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AI Integration into Language Education and Teacher Identity: An Ecological Perspective

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Abstract

This study explores how the integration of Artificial Intelligence (AI) tools into language education can influence language teachers' identity from an ecological perspective. To do so, 16 teachers were selected based on purposeful sampling and completed a narrative frame. To corroborate data, seven of them (based on the richness of their narrative frames) attended a semi-structured interview in which they discussed the integration of AI in their classes and how it impacted their identity. The semi-structured interviews were translated and transcribed and along with the narrative frames were analyzed by employing thematic analysis. The findings of this study revealed that AI integration in language education had a significant impact on participating teachers' identity and shaped their identity at different ecological layers of micro-pedagogical, meso-institutional, and macro-societal. These findings may assist teachers and teacher educators in raising awareness about AI integration into language education and how it can construct language teacher identity.

Keywords: *Artificial Intelligence (AI), Language Teacher's Identity, Language Education, Education Ecology*

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Introduction

The integration of Artificial Intelligence (henceforth AI) technologies in education has an impact on teachers (Kamali et al., 2024). It might increasingly influence the responsibilities of teachers towards learners, improve their abilities, and offer them fresh opportunities to adjust to new roles as facilitators and mentors (Chiu et al., 2022). It also provides them access to various tools and resources that can assist them in becoming more effective (Edwards & Cheok, 2018; Ji et al., 2023; Kamali et al., 2024). It may also impact Language Teacher Identity (henceforth LTI).

In recent years, there has been more attention drawn to studying LTI, which has become a new and popular area in education research. Acting as an important component of teachers' professional development, identity has a profound influence on their thoughts and professional practices (Beauchamp & Thomas, 2009). The concept of LTI has been defined and extensively studied over the past twenty years covering understanding and embodiment of teachers' roles in their respective teaching contexts (Nguyen, 2019; Sang, 2020). Barkhuizen (2017) posits that the concept of LTI implies that individuals do not merely choose to pursue a career as language teachers and persist in it solely based on their personal aspirations. Instead, this decision is shaped by a complex interconnection of sociocultural experiences with the external environment (Kamali, 2024a). The field of study on LTI aims to examine the various significant events that contribute to its development. The findings of previous studies demonstrated that various factors, which are interrelated in an intricate way, are involved in shaping LTIs, such as emotion (Nazari et al., 2023), personal practical knowledge (Kamali, 2024b), sociocultural factors (Pennington & Richards, 2016), cognition (Yazan & Lindahl, 2023), and education (Fairley, 2020) to name a few.

In addition, ecology, as “the totality of relationships of an organism with all other organisms with which it comes into contact” (van Lier, 2004, p. 3), has been widely employed as a methodological framework and appears relevant to the current study. It sheds light on the sociocultural peculiarities of studying a subject – LTI here. Knowing that LTI is an entity defined, constructed, and developed in a sociocultural context, this framework has been found relevant to the present study to investigate interconnections of diverse elements in different layers of the educational ecosystem (Bronfenbrenner, 1993).

Literature Review

Teacher Identity in Language Education

The concept of Language Teacher Identity (LTI) has become an important focus of study over the last two decades (Fairley, 2020; Tajeddin & Yazan, 2024). LTI plays a vital role in influencing the professional and personal lives of language teachers, affecting how they see themselves and how others perceive them, including colleagues, students, and others involved in education (Kamali & Nazari, 2023). Developing a thorough understanding of LTI can help language teachers grow into the ideal image of educational professionals. Over the past decade, studies on LTI have significantly increased, with particular emphasis on its relationship to emotions, agency, knowledge, and beliefs. This is because language teachers play an active role in educational settings, and their identity can inform their practice (Varghese et al., 2005). For example, Kanno and Stuart (2011) emphasized that LTI plays an important role in L2 teacher education by stating that “the development of L2 teacher identity should be at the center

of research and debate on L2 teacher education" (p. 250). Having a strong and positive attitude towards teacher identity might build clear and effective interaction among teachers and learners. Identity reflects personal attitudes toward many aspects of teachers' roles in different contexts, which is importantly related to social contexts.

As Pennington and Richards (2016) argue, identity is shaped by various factors, including context and how individuals present themselves within that context. The investigation into LTI development has become a key focus in language teacher education, allowing for an exploration of how teachers' identities evolve over time (Yazan & Lindahl, 2023). LTI is a dynamic construct influenced by socio-historical factors that shape teachers' self-perception, extending beyond content delivery to examine how teachers evolve and contribute to educational progress (Gong & Gao, 2024; Pennington & Richards, 2016). The fluidity of LTI construction reflects the contextual essence of the self, influenced by personal, professional, and sociocultural complexities, with language serving as both content and medium, impacting teachers' identity formation (Yazan, 2018). As such, LTI involves a nuanced interaction of socio-historical elements that dynamically shape teachers' self-perceptions. Different teaching contexts or approaches can affect the roles teachers assume, potentially leading to conflicts with their sense of identity. The study of LTI has become crucial over the past two decades, as it plays a vital role in influencing teachers' professional and personal lives, affecting both their self-view and how they are perceived by others, including colleagues and students. Understanding LTI helps language teachers develop into ideal educational professionals.

