 users' socialization is mediated by digital technologies, leading to an ongoing transformation and diversification of digital literacies (Jones & Hafner, 2021).

2.2.2 The model

The L2 investment model (Figure 1) was developed to illustrate how habitus is shaped by structural forces that are maintained by ideological systems.

Figure 1

A Model of Investment (adopted from Darvin & Norton, 2015, p. 42)

The commitment of L2 NTs mirrors Norton's concept of *identity* as the understanding of one's relationship with the world, its temporal and spatial structuring, and the perception of future possibilities (Norton, 2013). This definition aligns with Yazan's characterization of teacher identity as 'multifaceted, flexible, dynamic, paradoxical, relational, and context-specific' (2019, p. 3). Such a theorization of identity and the investment model have been embraced to explore the educational objectives of NTs (Waller et al., 2017), professional identity of university EFL teachers (Teng & Yip, 2025), L2 learners' CDL development (Liu, 2023), digital literacies in the wild (Liu, 2025; Liu & Darvin, 2024), and the negotiation of language teacher and other social identities and ideologies (Zhang, 2024; You & Zhang, 2025; Zhang & Darvin, 2025) and teacher identities (De Costa & Norton, 2016). It is particularly helpful to examine the link between learner commitment and teacher identity (Norton, 2017) and how learners' linguistic identities can lead to their silencing in educational settings (Darvin & Norton, 2018).

Recognizing *ideology* as a contested space where dominant, residual, and marginalized discourses compete allows for an understanding of identity that is both shaped by existing structures and capable of reshaping them through agency (Darvin & Norton, 2015). This notion enables scholars to critically examine how certain practices, and semiotic systems privilege some groups while marginalizing others (Darvin, 2015). It also sheds light on how ideological mechanisms contribute to inclusion and exclusion (Darvin & Norton, 2017a, b). NTs negotiate their own pedagogical and language beliefs in varied ideological spaces (De Costa & Norton, 2017), making it necessary for PST education to investigate ideological impositions in individual NTs' contexts of learning-to-teaching (Canagarajah, 1999). NTs may choose not to invest in such learning-to-teach practices if their pedagogical beliefs are challenged by important others (e.g., their teacher educators) (Zhang, 2024) or when social ideologies (e.g., patriarchal ideologies) shape the way they invest in their teacher identities (Zhang & Darvin, 2025).

From a poststructuralist viewpoint, L2 NTs may or may not engage in the target CDL practices using GenAI, believing that this involvement will broaden their access to symbolic and material resources, thereby enhancing the value of their cultural *capital* (Norton, 1995, p. 17). While (NTs as L2) learners may be motivated to learn an L2, they may not necessarily invest in L2 language and literacy practices (Darvin & Norton, 2015). Similarly, even though NTs' learning motivation can be enhanced by holistically integrating GenAI in English education (Guan et al., 2025), the extent to which NTs actually invest in GenAI-facilitated learning practices can be influenced by their access to material/economic, cultural, and social resources (capital). As youth, NTs of varied social classes may develop divergent digital literacies and dispositions towards technology (Darvin, 2018).

Similarly, GenAI has the potential to reinforce and normalize biases if used uncritically in research on identity and positioning (Keyes et al., 2021). Therefore, a critical perspective is essential when analyzing NTs' engagement with GenAI to uncover how they invest in GenAI-supported learning and teaching practices. Furthermore, by interrogating ideological structures, scholars can examine how learners position themselves, how others position them, and how power dynamics shape these processes (Darvin & Norton, 2015). This model is applied in the present study to investigate how NTs, as GenAI users, develop digital literacies and exercise agency in reshaping their learning environments.

Despite the growing presence of educational technology, research indicates that pre-service teachers and early-career educators frequently underutilize digital tools (Dawson, 2008) despite the need for both pre-service teachers (Burnett, 2011; Akayoglu et al., 2020) and NTs (Deiniatur & Cahyono, 2024) to engage in digital literacies in ways that reflect and uphold their identities in specific contexts for CDL development. This gap may be attributed to a misalignment between teacher education programs and the technological expectations of contemporary classrooms (Ottenbreit-Leftwich et al., 2010). Although novice teachers are generally ready for the use of GenAI tools in their daily lives, the effective and ethical use of such tools in their teaching practices was not found, given the lack of knowledge and readiness (Moorehouse, 2024).

While using GenAI tools, novice teachers tend to use them for demonstration only rather than for enriching teaching purposes, for inquiring rather than discussing (Jin et al., 2025), demonstrating their lack of pedagogical/ pedagogical content knowledge (Nazari et al., 2019) and over-reliance on the tools, negotiating learner identities (You & Zhang, 2025). Even among the limited number of NTs who attempt to integrate technology into their teaching, many report encountering technical difficulties and pedagogical uncertainties, as they find themselves navigating the complexities of instructional design while simultaneously developing their teaching identities (Sang et al., 2010). Given that technology use directly shapes a teacher's self-concept and pedagogical identity (Beijaard et al., 2004), it is essential to explore how NTs engage with GenAI tools and how this engagement influences their evolving sense of teacher identity and professional investment. Unlike experienced educators, NTs are still in a critical stage of teacher development, actively negotiating their beliefs, values, and instructional practices. Thus, understanding their perceptions, experiences, and challenges with GenAI is crucial for shaping future teacher training programs that effectively prepare them for GenAI-driven educational environments.

3 Methodology

This study adopts a multiple-case method to explore and understand how two NTs of different sociocultural backgrounds and learning experiences develop CDL in different programs in the context of Hong Kong.

3.1 Research design

A multiple-case study is designed to investigate a specific phenomenon through the lens of a small number of different cases studied in depth with data collected through various means to provide an understanding of individuals' experiences, insights, and development within a particular educational or social context (Duff, 2014). This study is a qualitative, interpretive case study that tends to be sociocultural in orientation, paying attention to different ways in which language and literacy practices are mediated, performed, and understood. This method can be particularly useful for understanding complex issues such as NT investment at the intersection of three different components. A case in this study is a NT, but it can also be an individual school, policy, communication in a specific setting, or language shift (Duff, 2018).

3.2 Participants

Our participants are two Chinese postgraduate students enrolled in two full-time education programs in two public universities in Hong Kong. They both have prior teaching experience before enrolling in the program. These two cases were selected because they have relatively few GenAI using experiences before their enrollment, according to their self-reported information provided during the research debriefing section, enabling a comparison of how they develop GenAI-facilitated CDL in potentially different ways. Both NTs are full-time postgraduate students in teacher education programs with teaching experiences, which are required for them to be admitted to these programs in Hong Kong. These two cases were purposively selected due to their different linguistic, educational, and social backgrounds and motivation to teach English upon graduation. Aiming for transferability and trustworthiness instead of generalizability/representativeness (Lincoln & Guba, 1985), the focal cases and the research context are introduced in great detail for readers to determine the extent to which results and interpretations can be transferred in their own contexts (Table 1).

Table 1

Profiles of Cases

Category	Ray	Jane
Gender	male	female
Age	29	34
L1	Cantonese	Mandarin
L2	Mandarin	English
L3	English	/
Year of Study	4	1
Study	Ph.D. in Education	M.Ed. in English for Academic Purposes
Degree	B.A. & B.Ed., M.Phil.	B.A.

Ray was born and raised in Hong Kong, speaking Cantonese as his mother tongue. He learned Mandarin and English in his early years of study due to "biliterate and trilingual" policy that aims to develop students' proficiency in writing English and Modern Standard Chinese (MSC, with traditional characters), and their capability to communicate in the local variety of Cantonese Chinese, the international language of English, and the national common vernacular of Mandarin Chinese (Evans, 2013). With an aim to be an English educator, Ray obtained his B.A. and B.Ed. in the field of English language education. While working as a full-time secondary school teacher for four years, to better prepare himself for his career, he obtained an M.Phil. degree in English and was in his fourth year of study in a Ph.D. in Education program during the data collection period.

Speaking Mandarin as the first language (L1) and English as a foreign language, Jane, the second case in this study, was born and raised in mainland China. Prior to coming to Hong Kong for an M.Ed. in English degree, she had never encountered GenAI in her life. Akin to Ray, Jane has also worked as a secondary-school teacher of English in mainland China for years. She obtained her B.A. in Education in mainland China and applied for the M.Ed. in Education in Hong Kong as a part of her career development as an English language teacher. As a cross-border student and PST in Hong Kong, Jane actively took courses and attended seminars, workshops, and other training sessions to develop her digital competencies and literacies.

3.3 Context

In Hong Kong, the emergence of GenAI in education has created a pressing need, yet it has also led to diverse attitudes and perceptions surrounding these tools. A significant challenge is the lack of uniform policies or guidelines that govern their use at institutional and regional levels (Yigitcanlar et al., 2023). This inconsistency not only drives our research, aimed at providing insights for policymakers, but also highlights the issue of linguistic hierarchies in the region. Such hierarchies tend to marginalize English that is influenced by Chinese, influencing students to have negative perceptions of their own local English and negative attitudes towards the users of "non-standard/native" English varieties without pedagogical interference (Gonzales & Zhang, 2025). This perception reinforces the privileged status of English and promotes an "English-only" discourse (Jiang et al., 2024). Furthermore, L2 teachers may unintentionally perpetuate societal stereotypes against ethnic and racial minorities by pressuring them to alter their "accented" English, reflecting underlying structural biases and language ideologies (Gu, 2018). Teachers' use of GenAI tools may reproduce such biases and ideologies due to the in-built ethnic and racial biases and stereotypes in GenAI output. As GenAI has been primarily developed using large language models based on English data from the Global North, its implementation intertwines with these critical societal issues in the Global South, necessitating users to critically assess the fairness, bias, and ethical implications of these models (Jenkins, 2025).

3.4 Data collection and analysis

In early January 2025, the two cases were approached and invited to participate in this study by the first author online. The two cases were selected through purposive sampling because they were in two different PST training programs at different levels of education in different universities. Both of them were interviewed twice to examine their dynamic investment in the GenAI-facilitated CDL (GenAI-CDL) practices. Ray was interviewed first in December 2023 and later in February 2024 in his third and fourth years of Ph.D. studies. Jane was interviewed in December 2024 first and then in April 2025 at the end of the first and second term of her M.Ed. study. The interviews were all 1:1, semi-structured and in-depth, lasting between 40 to 70 minutes, and conducted via Zoom. While Jane chose Mandarin Chinese, the shared L1 between her and the research assistant, Ray chose to speak English, the work language that he had used for years. The interview protocols consisted of the cases' life histories, lived and learning experiences, teaching experiences, and investment in English learning, teaching, and GenAI-CDL practices.

Regarding data analysis, all the data were first transcribed and translated into English. Then, two completed sets of data collected from two cases were read through and studied, guided by the two research questions regarding the extent to which questions were addressed and evidence of new foci occurred, with member checks. Second, open coding was conducted by re-reading the data and generating open codes from within-case and between-case analysis. Thirdly, the second round of coding was conducted using the model of L2 investment (Darvin & Norton, 2015) as the coding scheme to generate a higher level of codes. For instance, "They [Ray's students] will trust me [as a teacher] more than their teachers because of my Ph.D." was coded under both "teacher identity" and "scholar identity", under the umbrella code "identity", one core component of the model of L2 investment. Finally, data were categorized and theorized in an inductive and iterative manner into manageable units, woven into connected, stratified categories, and developed into three themes on the three components of L2 investment. It adopted a case-by-case approach to introduce and compare how identity, capital, and ideology shape individual NTs' investment in GenAI-CDL. Framing one NT as a case, both between-case analysis to illustrate similarities and differences in NTs' GenAI-CDL and within-case analysis to illustrate their shifting investing practices across time were conducted.

4 Findings

This section reports the key findings of this study by introducing three themes that emerged: (1) how cases' different teaching experiences in mainland China and Hong Kong shaped their investment in identities of competent English learner and teacher and GenAI *user identities*; (2) how their varied access to material, cultural, and social resources (capital) influenced the extent to which they can critically engage with GenAI tools; (3) how they experience *ideological* tensions and identity crisis at micro-individual, meso-institutional, and micro-individual levels.

4.1 Theory-driven vs. practice-driven English learners and teachers empowered by GenAI

4.1.1 Ray: a theory-driven teacher in Hong Kong

Ray's professional *identity* is grounded in traditional Second Language Acquisition (SLA) theory-based teaching, emphasizing evidence-based approaches to facilitate language learning. He preferred to construct a "theoretically driven teacher" *identity* by adapting SLA theories to the exam-oriented context of Hong Kong to help his future students learn English in a scientific way, with high expectations for the students. Even though such expectations included the use of GenAI, only very limited integration of GenAI could be found in his learning-to-teach practices, suggesting a partial disconnect from the evolving demands of GenAI-CDL, which emphasizes critical engagement with emerging technologies.

Ray's understanding of "good teaching" positions GenAI as peripheral, leaving little room for integrating GenAI-CDL as a part of his *capital*.

> I have several publications related to language teaching such as assessment for learning, Task-based Language Teaching, curriculum analysis, and papers on the real educational issues in Hong Kong. I'm quite confident about my own teaching philosophy and practices. I need to show students my credibility to impose certain demands on students to justify the demands and credibility. They will trust me more than their teachers because of my Ph.D.

Ray places significant emphasis on establishing credibility and trust through his academic accomplishments, such as his PhD and publications in language teaching. This reliance on traditional academic capital underscores his current PST identity as prioritizing conventional markers of authority while appearing to devalue technological or digital expertise, which are central to GenAI-CDL.

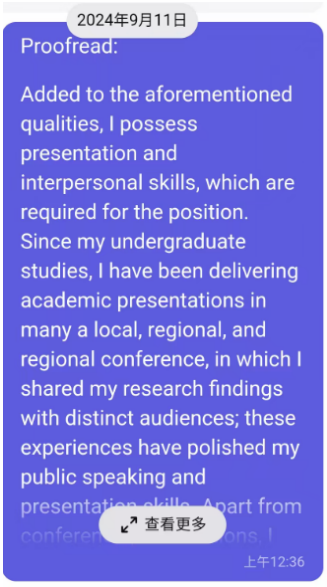
He also aligns with an *ideological* discourse that prioritizes a "traditional teacher identity," by emphasizing professional authority grounded in academic qualifications and theoretical expertise. He has observed his own lecturers and teachers in secondary schools and concluded that they lacked the basic GenAI literacies, not to mention GenAI-CDL.

> I have prepared a lot because I think I have much of theoretical foundation in different aspects due to my publications. I really need to show students my credibility. (Do you think current pre-service teachers that you know are qualified to teach using AI?) No. I don't think so. (How about in-service teachers?) A minority of them could be very proficient and competent. But there must be a lot that know nothing about how to use AI properly, or they just use it superficially like a search engine or just to do the Q&A like what's the synonym of something. They don't know how to us AI to facilitate their lesson planning or reduce their workload. AI's ability is no different from normal people for them. They just use AI just like everyday use.

Within this discourse, Ray views established academic capital as central to her professional identity, teaching effectiveness, and career progression, and regards teachers' use of GenAI tools as superficial due to their lack of knowledge on GenAI. Despite all the training provided for in-service teachers (ISTs) to develop GenAI-CDL, Ray still perceived that most teachers in Hong Kong, his imagined TESOL community, are not qualified to teach using GenAI tools. Ray's engagement with GenAI tools, such as ChatGPT, is minimal and limited to basic tasks like language refinement (Figure 2).

Figure 2

Ray's Interaction with POE for English Refinement



By arguing that "I don't use it (GenAI) very often, because when I use generative AI to, I mainly use it to improve my language, and I don't think AI literacy is part of the formal curriculum in universities", Ray does not yet perceive GenAI integration as a core aspect of his teaching identity, reflecting his hesitation to embrace GenAI as part of his professional identity and pedagogical practices, further limiting his investment in GenAI and its potential for professional growth.