AI in Language Education

In the contemporary era of rapid change, human life has been affected by various aspects of technology, such as computers, mobile devices, and social media platforms (Solak & Erdem, 2015). This integration of technology has brought about numerous innovations and social, cultural, and economic changes. Particularly in the field of computer science, the development of technologies capable of performing tasks traditionally associated with human intelligence, such as intellectual problem-solving and decision-making, holds great significance (Zhang & Lu, 2021). This branch of technology, known as artificial intelligence (AI), refers to the intelligence manifested by machines or computer systems that replicate human intelligence (Lucci et al., 2022). In education, AI has been used for different purposes among which one can call personalized learning (Yu et al., 2025), intelligent tutoring (Lin et al., 2023), automated assessment (Mohammadi et al., 2023), and educational games (Rapaka et al., 2025), to name a few. There are several studies that advocate its beneficial impact on learning. For example, Srinivasa et al (2022) asserted that AI could "improve students' learning experience and the overall quality of education" (p. 311). In another study, Zhang et al (2023) found out that "AI technology has great value demand for college students ideological and political education" (p. 12). However, there are studies that offer cautionary insights for handling AI in education. Concepts such as cheating and plagiarism are believed to be encouraged by AI (Pavlik, 2023). For instance, Adeshola and Adepoju (2023) discussing the challenges of using AI in education argued that cheating and plagiarism can be facilitated by the use of AI and specifically one of its new forms, ChatGPT. AI integration in language education offers significant advantages but remains underexplored in terms of trends, applications, and research issues. Ji (2023), reviewing 24 studies, highlighted that conversational AI supports teachers as a partner,

feedback provider, resource provider, and needs analyst. Advocates emphasize its potential to enable personalized learning, real-time feedback, gamification, and improved accessibility (Nazaretsky et al., 2022; Pokrivčáková, 2019).

Improving the quality of teacher education and changing the role of teachers through AI is also highly remarkable in education. For example, Holstein et al. (2019) suggested that upcoming advancements may involve AI-based machines assisting teachers in performing their orchestrator role in the educational process. AI is capable of assisting teachers in different contexts, however, it must first learn effective strategies for learning and teaching from teachers' data. Implementing proper pedagogical methods in their instruction is due to effective teaching (Tondeur et al., 2020), and productive teaching processes with appropriate pedagogical features can be recognized as models for AI-based educational systems (Sánchez-Prieto et al., 2020).

Theoretical Framework: An Ecological Perspective

Van Lier's (2004) ecological framework adopts a sociocultural perspective, positioning identity as an evolving process of self-perception and interactions with others. This framework views the self as a social construct shaped by social, institutional, and political contexts through interactions between perceptions, actions, and the environment. Central to this view is the concept of affordances – opportunities provided by the environment that individuals may act upon, shaping their identity and interactions. Aligned with Vygotsky's sociocultural theory (1978), which emphasizes the role of social interaction in cognitive development, learning is seen as a product of culturally embedded experiences. This mutual transformation of individuals and their environment is further expanded in Bronfenbrenner's educational ecology (1979), which outlines five layers influencing educational dynamics: micro, meso, exo, macro, and chronosystems. Bronfenbrenner (1993) emphasized that learning is not an isolated internal process but emerges from the interplay between individuals and their social contexts, transforming both in the process.

Several studies employed this framework to analyze LTI in the context of education (e.g., Edwards & Burns, 2016; Kamali & Nazari, 2023; Nazari, et al., 2023; Rayati, 2024; Yao & Slater, 2024; Zekri et al., 2024); however, exploring the impact of advancements in AI on LTI is still in its infancy. Therefore, this study tries to investigate the impact of AI integration on LTI with an eye on an ecological perspective as revealed through the teachers' narratives and interviews. To analyze the findings of this study within a theoretical framework, educational ecology (Bronfenbrenner, 1979) was employed since it recognizes the multifaceted, context-sensitive, and dynamic nature of identity formation which allows for a comprehensive understanding of how different aspects of AI interact with each other and other various factors to shape LTIs in educational settings. To guide our inquiry, the research questions are formulated as follows:

RQ1: How does integrating AI into language education affect Iranian teachers' LTI? How does educational ecology explain this investigation?