4.1.2 Jane: a practice-oriented teacher in Mainland China

Unlike Ray's teaching philosophy, deeply rooted in SLA theories, Jane's professional *identity* is shaped by her proactive approach to exploring and using GenAI tools in her teaching in Mainland China. Imagining herself as a practice-oriented, tech-sensitive teacher in Mainland China, she attached great importance to GenAI use and actively attended many GenAI-related pedagogy workshops and training sessions in her institution of training, dedicated to systematically building her knowledge and expertise in GenAI-enhanced English Language Teaching (ELT). Although she humbly described her GenAI literacies as "*bantongshui*" (still in the early stages), her consistent actions reveal a deliberate shift from a traditional teaching identity to that of a tech-sensitive teacher. She actively engages in GenAI learning initiatives and is laying a strong foundation for integrating CAL into her teacher *identity*.

> When I was bored, I talked to GenAI in English or just talked to myself and asked it to observe and correct me. Although GenAI was not as widespread in mainland China when compared with Hong Kong, two lecturers in Jane's BA study recommended the students to use GenAI by inputting correct prompts to apply it for language learning and curriculum development. The lecturers even reminded the students to critically review and examine GenAI output and use the tools ethically.

While Ray was introduced to GenAI by his friend, Jane approached it agentively with openness and curiosity, using tools like ChatGPT, Doubao, and Kimi to refine her language skills, improve teaching materials, and expand her pedagogical toolkit.

> I volunteer to sign up for an AI workshop before and learned some of the underlying logic of AI. In this historical development trend, it may have reached the level of human beings, or the level of human learning, or the level of human creativity, which I think is an irreversible trend of historical trend. Mastering it faster and better than others. In fact, it improves the competitiveness of teachers, which is also an advantage. It can even help teachers adapt to the development of society faster than others.

This proactive stance underscores her commitment to continuous professional development and reflects her *identity* as a lifelong learner. Through her dedication to learning and adapting, Jane positions her professional identity as one constantly evolving in response to technological advancements and pedagogical needs.

> Some TBLT teachers also use a combination of AI and TBLT. They use a teaching method as a model and integrate AI into it, making the class or teaching more personalized. However, the education environment in mainland China is compulsory education. I used to be a teacher in a compulsory education school. When I was an intern, I was involved in middle school, high school, and elementary school. I spent a lot of time in middle school. I found that the education environment there was very stressful.

Pedagogically, Jane takes a critical stance toward traditional grammar-translation pedagogies commonly practiced in mainland China, aligning instead with a task-based language teaching approach. This alignment reflects her progressive teaching philosophy and her rejection of conventional norms in favor of learner-centered, technology-integrated methodologies. Her belief in the regulation of GenAI use

through scaffolded instruction, expressed in the phrase "*yishu buyidu*" (facilitation, not prohibition), further underscores her innovative outlook on education. By emphasizing guidance rather than restriction, Jane challenges mainstream teaching norms and solidifies her identity as an innovative educator committed to redefining pedagogical practices and embracing technological advancement.

4.2 Access to resources and enactment of a range of GenAI-mediated learning-to-teach practices

4.2.1 Ray: lack of resources and limited involvement in social networks

Ray started to use GenAI because his friend introduced a tool to him as part of his social capital. He was impressed by the web profile of the friend, who shared that ChatGPT has improved the language in terms of the grammatical structure, suitability for the target genre, pronunciation, and avoiding ambiguity. He defined GenAI as a content-generation tool based on a large language model, without frequent use of any GenAI tools, or using them for teaching purposes.

> AI that can generate and produce some ideas based on some prompts; the productive nature that it can produce more than the prompt and generate something new, like a large amount of output based on a large language model. I don't use it very often, only to improve my language. I'm not familiar with its use in the academic context, not the functions.

Ray's access to GenAI-related teacher training is constrained by outdated and restrictive institutional policies, curriculum or support systems. He has attended altogether 1,500 hours of teacher training sessions, including seminars, workshops, and talks in his four years of learning, but none of the training was related to GenAI. He attributed this to the lack of training opportunities provided in the interview.

> I value digital education and AI literacy, but I have not received any training about them. AI literacy is not included in the formal curriculum. (There are some workshops about the development of AI literacy, right?) Yes, but those workshops are only free for teachers but cannot be opened for everyone.

His academic qualifications and SLA expertise provide him with significant cultural *capital* in traditional educational contexts. Meanwhile, he has not yet accumulated cultural capital essential for GenAI-CDL development, such as knowledge and skills related to core GenAI concepts, familiarity with the technological discourse, and formal credentials in GenAI-related fields. His SLA knowledge, as well as the lack of training opportunities, illustrated above:

> When I work as a part time teacher like they trust me more than the original teacher. The reason is that they know that I'm Ph.D., not what I'm doing, so I think the qualification is already very important. If we use generative AI, students' performance would deviate further from their confidence, because, even if they have low competence, they can use AI to make their performance seem much better than their competence. I cannot. There's no way for me to access the real competence until the summative exam, but it's too late.

This mismatch risks positioning her as disconnected from current professional expectations, further discouraging her investment in GenAI-CDL.

Finally, arguing that "I don't think so, like they don't really need AI in their work", Ray's social networks, including friends and family, do not view GenAI as relevant or meaningful, and there are few conversations about GenAI in his personal or professional circles. This lack of exposure to individuals successfully leveraging GenAI reinforces his perception that GenAI literacy is non-essential and

irrelevant, limiting opportunities for shared learning, knowledge exchange, and collaborative exploration of GenAI tools and applications, which are critical for developing GenAI-CDL.

Overall, Ray's limited access to institutional resources, digital capital, and supportive social networks constrains her ability to engage with and develop GenAI-CDL. This capital imbalance not only hinders his personal development as a critically GenAI-literate educator but also perpetuates broader inequities among NTs, creating a widening gap in their preparedness for GenAI-enhanced classrooms.

4.2.2 Jane: economic constraints and cultural/social capital accumulation

Even though both Ray's and Jane's universities provide free GenAI tools for NTs to use, Jane's use of GenAI tools is constrained by her limited economic capital. Without access to a paid VPN that grants her access to ChatGPT in mainland China, she relies on free tools like Doubao, Deepseek, and Kimi, which sometimes fail to satisfy her needs. When asked about the constraints of GenAI tools, Jane shared that she used Doubao and Kimi because they were free, and ChatGPT was not accessible in mainland China without a paid VPN. ChatGPT had its own drawbacks as Jane has found several references created by ChatGPT to be fake. GenAI hallucinations and misinformation were serious problems with ChatGPT that increased her workload for reviewing and double-checking.

> Doubao can help us with some translation studies, or Runwen or Kimi, etc. These may be free, and you can easily download them. Then, ChatGPT may be difficult to obtain in Mainland China. It seems that ChatGPT or more popular AI is the commonly used ones. It may not be as smart as Doubao, but it can help you deal with some simpler problems, help you polish your writing, or point out the mistakes in your writing, or search for some basic things.

In Jane's case, her limited economic capital limited her use of GenAI to free tools that may not satisfy all her needs.

Through participation in multiple GenAI workshops and sessions, Jane has accumulated foundational cultural *capital*, including a basic understanding of the computational foundations of GenAI and effective prompt design for ethical GenAI use and critical evaluation of GenAI output for developing CAL. However, the training she has received primarily covers introductory knowledge and lacks advanced, systematic instruction on implementing GenAI-enhanced pedagogies.

> There are fewer practical courses, so they may first lay a theoretical foundation for you. How do you program? In fact, some of the more in-depth things may not be able to be integrated with people from so many backgrounds.

This leaves her cultural capital somewhat incomplete and impractical, as she still seeks deeper knowledge to fully realize GenAI's potential in teaching. Jane proactively engages with her social networks, including course peers and faculty, to expand her understanding and use of GenAI. For instance, peers introduced her to tools such as Doubao, while her teachers recommended using ChatGPT for language learning and reminded her to use it critically and ethically:

> In class, my group member told me to use POE as it's more convenient. Doubao was also introduced to me by a classmate presenting his project. Their experiences sounded interesting to me, so I also tried such tools for my teaching.

However, such social capital is limited by regional policy and institutional practices. For example, in mainland China, restrictive policies on digital devices in schools and mixed attitudes toward GenAI tools hinder the growth of her social capital and reduce opportunities for collaborative exploration of AI-enhanced teaching practices.

4.3 Tensions at micro-individual, meso-institutional, and macro-individual levels

4.3.1 Ray: academic legitimacy and GenAI skepticism

The absence of GenAI-related courses in teacher training and the lack of consistent policies regarding GenAI use in secondary schools directly limit Ray's access to practical tools and guidance to develop GenAI-CDL. As indicated in the second excerpt in 4.2.1, without formal scaffolding or encouragement, NTs face further barriers to proactive learning regarding GenAI integration, perpetuating limited engagement with GenAI technologies. Moreover, this institutional force reflects an underlying institutional belief that AI is not central to teaching practice, particularly for NTs. This perceived systemic marginalization shapes what NTs consider worthwhile knowledge and inclines Ray to view GenAI-CDL as optional or irrelevant, discouraging him from proactively seeking out GenAI learning opportunities.

Additionally, the institution's conservative focus on traditional teaching competencies reinforces Ray's internalized belief that GenAI-CDL is peripheral to his professional development. Compared with his academic degree and publications, he did not value GenAI to a similar extent. There exist drastically different GenAI policies among the eight public universities in Hong Kong. For instance, the universities where Ray obtained his master's degree banned GenAI use, and lecturers and students were only allowed to use GenAI tools to a very limited extent with prior approval obtained. The university where he studied for his Ph.D. degree also limited the use of GenAI. This is because there are no explicit policies or guidelines on AI use in Hong Kong schools. This unequal distribution of resources creates structural barriers, depriving NTs like Ray of the digital and social capital (e.g., technical competencies, professional networks) needed to develop GenAI-CDL.

Ray managed to demonstrate a certain level of critical lens towards GenAI and his use of GenAI tools such as evaluating all GenAI output and content critically and changing the content for his own purposes. Also, unlike NTs who may rely on GenAI as native speakers that decide what is proper and "good" English, Ray explicitly challenged such practices.

> I don't ask GenAI tools to make the language native-like, which is not my goal. I'm not a native speaker or in favor of native-speakerism. I embrace language diversity, so I don't believe that there should be a native model that I should follow.

Ray's cautious attitude toward GenAI reflects broader societal narratives about its harmful impact on education, including fears of technology dependence, diminished student writing and critical thinking skills, and compromised assessment practices. Additionally, Ray critiques GenAI's biases toward standardized, native-like linguistic norms, demonstrating his alignment with GenAI-CDL's critical perspectives. Nonetheless, the absence of scaffolded support hinders his ability to translate this critical awareness into adaptive and ethical engagement with GenAI tools. Instead of empowering her to become an advocate for leveraging GenAI to foster equitable and inclusive language practices, his skepticism deepens her reluctance to engage with AI, further limiting his investment in GenAI-CDL.

In conclusion, Ray's negotiation of GenAI-CDL is shaped by entrenched *ideologies* that prioritize traditional academic legitimacy while marginalizing AI literacy in teaching. These systemic and cultural narratives constrain his engagement with GenAI-CDL and highlight the need for institutional reform to reposition GenAI literacy as a core component of teacher education.

4.3.2 Jane: tensions and legitimate GenAI user discourse

Jane's GenAI-CDL development is shaped by competing educational *ideologies* that legitimize different approaches to teaching and learning. The dominant ideology in mainland China promotes traditional teacher-centered pedagogy and views technology as potentially disruptive to established educational practices. This ideology manifests in institutional power through school policies restricting digital

device use in schools and maintaining traditional grammar-translation methods. Nonetheless, Jane aligns herself with an alternative ideology that values technology as a facilitator of student-centered, task-based learning, as shown in her belief in "yishu buyidu" (facilitation, not prohibition).

> I think digital tools and GenAI yishu buyidu. Even if you prohibit the existence of such tools, students will get to know them and use them secretly. Without proper instructions, the situation can be way worse. Hence, her pedagogical beliefs were not in line with the traditional educational ideology, shaping her investment in GenAI literacies.

This ideological clash impacts Jane's GenAI-CDL by positioning her as a challenger to established teaching norms. She found GenAI tools useful in generating equitable and meaningful output with carefully designed prompts. For instance, criticizing images full of white, blond females using the keyword "people working with children" in search engines as racial and sexist, she prompted in Canva to produce Black male and female teachers of all ages that fit her pedagogical and gender ideologies in her imagined teaching community (Figure 3).

Figure 3

Critical Prompting Literacies for Racial and Gender Equity

Her efforts to adopt AI reflect resistance to dominant power structures, forcing her to negotiate between her beliefs and institutional constraints, shaping the legitimacy of her GenAI-integrated teaching practices.

The ideological tension between facilitating and restricting AI use arises not only from Jane's teaching philosophy but is also shaped by the institutional environments in which she operates. In Hong Kong, educational policies increasingly legitimize the integration of GenAI, with some private schools actively adopting AI tools in classrooms. In contrast, mainland China's policies often marginalize technological innovations, favoring traditional approaches that restrict digital device use in schools. Navigating between these systems, Jane must adapt to contrasting power structures and differing expectations, shaping her GenAI-CDL practices. For example, while completing her M.Ed. in Hong Kong, she adopted a more exploratory approach to GenAI, actively attending training sessions and comparing different GenAI tools. However, when discussing the use of GenAI in mainland China, she expressed concerns about limited access, insufficient information, and the lack of time to explore AI due to the heavy workload faced by public school teachers.

> AI was not so popular in mainland China, so the teacher might just mention it. You might say that when you practice your language, you can talk to your mobile assistant, which is some AI assistant. Then they will correct your pronunciation, check your pronunciation, or do some

> speaking practice, but in fact, they are very rare. Very few teachers will mention AI, or encourage you, or teach you how to really get in touch with some cutting-edge AI.

These challenges highlight how systemic constraints, and institutional pressures can significantly influence her ability to fully engage with and implement GenAI in diverse educational contexts.

Jane observes that some NTs self-identify as "illegitimate users" due to their lack of formal training and considers herself "still in the early stages" of mastering GenAI use. This reflects an ideological discourse that defines the "legitimate AI user" as someone with formal training and institutional validation, thereby creating hierarchies of expertise and determining who is deemed "authorized" to integrate GenAI into teaching practices. This ideology influences Jane's GenAI-CDL development in two distinct ways: (1) it reinforces her emphasis on formal training and institutional recognition as critical prerequisites for effectively engaging with AI, and (2) it shapes her cautious approach to verifying GenAI outputs, reflecting her alignment with dominant norms around educational authority, credibility, and professional responsibility.

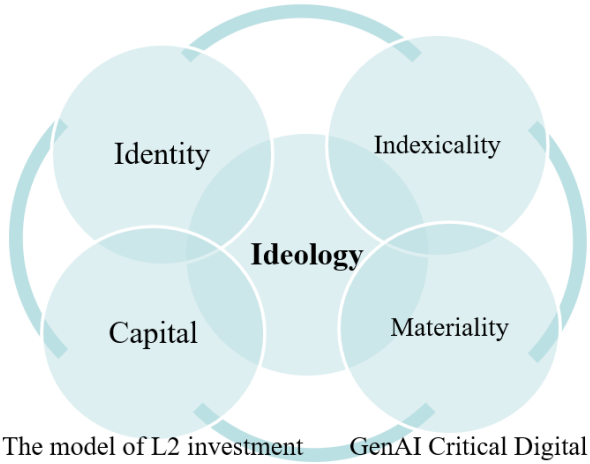
Overall, Jane's PST identity is transitioning from a traditional language teacher to a forward-looking, tech-sensitive educator, even though she still views her AI competencies as incomplete and seeks further systematic training. Her active engagement in AI learning, commitment to lifelong development, and critical stance toward traditional pedagogies collectively shape her as an educator who views CAL not as a supplementary skill, but as integral to her teaching philosophy. Through continuous learning and a willingness to challenge conventions, Jane is building a professional identity aligned with the rising demands of AI-enhanced ELT.