Method

Design

In order to investigate the effect of using AI tools on LTI, qualitative research was conducted. To ensure the phenomenological focus of the research design, data was collected through semi-structured interviews. The unit of analysis centered around the participants' experience and what it meant to them. The participants' previous experience with the phenomenon of their eagerness to use AI tools in their teaching was assessed through narrative frames. The research was mainly focusing on how the participants were affected by the setting and the link between using AI tools and LTI was manipulated.

Participants and Context

This study was conducted in Iran where AI is one of the most current trending topics of interest among Iranian language teachers despite all restrictions on access to the Internet and purchasing AI services (Meraji et al., 2023). Since AI is a new phenomenon, many Iranian teachers are interested in applying AI tools in different steps of their teaching process to get help from it in their lesson plans and implementing their sessions. Despite facing international sanctions that have limited Iran's access to new technologies, including AI, the educators' commitment to incorporating AI in education surpasses the challenges posed by these sanctions (Steckman, 2020).

To collect data, teachers from language schools offering both in-person and online classes were selected to examine their identity construction through AI use in lesson planning and teaching. Purposeful sampling (Creswell, 2019) was employed to recruit participants capable of providing detailed insights into the topic. Initially, 16 participants completed an online form, but interviews were conducted with seven who provided sufficient narrative data. As this study utilized a phenomenological approach, emphasis was placed on in-depth data from a small, purposefully selected sample (Miles & Huberman, 1994), prioritizing information richness over sample size to ensure validity (Patton, 2002). Data were gathered through semi-structured interviews with seven teachers (five male, two female), aged 25 to 42, with 5 to 19 years of teaching experience and qualifications ranging from BA to PhD in language-related and other fields (Table 1). These participants had experience with both traditional and AI-supported teaching methods, enabling exploration of links between AI use and identity formation. To ensure data saturation, an interview with an unqualified participant was reviewed, confirming that no new insights emerged, meeting the stopping criterion (Guest et al., 2006).

Table 1

Demographic Information of the Participants

Teacher	Gender	Age	Education	Teaching Experience (years)	AI Tools
T1	Male	42	MA ELT	17	Chat GPT and OpenAI
T2	Male	36	MA ELT	19	Chat GPT
T3	Female	34	MA TEFL	17	Google tools & Chat GPT
T4	Male	34	MA	13	Chat GPT
T5	Male	25	PhD	5	Microsoft Bard
T6	Female	33	MA TEFL	14	Chat GPT
T7	Male	36	MA TEFL	14	Chat GPT

Data Collection

To answer the research question, a thematic analysis (Braun & Clarke, 2006) was employed to explore how LTI is formed by integrating AI into education. As the first step to collect data, a Google form link was sent to the teachers. The form included a consent letter at the beginning, a part about participants' demographic information, and three narrative frame statements at the end (Appendix A). After investigating the participants' information to identify which teachers were more qualified, the data were collected through semi-structured interviews.

To enhance the trustworthiness of the study, two interviewers conducted the interviews (Velardo & Elliott, 2021). Since interviewees were geographically dispersed and not available in the same area, they were asked to participate in the interviews through online platforms like Google Meet and Skype. Online interviews also facilitated the recording of data electronically for further investigation. The duration for each interview was about 30 to 60 minutes. During the process of collecting data and doing the research, coordination meetings with all the researchers (a total of two meetings) were held through the Google Meet platform and they were all recorded and shared in the group as well.

Data Analysis

Data were analyzed using the thematic analysis method proposed by Braun and Clarke (2006) to identify themes and codes that illustrate how AI use constructs LTI from an ecological perspective. Narrative frames were collected, and recorded interviews were transcribed and translated from Persian to English. The main interviewer (first researcher) read and reread the transcriptions, and to ensure the validity of the emergent themes and codes, all researchers participated in two online meetings to discuss the themes and sub-themes. Primary themes and sub-themes were developed based on the codes identified in the narrative frames and interviews, highlighting how AI use shapes LTI within educational ecology. A thematic map was created and agreed upon by all researchers, with final themes collaboratively discussed and formed. Three ecological levels emerged as the main themes—micro-pedagogical, meso-institutional, and macro-sociocultural—each containing two sub-themes. For example, one teacher noted how negative attitudes from parents about AI in education affected their identity and willingness to use AI, reflecting the meso-institutional level's dynamics between the school environment, parental expectations, and teacher readiness. To ensure the trustworthiness of the results (Lincoln & Guba, 1985), Interviewee Transcript Review (ITR) (Rowlands, 2021) was conducted, where themes and extracts were shared with the teachers to verify their authenticity and accuracy.