5 Discussion and Conclusion

The findings reveal that NTs' investments in GenAI-mediated learning-to-teach practices are deeply shaped by their identities and dispositions toward both GenAI and the teaching profession. Their divergent GenAI-CDL are historically and culturally shaped (Collins & Blot, 2003) by and reflect their life histories and lived experiences. The two NTs' investment in different GenAI-CDL practices was shaped by their identities and capital, two components in the model of L2 investment (Darvin & Norton, 2015), as well as indexicality and materiality, two components of CDL (Darvin, in press). These two models can be linked by the shared component, ideology, to understand how L2 teachers invest in GenAI-CDL practices (Figure 4).

Figure 4

L2 Teachers' Investment in GenAI-CDL



To illustrate how components in these two models intersect with each other in a shared ideological context, we compare and contrast the two cases and discuss how they invest in GenAI-CDL. Firstly, findings indicate that NTs negotiate teacher and social *identities*, voices, and positioning while examining how the use of GenAI and GenAI output *index* specific conceptualizations and dispositions that may or may not accord with NTs'. The unpredictability of GenAI outputs (Lim, 2024) influenced different ways in which NTs interpreted and used tools for language learning, academic tasks, and pedagogical development, a crucial part of their different GenAI-CDL (*multiplicity*). Ray's investment was limited, shaped by a traditionally anchored teacher identity that prioritizes academic legitimacy and skepticism towards GenAI's role in authentic teaching. The affordances of GenAI he perceived were restricted to his English learner/user identity due to a lack of training on integrating GenAI into L2 teaching. His imagined TESOL community in Hong Kong values theoretical expertise and conventional qualifications such as a Ph.D., which he sees as incompatible with the use of GenAI.

Supporting prior research on how NTs' pedagogical beliefs are shaped within his imagined teacher community (Barkhuizen, 2016; Zhang, 2024; Zhang & Huang, 2024), Ray's case shows that when GenAI-CDL was not a pedagogical goal, NTs can divest in GenAI-facilitated practices, reinforcing their conceptualization of a "good teacher", who does not need GenAI-CDL. As a theory-based, traditional English teacher, Ray demonstrated some critical awareness with his self-positioning as a legitimate language user instead of a "non-native" English learner. This positioning enabled him to position GenAI as only a language tutor, not a "native" English teacher. He managed to detect and criticize how native norms are privileged by GenAI trained towards "standard English" (Billingsley & Gardner, 2024), similar to how the ideology of native-speakerism shapes learning and teaching practices in online teaching platforms (Curran, 2023), teacher recruitment spaces (Ruecker & Ives, 2015), telecollaborative platforms (Viáfara González, 2020), and other online spaces. Conversely, Jane's journey illustrates a more agentive and reflective navigation of these ideological challenges. She challenged institutional and societal power structures that she encountered, which traditionally limited the use of technology in teaching. Such an agentive move originated from the support from her important others and her cross-border learning experiences in a teacher training program with GenAI-CDL as a part of the pedagogical goal. Without such support from the meso-institutional and micro-interactional levels, a teacher can divest from one's teacher identity shaped by pedagogical, language, and gender ideologies (Zhang, 2024; Zhang & Darvin, 2025). The legitimizing discourse around GenAI use in Jane's teacher education program, combined with her own commitment to equity and innovation, enabled her to redefine her role as a progressive, tech-sensitive teacher.

Secondly, NTs' access to and use of material and symbolic resource such as cultural, social, and economic *capital* critically shaped their capacity to develop CDL involving GenAI (*criticality*). Ray's limited GenAI-CDL development stemmed from both material disparities and symbolic capital misalignments. He lacked scaffolded support (social capital) and formal training (cultural capital), which constrained their ability to critically examine or meaningfully use GenAI tools. His perception that even in-service teachers in Hong Kong lacked GenAI literacy and ethical awareness further seemed to discourage his engagement. Similarly, Teng and Yip's (2025) narrative inquiry of six Chinese university EFL teachers also reveals that teachers' perceive their students to lack GenAI knowledge and understanding. Furthermore, they pointed out that teachers' prior training in critical thinking and creative writing can become important cultural capital, whereas teachers from more rural regions in China with less economic capital tend to be passive towards GenAI tools. Ray's case adds to this finding in that his reliance on traditional academic capital prevented him from further investing in GenAL-CDL

The absence of peer networks that could legitimize GenAI use also restricted his development. This resonates with Darvin and Norton's (2018) assertion that learners invest in practices valued by their social environment. Moreover, Ray's economic and institutional context did not provide equitable access to tools or training, which in turn reinforced his marginal position in the evolving digital teaching settings (*materiality*). Jane, on the other hand, accumulated symbolic capital through training sessions,

institutional support, and peer networks, which empowered her to integrate GenAI into her emerging pedagogy. While still facing economic and regional constraints, her proactive stance and engagement with like-minded peers contributed to a more robust development of GenAI-CDL. This aligns with Jones and Hafner's (2012) view of digital literacies as practices of assembling varied tools and resources, shaped by interaction with others.

Finally, NTs' investment in GenAI-CDL is situated in specific teacher communities that are ideological space. NTs navigate complex sociocultural and ideological terrains as they attempt to claim legitimacy as GenAI-informed teachers. Jane's proactive identity as a lifelong learner and her ideological stance towards inclusive, progressive pedagogy position her as a future leader in GenAI-enhanced teaching (*ideology*). Her emphasis on "yishu buyidu" (facilitation, not prohibition) reflects an identity aligned with the dominant ideology that favors learner-centered, task-based teaching practices. Akin to how perceived usefulness and affordances of GenAI can emerge from informal digital learning of English experiences (Liu et al., 2024a), Jane valued both formal and informal learning-to-teach activities involving GenAI, and thus perceived GenAI-CDL as a part of her capital that afforded her teacher preparation journey. Unlike Ray, who marginalized GenAI in his teaching practices, Jane imagined herself to be a competent GenAI user in her imagined teaching community and engaged actively with GenAI-facilitated tasks with a high level of enjoyment. Such positive emotions have been found to mediate the relationship between English learners' ideal L2 selves and learning experiences involving GenAI (Liu et al., 2024b).

On the other hand, Ray's hesitance stems from deeply rooted ideological structures that define "good teaching" in conventional terms and exclude emerging technologies as legitimate teaching tools from his institution. His case illustrates the ideological barriers that NTs encounter when their emerging practices diverge from the dominant academic culture (Luke, 2002). His belief in the superiority of traditional academic capital leaves little room for exploring GenAI-enhanced pedagogy, even though he possesses critical awareness of biases such as native-speakerism (Darvin, 2025; Hawkins & Norton, 2009). These findings show that NTs' learning-to-teach practices are negotiated through the tensions between their evolving professional identities and prevailing institutional ideologies at the micro-individual, meso-institutional, and micro-individual levels (Zhang, 2024; Eryılmaz & Dikilitaş, 2023; Kaya & Dikilitaş, 2019). Both NTs relied on GenAI for tasks such as language polishing without fully recognizing biases or inaccuracies embedded in GenAI outputs (Keyes et al., 2021; Kohnke et al., 2023). However, Jane's sociocultural environment offered more avenues to engage in reflective dialogue and validation, which allowed her to resist dominant narratives and reimagine GenAI as a legitimate professional practice. This supports the notion that ideologies of practice are not static but can be reconstituted through social interaction and institutional support (Darvin, 2018).