In this study, precise attention was given to ethical considerations by sending a consent letter, which included an explanation of the research objectives as well as the benefits it brings to the teachers, before inviting the respective participants to fill out the narrative frames prior to the interviews. It also consisted of a paragraph mentioning the data collection and storage procedures, and that the only use was for research purposes. In addition, the letter informed the participants that personal information would remain confidential and that they could withdraw without penalty.

Researchers' Positionality

All researchers involved in this study share a background as language teachers who have worked or currently work in Iran, integrating AI into their teaching environments. The main interviewer, responsible for theme development and coding, is an experienced EFL teacher who actively incorporates AI as a supplementary tool in the Iranian context. This selection was intentional, as her familiarity with both the educational context and AI integration provides a unique and insightful perspective. Her role includes conducting interviews and shaping the initial thematic framework that guides data analysis. While the primary interviewer's background, along with those of the other researchers involved in coding and theme construction, may influence the study's focus and interpretation, this subjectivity is acknowledged and embraced. It contributes to a deeper understanding of the complex dynamics between AI and teacher identity construction (LTI) in the specific educational context of Iran.

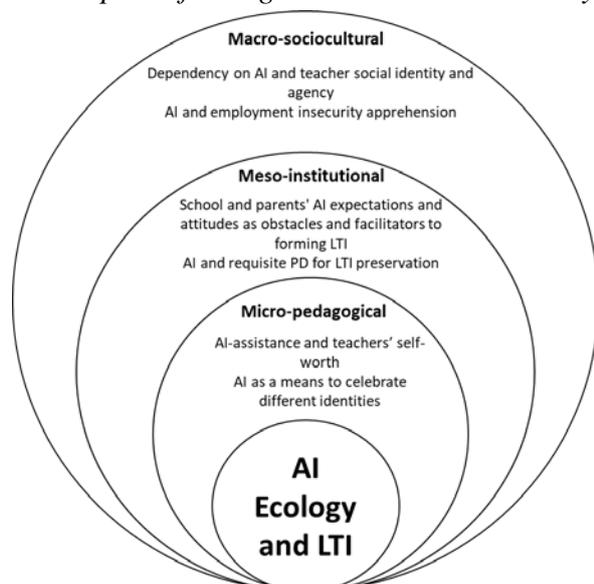
Findings

Bronfenbrenner's ecological systems theory highlights the multifaceted environmental influence on human development at five different levels, ranging from personal interactions to broader societal contexts, out of which only three have emerged in our study. According to this model, the microsystem refers to the direct interaction between individuals like peers and teachers; the mesosystem reflects the connection between different microsystems such as educational institutions and family, as well as between teachers and colleagues, and the macrosystem includes societal and cultural impacts on individual development.

In this study, deductive data analysis (Braun & Clarke, 2006), which was conducted based on a pre-established theory derived from Bronfenbrenner's ecological systems theory, indicated that integrating AI in teaching language affects LTI at three ecological levels: micro-pedagogical, meso-institutional, and macro-sociocultural. According to Figure 1, there are three major themes and each theme was subdivided into two subthemes, which are described in detail.

Figure 1

The Impact of Using AI on Teachers' Identity from an Ecological Perspective



Micro-Pedagogical Level

From a micro-pedagogical lens, the impact of utilizing AI by teachers in the classroom environment on LTI revealed two subthemes, i.e. “AI assistance and teachers’ self-worth” and “AI as a means to celebrate different identities.” In this regard, all participants concurred that AI integration in education could provide confidence in teaching by assisting them, and they felt employing AI could enhance the efficiency of their tasks compared to the methods used before, which is the reason they displayed a preference for using it in their instructional practices. This increases the participating teachers’ sense of self-worth. The experience of using AI instills confidence and a heightened sense of responsibility for the learners, contributing to a more robust and empowered professional identity among teachers. In other words, incorporating AI in teaching could help them develop their knowledge and, as a result, their self-confidence enhanced. T1 started his interview by narrating his apprehension of learners’ literacy in AI in the class. The moment he saw all the learners answering every question genuinely without hesitation (which became evident that it happened with the help of AI), he decided to develop his knowledge of AI so that he could move with the students, leading them to use AI accurately. This transformation also instilled confidence in his classroom presence.

...I was a bit scared, and this fear marked the beginning. In the beginning, I felt that some kids were doing some unusual things in class, and it seemed strange to me how they were doing these things. The way they reduced the number of mistakes or answered research-based questions... It seemed like the kids were getting help from something or someone... I realized they were actually using artificial intelligence for some of their tasks, and now I'm just trying to discover what it is. Gradually, I understood how much it can help me in class. (T1, Interview).