6 Implications

This study provides some pedagogical implications for stakeholders involved in the process of PST education and development. Without institutional scaffolding, equitable access to resources, and a shift in ideological narratives that position GenAI literacy as central to contemporary teaching, NTs like Ray may continue to view GenAI-CDL as peripheral to their professional identity. Addressing these barriers is crucial to fostering critically GenAI-literate educators who can navigate the affordances and limitations of GenAI while promoting equitable and effective teaching practices in GenAI-enhanced classrooms. Thus, it is important for PST educators to provide opportunities for them to create critical reflections and establish social presence in online interactions during their learning-to-teach journeys (Mumford & Dikilitaş, 2020). Akin to PSTs (Akayoglu et al., 2020), NTs' development of digital literacies is also under significant influences from the university professors. The results indicate that NTs' access to resources and enactment of a range of GenAI-mediated learning-to-teach practices depend on not

only their socioeconomic status but also their relations with effective, ethical, and critical GenAI users, especially experienced teachers. The recommendation centers on intentionally designing collaborative structures that not only introduce GenAI tools but also cultivate supportive ecosystems where NTs can collectively reflect on, negotiate, experiment with, and legitimize their emerging GenAI-CDL identities with their important others such as teacher educators, peers, and professors. Such approaches move beyond traditional skill acquisition, positioning peer networks as transformative spaces for professional learning and identity development in an GenAI-enhanced educational landscape.

As educational institutions around the world grapple with the evolving landscape of technology in education, it is imperative that they acknowledge and legitimize GenAI-CDL as a core component of teacher education. By fostering supportive environments that embrace peer collaboration and recognize the value of GenAI-informed identities, institutions can empower NTs to overcome barriers to technological integration (Jimarkon et al., 2021). Ultimately, addressing these systemic challenges will cultivate a new generation of critically GenAI-literate educators ready to engage with the complexities and opportunities presented by GenAI in the classroom, thereby enhancing the overall quality of education in an increasingly digital world. For some educators, investing in GenAI-driven pedagogies may serve as a means of enhancing classroom engagement and improving student learning outcomes (Klimova et al., 2024). However, this investment is not merely a technical decision; it is deeply intertwined with teachers' identities, beliefs, and values.

This study has only investigated the NTs' investment in GenAI-CDL using serial interviews and two of their learner artifacts. Multimodality is crucial in CDL and GenAI-facilitated practices (Darvin, 2025a); thus, future studies can analyze NTs' engagement with multimodal GenAI output and their investment in learning-to-teach activities such as digital multimodal composing. Also, GenAI can provide particular suggestions that reflect a specific understanding of what good practices are and the dominant ideologies in a given society (Darvin, 2025). Teacher educators are suggested to take a critical lens and value NTs' diverse GenAI-CDL as multiple and diverse so as to prepare NTs for challenges such as inaccuracies and GenAI's inability to replace teachers' unique insights (Lo, 2025). A challenge-based learning approach can be adopted for teacher educators to reposition NTs/PSTs as agentive actors and empower them to make decisions, assess needs in the world, and develop critical opinions and awareness (Dikilitaş et al., 2025) in response to the challenges brought by GenAI.

Acknowledgements

This project is funded by the corresponding author's Strategic Budget Allocation Fund (Formulation of Research Network between EdUHK and IoE, UCL). The first author would like to thank Ms. Yilin You, the research assistant, for her help with the finding section.

References

Akayoglu, S., Satar, H. M., Dikilitas, K., Cirit, N. C., & Korkmazgil, S. (2020). Digital literacy practices of Turkish pre-service EFL teachers. *Australasian Journal of Educational Technology*, *36*(1), 85-97. https://doi.org/10.14742/ajet.4711

Barkhuizen, G. (2016). A short story approach to analyzing teacher (imagined) identities over tme. *TESOL Quarterly, 50*(3), 655-683. https://doi.org/10.1002/tesq.311

Beijaard, D., Meijer, P. C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and teacher education, 20*(2), 107-128. https://doi.org/10.1016/j.tate.2003.07.001

Billingsley, F., & Gardner, S. (2024). Utilizing generative AI with second-language users and bilingual students. In F. Billingsley, & S. Gardner (Eds.), *Facilitating global collaboration and knowledge sharing in higher education with generative AI* (pp. 109–132). IGI Global.

Burnett, C. (2011). Pre-service teachers' digital literacy practices: exploring contingency in identity and digital literacy in and out of educational contexts. *Language and Education*, *25*(5), 433-449. https://doi.org/10.1080/09500782.2011.584347

Canagarajah, A. S. (1999). On EFL Teachers, awareness, and agency. *ELT Journal*, *53*(3), 207-214. https://doi.org/10.1093/elt/53.3.207

Chiu, T. K. (2024). The impact of Generative AI (GenAI) on practices, policies and research direction in education: A case of ChatGPT and Midjourney. *Interactive Learning Environments*, *32*(10), 6187-6203. https://doi.org/10.1080/10494820.2023.2253861

Collins, J., & Blot, R. (2003). *Literacy and literacies: Texts, power, and identity*. Cambridge University Press.

Cope, B., & Kalantzis, M. (2010). New media, new learning. In D. Cole & D. Pullen (Eds.), *Multiliteracies in motion: Current theory and practice* (pp. 87-104). Routledge.

Curran, N. M. (2023). "More like a friend than a teacher": ideal teachers and the gig economy for online language learning. *Computer Assisted Language Learning*, *36*(7), 1288–1308. https://doi.org/10.1080/09588221.2021.1976801

Darvin, R. (2015). Representing the margins: Multimodal performance as a tool for critical reflection and pedagogy. *TESOL Quarterly, 49*(3), 590-600. https://doi.org/10.1002/tesq.235

Darvin, R. (2017). Language, ideology, and critical digital literacy. In S. Thorne & S. May (Eds.), *Language, education and technology. Encyclopedia of language and education* (3rd ed., pp. 17-30). Springer. https://doi.org/10.1007/978-3-319-02237-6_35

Darvin, R. (2018). Social class and the unequal digital literacies of youth. *Language & Literacy*, *20*(3), 26-45. https://doi.org/10.20360/langandlit29407

Darvin, R. (2019). L2 motivation and investment. In M. Lamb, K. Csizér, A. Henry, S. Ryan (Eds.) The Palgrave hand*book of applied linguistics research methodology* (pp. 777-792). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-28380-3_12

Darvin, R. (in press). Critical digital literacies. In W.S.E. Lam & R. Darvin (Eds.). Literacy. In C. Chapelle (Gen. Ed.), *The Encyclopedia of Applied Linguistics.* Wiley.

Darvin, R. (2025). The need for critical digital literacies in generative AI-mediated L2 writing. *Journal of Second Language Writing*, *67*, 101186. https://doi.org/10.1016/j.jslw.2025.101186

Darvin, R., & Hafner, C. A. (2022). Digital literacies in TESOL: Mapping out the terrain. *TESOL Quarterly*, *56*(3), 865-882. https://doi.org/10.1002/tesq.3161

Darvin, R., & Norton, B. (2015). Identity and a model of investment in applied linguistics. *Annual Review of Applied Linguistics, 35*, 36-56. https://doi.org/10.1017/S0267190514000191

Darvin, R., & Norton, B. (2017a). Investing in new literacies for a cosmopolitan future. In R. Zaidi & J. Rowsell (Eds.), *Literacy lives in transcultural times* (pp. 89-101). Routledge.

Darvin, R. & Norton, B. (2017b). Language, identity, and investment in the 21st century. In T. McCarty & S. May (Eds.) Language policy and political issues in education, (p. 227-240), *Encyclopedia of Language and Education.* Springer. https://doi.org/10.1007/978-3-319-02320-5_18-2

Darvin, R., & Norton, B. (2018). Identity, investment, and TESOL. In J. I. Liontas (Ed.). *The TESOL Encyclopedia of English Language Teaching* (pp. 1-7). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118784235.eelt0802

Dawson, V. (2008). Use of information communication technology by early career science teachers in Western Australia. *International Journal of Science Education, 30*(2), 203-219. https://doi.org/10.1080/09500690601175551

De Costa, P. I. & Norton, B. (2016). Identity in language learning and teaching: Research agendas for the future. In S. Preece (Ed.), The *Routledge handbook of language and identity* (pp. 586-601). Routledge.