Regarding responsibility and the impact of AI usage on LTI, T3 expressed that refraining from using AI is not an option for him; this reflects its integration into his identity. She expressed in the interview:

That, I as a teacher decided to learn how to use artificial intelligence and various online tools for my classes, indicates that I really feel the responsibility to learn more new things and to use the tools. Then I can't stop using them, as they work well, and I see that learning happens much faster, and it's very interesting for learners. (T3, Interview).

While participants acknowledged the potential benefits of incorporating AI in education for learners and how it helped them form their identity, their primary emphasis lay on its usefulness for teachers. They perceived AI applications in teaching as particularly advantageous for teachers rather than learners and “as a means to celebrate different identities at the micro-pedagogical level” which is the second subtheme. Six participating teachers asserted that integrating AI can significantly impact learners' autonomy across various ages, levels, and learning styles. This transformative effect on learners contributes to shaping the teachers' identity, as they see themselves as contributors to learners’ success. T7 narrated in the interview about the result and motivation of two of his IELTS students as:

For example, in writing, students usually have ideas and vocabulary weaknesses, I tell them to use artificial intelligence to create ideas and learn new words related to each topic. Two cases that I've had long ago that their writings have changed from band six and a half to seven and seven and a half when I told them to use AI to collect ideas, and it worked (T7, Interview).

Another teacher also stated, “You can improve your learning outcome because it's always available. And kids can always communicate with them, talk to them, chat with them – this can have a good impact on children's language learning.” (T6, Interview). However, T2 saw this autonomy as the disadvantage of using AI in teaching language, which could reduce the need for teachers. “Students can simply self-learn languages with the assistance of AI. It does create a bit of concern for teachers regarding their future careers...” (T2, Interview).

In summary, the micro-pedagogical examination of AI usage among teachers reveals that LTIs are influenced by the impact of AI on teachers' self-worth and how it is used to celebrate the diversity of LTIs. Participating teachers affirm that integrating AI not only enhances their confidence and efficiency but also contributes to a more robust LTI.

Meso-Institutional Level

From a meso-institutional perspective, the use of AI by teachers in the context of language schools or institutes and its effect on LTI was analyzed and two main subthemes emerged from the data, namely, “School and parents' AI expectations and attitudes as obstacles and facilitators to forming teachers' identity” and “AI and requisite PD (professional development) for LTI preservation”. Four teachers expressed the belief that AI had the potential to enhance their professional lives, making them more organized in their roles and improving interactions with colleagues and supervisors. This positive perception and anticipation of AI's benefits contribute to shaping the language teachers' identity, portraying them as adaptable professionals who embrace technology to optimize their job performance. As T3 mentioned in the interview:

Well, I know that for every report I complete and share through the platform, my senior manager can check it every night, so I know I'm completely in control of my supervisor, and other colleagues... and this interaction does not need to report anything orally and is available to everyone during the process. (T3, Interview).

Moreover, as a result of improving relationships with their colleagues and supervisors, teachers can share their information about the useful features of AI and its application in the class; therefore, it encourages them to apply AI in their teaching. For example, T4 stated in the interview “I might say that a significant portion of our conversations is now related to AI, and what potential it has, and what we can do with it. We learn new things every day.” (T4, Interview).

The participant's apprehension about AI as a potential threat or competitor to schools and teachers introduces a dimension of concern within the landscape of LTI. The perceived financial challenges associated with AI implementation add a layer of complexity, reflecting how external factors, such as budget constraints, influence the professional identity of language teachers. In this context, teachers might grapple with the implications of technological

advancements, questioning how these changes could impact their roles, responsibilities, and the overall educational environment. This interplay between concerns about AI and financial considerations contributes to the evolving narrative of language teacher identity in the face of technological advancements in education.

... if the progress of AI is faster, it's possible that we won't need language education institutions in the near future. That's because artificial intelligence can easily take over this role. So, artificial intelligence is a luxury item right now. They don't have a clear plan for it, nor do they know what's going to happen with this luxury item ... (T2, Interview).

Furthermore, all participants claimed that parents' attitudes towards AI and their expectations from teachers are effective in their use or not use of AI in their teaching. This dynamic underscores the adaptive nature of language teachers, whose professional identity is shaped not only by their own perspectives but also by the expectations and preferences of the broader community, especially parents. The relationship between teachers, parents, and technology creates a nuanced layer within the evolving narrative of LTI in the context of educational technologies like AI.

Traditional families are not very fond of their kids being involved with technology. But modern families with a more open and broader perspective, which are mostly like this nowadays believe it is helpful for their kids ... For example, my own sister, I mean, if she knows she can use AI to help her child, she definitely encourages her child to use it (T4, Interview).

In this regard, T2 also asserted that teachers should meet the parents' needs since parents are the ones who pay the teachers by enrolling their children in the language courses, as he said in the interview:

Definitely, because they're the ones paying for their kids to enroll, and it's a business for me; I'm making money regardless of what they say; if they say the sun is green, I say it's definitely green because they're the ones paying. (T2, Interview).

Regarding the second extracted subtheme, AI and requisite PD for LTI preservation, all participating educators agreed that AI could enhance teachers' professional knowledge, thereby advancing their professional development. However, three participants noted that training courses or webinars are necessary for teachers to learn about AI's features and how to use it effectively in the classroom. This view frames teachers as dynamic professionals who recognize the value of technological advancements and actively seek the training needed to incorporate AI into their practices. For example, T1 stated, "I can be more alert to boost my professional knowledge because AI shows us our understanding of the world is too limited" (T1, Narrative statement). T3 shared that using AI had led to positive feedback from students and supervisors, which she views as a valuable addition to her resume: "I always announce the good feedback I got from the institution as an important part of my resume. This was really

encouraging to me to learn more and more about using AI in my classes” (T3, Interview). In contrast, T4 emphasized the value of skill and experience over position within the school, stating:

Well, it hasn't been long since professional development is not like, for example, today, AI comes, and you make use of it, and you think you've got a better position. No, but I consider myself more professional. However, seeing myself in a better position, not yet, really, maybe it's too early for that. (T4, Interview).

Or T5 stated the need for being updated which can be one of the reasons to use AI for teaching classes and to preserve LTI.

Before I discovered AI, I saw myself as one who tried to keep himself up-to-date with apps and to be familiar with technology. I have to add, I know how to work with it. How to order it. I can say that it's just like something new comes up and the teacher needs to update himself and his science on that. (T5, Interview).

In conclusion, the meso-institutional analysis of AI integration reveals the importance of school and parents' opinions regarding AI and its PD (professional development) on LTI. Positive perceptions of AI enhance teachers' efficiency and interactions within institutions. The evolving narrative of LTI includes adapting to technology and seeking training for effective AI integration. The interplay between teachers, institutions, and technology underscores the adaptive nature of language professionals in the face of technological advancements.

Macro-Sociocultural Level

From the last ecological dimension, named macro-sociocultural perspective, the impact of the integration of AI in education on LTI was analyzed with an eye on sociocultural peculiarities, and two principal subthemes emerged out of the data: “Dependency on AI and teacher social identity and agency” and “AI and employment insecurity apprehension.”

One of the extracted codes related to the first subtheme was that five of the participating educators believed AI is a new and almost unknown technology for society towards which people are gradually moving. Language teachers are actively exploring the integration of AI in their classrooms, driven by a desire to align with societal trends and fulfill the evolving needs and expectations of the community. This proactive approach allows them to stay relevant and actively participate in the broader societal milieu. T4 believed that society's standpoint plays a crucial role in constructing LTI.

In my opinion, after a transitional period, which we are currently in, society is moving towards accepting and embracing technology and AI, and there is no other option ... This societal perspective affects you as a teacher and your identity. It convinces me that I need to be more active and up-to-date. (T4, Interview).

In the context of language teacher identity, all participants expressed the view that societal perspectives on AI and teacher agency are influential. They believed that their ability to

persuade others to embrace or reject AI in education is primarily limited to individuals they know well and maintain close relationships with. The implication is that language teachers may feel a sense of responsibility or capability to influence those within their immediate circles, but beyond that, they may perceive convincing others about the use of AI in studies, life, and work as beyond their duty or capability. This nuanced perspective further shapes their identity as language teachers within the broader societal milieu. As T6 expressed, it is almost impossible to convince the educational system and people in society to use AI due to the limitations in our country:

My aunt is the deputy of a school. I asked her why schools are traditional. It's impossible to convince them because they have certain constraints. For example, providing free internet access to students in class means they might go to other websites... I have to restrict it to keep the students focused on their studies. Unfortunately, because this culture has not spread much in our society, schools face these problems. (T6, Interview).

Or T2 said:

... the idea of educating and convincing society, I don't consider it my mission... It takes a lot of energy from me... For example, I can talk to some people and, if they are willing, I definitely teach and discuss. But going out into the streets to find someone, convince them ... what artificial intelligence is – no...” (T2, Interview).