De Costa, P. I., & Norton, B. (2017). Introduction: Identity, transdisciplinarity, and the good language teacher. *The Modern Language Journal, 101*(S1), 3-14. https://doi.org/10.1111/modl.12368

Deiniatur, M., & Cahyono, B. Y. (2024). Digital literacy practices of novice English as a foreign language teacher in writing research articles for publication. *Journal of Education and Learning* (EduLearn), *18*(1), 165-172.

Dikilitaş, K., Marshall, T., & Shahverdi, M. (2025). *A Practical Guide to Understanding and Implementing Challenge-Based Learning* (1st ed.). Cham: Springer Nature. https://doi.org/10.1007/978-3-031-67011-4

Duff, P. A. (2014). Case study research on language learning and use. *Annual Review of Applied Linguistics*, 34, 233-255.

Duff, P. A. (2018). *Case study research in applied linguistics*. Routledge.

Eryılmaz, R., & Dikilitaş, K. (2023). Identity tensions of in-service teacher educators: A narrative inquiry. *Language Teaching Research*, Online First. https://doi.org/10.1177/13621688231216816

Evans, S. (2013). The long march to biliteracy and trilingualism: Language policy in Hong Kong education since the handover. *Annual Review of Applied Linguistics*, *33*, 302-324. https://doi.org/10.1017/S0267190513000019

Fassbender, W. J. (2024). "I can almost recognize its voice": AI and its impact on ethical teacher-centaur labor. *English Teaching: Practice & Critique, 23*(1), 104-117. https://doi.org/10.1108/ETPC-08-2023-0101

Gu, M. (2018). Teaching students from other cultures: An exploration of language teachers' experiences with ethnic minority students in Hong Kong. *Journal of Language, Identity & Education, 17*(1), 1-15. https://doi.org/10.1080/15348458.2017.1381566

Guan, L., Lee, J. C.-K., Zhang, Y., & Gu, M. M. (2025). Investigating the tripartite interaction among teachers, students, and generative AI in EFL education: A mixed-methods study. *Computers and Education: Artificial Intelligence*, 8. Online First. https://doi.org/10.1016/j.caeai.2025.100384

Guan, L., Zhang, Y., & Gu, M. M. (2024). Pre-service teachers' preparedness for AI-integrated education: An investigation from perceptions, capabilities, and teachers' identity changes. *Computers and Education: Artificial Intelligence*. Online First. https://doi.org/10.1016/j.caeai.2024.100341

Gonzales, W., & Zhang, Y. (2025). Reshaping language learners' languaging habitus: A world-Englishes-informed critical pedagogy. *RELC Journal*. Online First. https://doi.org/10.1177/00336882251313702

Grassini, S. (2023). Shaping the future of education: Exploring the potential and consequences of AI and ChatGPT in educational settings. *Education Sciences, 13*(7), 692. https://doi.org/10.3390/educsci13070692

Habermas, J. (1976). Some distinctions in universal pragmatics: A working paper. *Theory and society*, *3*(2), 155-167.

Hawkins, M., & Norton, B. (2009). Critical language teacher education. In A. Burns & J. Richards (Eds.), *Cambridge guide to second language teacher education*. (pp. 30-39). Cambridge University Press

Hill, J. E., & Uribe-Florez, L. (2020). Understanding secondary school teachers' TPACK and technology implementation in mathematics classrooms. *International Journal of Technology in Education, 3*(1), 1-13.

Huo, X., & Siau, K. L. (2023). Generative AI and ChatGPT impact on technostress of teachers. *Pacific Asia Conference on Information Systems (PACIS) 2023 Proceedings*. 126. https://aisel.aisnet.org/pacis2023/126

Jenks, C. J. (2025). Communicating the cultural other: Trust and bias in generative AI and large language models. *Applied Linguistics Review*, *16*(2), 787-795. https://doi.org/10.1515/applirev-2024-0196

Jiang, L., Zhang, X., & Mirhosseini, S. A. (2024). 'Their first language … would be a resource sometimes': preservice English teachers' preparedness for linguistically responsive teaching. *Language, Culture and Curriculum, 37*(2), 267-287. https://doi.org/10.1080/07908318.2024.2331523

Jimarkon, P., Wanphet, P., & Dikilitaş, K. (2021). Pre-service teachers' digital experiences through digital pedagogical practices in Norway. *Nordic Journal of Comparative and International Education (NJCIE)*, *5*(4), 4. https://doi.org/10.7577/njcie.4230

Jin, F., Peng, X., Sun, L., Song, Z., Zhou, K., & Lin, C. H. (2025). Knowledge (Co-) Construction Among Artificial Intelligence, Novice Teachers, and Experienced Teachers in an Online Professional Learning Community. *Journal of Computer Assisted Learning*, *41*(2), e70004. https://doi.org/10.1111/jcal.70004

Jones, R. H., & Hafner, C. A. (2012). *Understanding digital literacies: A practical introduction*. Routledge.

Jones, R. H., & Hafner, C. A. (2021). *Understanding digital literacies: A practical introduction* (2nd ed.). Routledge.

Kaya, M. H., & Dikilitaş, K. (2019). Constructing, reconstructing and developing teacher identity in supportive contexts. *Asian EFL Journal*, *21*(1), 58-83.

Kaplan, N. (1995). E-literacies: Politics, hypertext, and other cultural formations in the age of print. *Computer-Mediated Communication Magazine, 2*(3), 3-35.

Keyes, O., Hitzig, Z., & Blell, M. (2021). Truth from the machine: Artificial intelligence and the materialization of identity. *Interdisciplinary Science Reviews, 46*(1-2), 158-175. https://doi.org/10.1080/03080188.2020.1840224

Klimova, B., Pikhart, M., & Al-Obaydi, L. H. (2024). Exploring the potential of ChatGPT for foreign language education at the university level. *Frontiers in Psychology, 15,* 1269319. https://doi.org/10.3389/fpsyg.2024.1269319

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. *RELC Journal, 54*(2), 537-550. https://doi.org/10.1177/00336882231162868

Lan, Y. (2024). Through tensions to identity-based motivations: Exploring teacher professional identity in Artificial Intelligence-enhanced teacher training. *Teaching and Teacher Education*, *151*, 104736. https://doi.org/10.1016/j.tate.2024.104736

Lim, F. V. (16 August, 2024). Composing with generative AI: Pedagogical designs and implications. *Paper presented at AILA 2024.* Kuala Lumpur, Malaysia.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistuic inquiry.* SAGE Publications.

Liu, G. (2023). Interrogating critical digital literacies in the Chinese context: Insights from an ethnographic case study. *Journal of Multilingual and Multicultural Development*, 1-19. https://doi.org/10.1080/01434632.2023.2241859

Liu, G. L. (2025). Digital empowerment for rural migrant students in China: Identity, investment, and digital literacies beyond the classroom. *ReCALL*, 1-17. https://doi.org/10.1017/S0958344024000302

Liu, G., & Darvin, R. (2024). From rural China to the digital wilds: Negotiating digital repertoires to claim the right to speak. *TESOL quarterly*, *58*(1), 334-362. https://doi.org/10.1002/tesq.3233

Liu, G. L., Darvin, R., & Ma, C. (2024a). Exploring AI-mediated informal digital learning of English (AI-IDLE)A mixed-method investigation of Chinese EFL learners' AI adoption and experiences. *Computer Assisted Language Learning*, 1-29. https://doi.org/10.1080/09588221.2024.2310288

Liu, G. L., Darvin, R., & Ma, C. (2024b). Unpacking the role of motivation and enjoyment in AI-mediated informal digital learning of English (AI-IDLE): A mixed-method investigation in the Chinese context. *Computers in Human Behavior*, *160*, 108362. https://doi.org/10.1016/j.chb.2024.108362

Lo, A. W. (2025). On the Promises and Challenges of Artificial Intelligence in Global Englishes-oriented Materials Development and Implementation: A Critical Ecological Perspective. *System, 103610.* https://doi.org/10.1016/j.system.2025.103610

Luke, A. (2002). What happens to literacies old and new when theyre turned into policy. In D. E. Alvermann (Ed.), *Adolescents and literacies in a digital world* (pp. 186-204). Peter Lang.