Concerning the second subtheme at the socio-cultural level, “AI and employment insecurity apprehension”, all teachers except one claimed that AI cannot replace their jobs and can only act as a facilitator, which might ease their job and change their role to a coordinator or operator or a content producer in the class, that does not mean they will lose their job even in foreseeable future. In effect, the viewpoints were twofold: the first comprises traditional teachers who are hesitant to embrace technological advancements, expressing concerns about potential job displacement in the future; the second group consists of technophiles and AI-focused language instructors who actively integrate AI into their teaching methodologies, viewing it as a valuable facilitator and recognizing that their roles may undergo positive transformations. As T3 and T1 stated in their interviews, respectively “Technologists become content producers ...the only changes are the role of teachers, and those who are not technicians are afraid to get into it and fear to lose their jobs.” (T3, Interview).

The teacher will always remain, and we will always be teachers. Our role may change; we might become operators or individuals who want to delegate idea generation to machines. But I'm not concerned that artificial intelligence will diminish the role of the teacher. Its role will change. (T1, Interview).

The only participant who believed that teachers would definitely be replaced by AI and there would be no need for language teachers in the future was T2, who explained: “Typically when educators encounter a tool like artificial intelligence, which aims to take on some of their

tasks, they become defensive and view it as a competitive threat. They perceive it as a threat rather than an opportunity.” (T2, Interview). Interestingly, T2 was the owner of a language school simultaneously, and he considered AI as a threat to the language institutes and schools as well, which would cause their removals.

Despite being in this state, we have no place for AI because AI is essentially seen as a threat to the institute. Institutes try to provide services that AI cannot deliver so they can remain stable and competitive. In the future, AI will eliminate the need for physical presence. Eventually, the institutes will lose unless they can provide services that AI cannot. However, this is quite far-fetched. (T2, Interview).

In conclusion, in this ecological layer, i.e. macro-sociocultural, participants recognizing AI, as a new societal trend, actively explore its integration in response to evolving community needs. Teachers recognize their limited influence on broader societal views regarding AI in education, emphasizing their capacity to persuade those within their immediate circles. Participants also presented both concerns about job displacement because of AI and embracing AI as a positive transformative force.

Discussion

The findings of this study revealed that AI integration in instructional practices had a significant empowering impact on participating teachers' identity construction at different ecological layers of micro-pedagogical, meso-institutional, and macro-societal. According to the data at the classroom level, AI usage positively affected language teachers' professional identity, making them feel competent, self-worth, and efficient in their classes. The findings illustrated that AI integration encouraged teachers to develop their knowledge, and therefore, it could increase their self-confidence which contributed to shaping their professional identity. This aligns with the previous research findings showing the impact of AI integration in professional development programs on improving teachers' knowledge and teaching methods, fostering their professional growth and confidence (Tammets & Ley, 2023), thereby enhancing their professional identity (Ng et al., 2023). In addition, AI was found to be notably effective in teachers' preparatory endeavors before the class; it could assist them in providing feedback, supplemental resources, and materials, which resonated with the study of Ji et al. (2023) and caused its participating teachers to feel more organized in class. In our study, AI applications could also help teachers in problem-solving and decision-making processes, affirming the previous study by Zhang and Lu (2021), who argued that technological advances could improve the ability of problem-solving and decision-making in education. In this regard, our study mainly added to the discussion that AI, as a part of technology, could assist language teachers and improve their professional identity.

A concurrent belief at the micro-pedagogical level is the effect of AI integration on language learners' academic success, which is also considerable, although our participants claimed that AI could be more of an assistant to the teachers rather than the learners. In this regard, language teachers experienced a sense of achievement observing the learners' improvement in the learning process following the integration of AI in the class. This resonates with the study findings by Srinivasa (2022), indicating that AI can help learners improve in

education. Our study also added that AI could increase the learners' autonomy to such an extent that it raised concerns among teachers regarding job security or to be replaced by AI. The findings also revealed some issues regarding learners' use of AI. Despite the fact that AI can be helpful for learners, there are also some challenges that might be a result of its usage in education. In line with Adeshola and Adepoju (2023) and Palvik (2023), this study posited plagiarism and cheating as the challenges of using AI in education. This might cause a shift in LTI by showing a reluctance to endorse the integration of AI as a tool in the autonomous learning process.

At the meso-institutional level, AI integration is effective on LTI based on parents' attitudes and school support. If parents and schools have positive attitudes towards the use of AI in education and schools support their teachers pedagogically, technically, and financially, language teachers will exploit it in their classes that leads to a sense of efficiency and efficacy. The findings supported Bradley and Russell (1997), who emphasized the positive impact of a school environment that supported the use of technology on teachers' technology anxiety. AI also improved the teachers' relationships and interaction with their colleagues substantially in the context of school by facilitating the sharing of educational resources and improving teaching efficiency; thus, they could develop their professional status and become more disciplined in their job performances at school. However, it is believed that to employ AI more effectively in instructional practices, teachers need to be updated and trust must be built regarding technology use and professional development programs can play a key role in achieving this (Nazaretsky et al., 2022); this might be one of the areas within which schools can provide support. The participants asserted that teachers needed to broaden their knowledge in technological subjects so that they could achieve a higher professional role. However, providing these courses could incur costs. The high expenses of preparing technical facilities like the Internet, smart screens or applications, and other required relevant means can prevent the teachers from employing AI in their classes affecting their professional identity. This is what the schools should provide support upon.

At the macro-societal level, the findings revealed that AI integration in education is a must as society is moving towards the technology era. Teachers, therefore, should meet the needs of society, otherwise, they will be replaced by technology-oriented ones. Albeit seeming unfair, this positively influences LTI formation by encouraging teachers to update their AI-related awareness so that they will survive as language teachers (Kong et al., 2023). Nevertheless, our research added to the Kong et al. (2023) considering this as a broader societal landscape, in that any profession might be in danger of removal, and the only way to maintain their roles is to adapt themselves to technological advancements instead of resisting and fighting against them. The findings asserted that developing technological skills shifted AI from a threat to a beneficial tool for them, like a scaffolder or facilitator. Thus, not only does AI not replace language teachers' roles, but it can also transform their role positively to the coordinator, which supports the orchestrator role of the teacher (Holstein et al., 2019) and accelerates the process of teacher metamorphosis (Kamali, 2014, 2021, 2023). Nevertheless, the perception of a positive transformative role may hold true primarily among teachers who are technophiles. While, in this study, all participants were AI-oriented teachers, it would have been valuable to explore the beliefs of traditional teachers as well. This could provide insights into whether their

perspectives align with the findings of this study regarding teachers' concerns about future employment.

All in all, this study shows the interrelationship between the three ecological layers and reveals that all the layers can influence and reinforce each other. At the micro-pedagogical level, AI integration in language teaching can enhance teachers' competence, increase their professional identity, and assist them in their instructional practices, all of which lead to their professional development at the meso-institutional level so that they can have technical and financial support from educational institutions and improve the use of AI tools effectively. Some research indicated that when there is robust support from schools like professional development programs, teachers have a sense of competence and confidence in using AI tools; therefore, they can become more effective teachers (Bradley & Russell, 1997). These improvements also reduce teachers' apprehension of insecurity in employment at the broader societal level. As Celik et al. (2022) highlighted in their research, AI can significantly benefit teachers by providing them with professional development chances and reducing their concerns about job insecurity, which boosts their confidence and competence as a result of more effective roles at schools.

Conclusion

The present study investigated the impact of AI integration into language education on LTI construction from an ecological perspective. The findings revealed that the data emerged on three different levels: micro-pedagogical, meso-institutional, and macro-sociocultural. AI significantly empowers language teachers by enhancing their self-worth and efficacy and serves to celebrate different identities at the micro-pedagogical level while at the meso-institutional level, school and parents' AI expectations and attitudes act as obstacles and facilitators to shape LTI, and AI and requisite PD are crucial for LTI preservation. Finally, in the third level – macro-sociocultural ecosystem – dependency on AI and teacher social identity and agency and AI and employment insecurity apprehension emerged as subthemes.

This study had also some limitations, which are valuable to mention. The most significant challenges were Internet access, AI purchase restrictions due to socio-political issues, cost, and educational policy constraints. Therefore, it was challenging to find many eligible participants for this study. Thus, changing the context from Iran to other regions might raise questions about the generalizability of the findings.

It is noteworthy that the teachers who participated in this study were all proponents of integrating AI in language classrooms; therefore, another study may be conducted by the other group of teachers who oppose integrating AI into classrooms. It is also important to acknowledge that the findings of this study, consistent with the typical nature of qualitative studies, should be expanded from its original context – Iran – with caution. Therefore, it is recommended that this study be replicated in other contexts, specifically the ones without restriction and sanctions, to ascertain the broader applicability and validity of its outcomes. The result of this study can raise teachers' awareness regarding integrating AI into classrooms and how it can impact their identity construction. It can also assist them to investigate their own views regarding the integration of AI. The findings can also inform teacher educators to address the potential resistance or apprehension towards AI integration among some teachers

and emphasize the importance of tailored professional development programs to enhance their technological proficiency.

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Competing Interests

No, there are no conflicting interests.

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Appendix A

Narrative Frames

Complete the following sentences with your experience.

1. *One of the most significant changes I felt in my classes after the advent of AI is because*
2. *One of the most significant changes I felt in my school after the advent of AI is because*
3. *One of the most significant changes I felt in my society after the advent of AI is because*