Luo, J. (2025). How does GenAI affect trust in teacher-student relationships? Insights from students' assessment experiences. *Teaching in Higher Education, 30*(4), 991-1006. https://doi.org/10.1080/13562517.2024.2341005

Markel, J. M., Opferman, S. G., Landay, J. A., & Piech, C. (2023). GPTeach: Interactive TA training with GPT-based students. In *Proceedings of the tenth ACM conference on learning @ scale* (pp. 226-236). https://doi.org/10.1145/3573051.3593393

Moorhouse, B. L. (2024). Beginning and first-year language teachers' readiness for the generative AI age. *Computers and Education: Artificial Intelligence*, *6*, 100201. https://doi.org/10.1016/j.caeai.2024.10020

Mumford, S., & Dikilitaş, K. (2020). Pre-service language teachers reflection development through online interaction in a hybrid learning course. *Computers and Education*, *144*. https://doi.org/10.1016/j.compedu.2019.103706

Nazari, N., Nafissi, Z., Estaji, M., & Marandi, S. S. (2019). Evaluating novice and experienced EFL teachers' perceived TPACK for their professional development. *Cogent Education, 6*(1), 1632010.

New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, *66*(1), 60-93.

Norton, B. (1995). Social identity, investment, and language learning. *TESOL Quarterly, 29*(1), 9-31. https://doi.org/10.2307/3587803

Norton, B. (2013). *Identity and language learning: Extending the conversation* (2nd ed.) Multilingual Matters.

Norton, B. (2017). Learner investment and language teacher identity. In G. Barkhuizen (Ed.) *Reflections on language teacher identity research* (pp. 80-86). Routledge.

O'Regan, J. & Ferri, G. (2025). Artificial intelligence and depth ontology: Implications for intercultural ethics. *Applied Linguistics Review*, *16*(2), 797-807. https://doi.org/10.1515/applirev-2024-0189

Ottenbreit-Leftwich, A. T., Glazewski, K. D., Newby, T. J., & Ertmer, P. A. (2010). Teacher value beliefs associated with using technology: Addressing professional and student needs. *Computers & Education, 55*(3), 1321-1335. https://doi.org/10.1016/j.compedu.2010.06.002

Perkins, M., Furze, L., Roe, J., & MacVaugh, J. (2024). The Artificial Intelligence Assessment Scale (AIAS): A framework for ethical integration of generative AI in educational assessment. *Journal of University Teaching and Learning Practice, 21*(6), 49-66. https://doi.org/10.53761/q3azde36

Rakap, S. (2024). Chatting with GPT: Enhancing individualized education program goal development for novice special education teachers. *Journal of Special Education Technology, 39*(3), 339-348. https://doi.org/10.1177/01626434231211295

Ruecker, T., & Ives, L. (2015). White Native English Speakers Needed: The Rhetorical Construction of Privilege in Online Teacher Recruitment Spaces. *TESOL Quarterly*, *49*(4), 733–756. https://doi.org/10.1002/tesq.195

Sang, G., Valcke, M., Van Braak, J., & Tondeur, J. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. *Computers & Education, 54*(1), 103-112. https://doi.org/10.1016/j.compedu.2009.07.010

Sharma, S., & Yadav, R. (2022). ChatGPT-A technological remedy or challenge for education system. *Global Journal of Enterprise Information System, 14*(4), 46-51. Retrieved from https://www.gjeis.com/index.php/GJEIS/article/view/698

Teng, M. F., & Yip, J. W. (2025). Language teacher identity in the global GenAI context: Enrichment from Darvin and Norton's (2015) identity and investment framework. *International Journal of TESOL Studies*, *7*(4).

Viáfara González, J. J. (2020). Prospective English teachers re-examining language ideologies in telecollaboration. *Computer Assisted Language Learning*, *33*(7), 732–754. https://doi.org/10.1080/09588221.2019.1590419

Waller, L., Wethers, K., & De Costa, P. I. (2017). A critical praxis: Narrowing the gap between identity, theory, and practice. *TESOL Journal, 8*(1), 4-27. https://doi.org/10.1002/tesj.256

Yazan, B. (2019). Toward identity-oriented teacher education: Critical autoethnographic narrative. *TESOL Journal, 10*(1), e00388. https://doi.org/10.1002/tesj.388

Yigitcanlar, T., Li, R. Y. M., Beeramoole, P. B., & Paz, A. (2023). Artificial intelligence in local government services: Public perceptions from Australia and Hong Kong. *Government Information Quarterly, 40*(3), 101833. https://doi.org/10.1016/j.giq.2023.101833

You, Y. L., & Zhang, Y. (2025). Developing AI literacies and negotiating professional identities: A study of pre-service English teachers in a ChatGPT-facilitated pedagogy. *Journal of China Computer-Assisted Language Learning*. Online First. http://doi.10.1515/jccall-2025-0007

Zhang, Y. (2025). Novice non-native L2 teacher: Identity and agency. In M. Nazari (Ed). *Novice Language Teacher Agency* (pp. 73-95). Routledge.

Zhang, Y. (2024). Investing in and divesting from learning-to-teach practices: A critical ethnography of a teacher of English in China. *Asia-Pacific Journal of Teacher Education*. Online First. https://doi.org/10.1080/1359866X.2024.2431021

Zhang, Y., & Darvin, R. (2025). Negotiating gender ideologies and investing in teacher identities: The motivation and investment of EFL pre-service teachers. *System*, Online First. https://doi.org/10.1016/j.system.2025.103669

Zhang, Y., & Huang, J. (2024). Learner identity and investment in EFL, EMI, and ESL contexts: A longitudinal case study of one pre-service teacher. *Journal of Language, Identity & Education*. Online first. https://doi.org/10.1080/15348458.2024.2318423

Zhang, Y., Lai, C., & Gu, M. M. (2025). Developing Artificial Intelligence Literacies: The Role of Pre-service Teachers' Identity and Investment in Learning-to-teach Practices. *System*. Online First. https://doi.org/10.1016/j.system.2025.103746

Zhang, Y., & Liu, G. (2023). Examining the impacts of learner backgrounds, proficiency level, and the use of digital devices on informal digital learning of English: An explanatory mixed-method study. *Computer Assisted Language Learning*. Online First. 1-28. https://doi.org/10.1080/09588221.2023.2267627

Yue Zhang is an Assistant Professor in the Department of English Language Education, The Education University of Hong Kong. She has obtained her M.Phil. and Ph.D. in Applied English Linguistics at The Chinese University of Hong Kong. Her research interests include L2 identity and investment, CALL, and critical pedagogies. She was involved in TESOL and English teacher education in Mainland China and Hong Kong for years. She has published in *System, RELC Journal, Asia-Pacific Journal of Teacher Education, ELT Journal, ReCALL, Journal of Multilingual and Multicultural Development, Computer Assisted Language Learning, TESOL Quarterly, Computers and Education: Artificial Intelligence, Journal of Language, Identity, and Education,* and *Language Awareness*. http://orcid.org/0000-0003-4109-2506

Kenan Dikilita is a professor of university pedagogy in the Department of Education at the University of Bergen. He teaches courses on higher education pedagogy and supervises university teachers in their professional development. His research interests focus on teacher development through action research, translanguaging in emerging contexts, and higher education pedagogy. He has published extensively in academic journals and (edited) books by Routledge, Wiley, Palgrave, and Springer.

http://orcid.org/0000-0001-9387-8696