

AI as a reflective coach in graduate ESL practicum: activity theory insights into student-teacher development

Research Article

Julian L'Enfant*

Faculty of Arts, Saint Mary's University, Halifax, Canada; Department of Educational Research, Lancaster University, Lancaster, UK

Abstract: This study examines the role of artificial intelligence (AI) as a reflective coach in graduate ESL practicums, using Activity Theory to assess its impact on student-teachers' (STs) reflective practices. An exploratory case study of 26 graduate ESL STs was conducted, with data from AI interactions and post-reflection questionnaires analysed qualitatively. Findings indicate that AI enhances STs' reflection, providing a structured, data-driven method for pedagogical development and personalised anytime feedback, thereby addressing feedback challenges in ESL teaching practicum courses. Despite limitations like diverse ST backgrounds and practicum environments, findings suggest AI's promise for transformative learning experiences. The study concludes that AI, as a reflective tool in ESL practicums, warrants further research into its impact on teacher development and adaptability in various teaching contexts.

Keywords: *Artificial intelligence in education; ESL practicum; Reflective practice; AI as reflective coach; Activity Theory*

Introduction

The integration of artificial intelligence (AI) into English Language Teacher Education (ELTE) addresses challenges in teacher professional development (PD) and training. This study investigates how AI as a coaching tool in graduate ESL practicums can potentially transform critical evaluation and reflection. It explores the intersection between AI-coaching tools and ESL student teachers' (STs) reflective processes during a capstone graduate practicum course, using Activity Theory to analyse cognitive transformations in teaching practices influenced by AI-mediated interactions.

Background

ELTE practicums typically involve supervised teaching practice, systematic, or structured observation, and a familiarisation process to the teaching context. These experiences vary greatly in intensity (Gebhard, 2009, p. 250) but are pivotal for reflective practice (RP). Through these experiences, STs are encouraged to examine their teaching practices critically with the goal of continuous improvement. Research has established that RP is a complex, dynamic and highly personalised cyclical process that involves deep thinking, critical analysis and continuous improvement that benefits significantly

from collaborative efforts and external input (Godínez Martínez, 2018, p. 443; Korucu-Kis & Demir, 2019, p. 1249). However, RP is often limited by inadequate feedback mechanisms that fail to promote critical self-reflection (Godínez Martínez, 2018, p. 430; Ochieng' Ong'ondo & Borg, 2011, p. 522). Furthermore, Walsh (2013, p. 12) suggests that many ST and supervisors often lack both the knowledge and training in practising effective RPs.

However, the practicum supervisor plays a key role in guiding ESL STs through structured reflective processes to support the application of what is learned in their courses to the realities of their practicum teaching context (Gebhard, 2009, p. 254), especially in early training stages (Gan & Lee, 2015, p. 252; Ochieng' Ong'ondo & Borg, 2011, p. 522). However, challenges can include conflicts with mentors (Mohd Ariff Albakri et al., 2017, p. 231), theory-practice gaps (Al-Adwani & Al-Shammari, 2022, p. 100) and time constraints for feedback (Celen & Akcan, 2017, p. 266). Drawing from my experience in running graduate practicum courses for many years, I have also observed these challenges in current RP processes most notably feedback delays.

This research is situated within the higher education and ELTE context and acknowledges the convergence of technology, pedagogy and ESL ST needs. The study

* E-mail: Julian.LEnfant@smu.ca

positions itself at the intersection of technology and language education, emphasising the potential of AI in enhancing and potentially transforming ESL teacher training and development. My positionality attempts to value both the depth of academic inquiry and the practical implications of AI in practicum settings.

Generative AI has the potential to provide personalised instruction and feedback, assisting ST in identifying and addressing gaps in their understanding, thereby enhancing their critical thinking and pedagogical skills (Mollick & Mollick, 2022, p. 2). The utilisation of AI as a reflective coach in ESL practicums could support the development of metacognitive abilities, offer non-judgemental feedback spaces (Mollick & Mollick, 2023a, 2023b, p. 18) and enhance technological awareness. However, it's crucial to balance AI with human mentorship (Mollick & Mollick, 2023a, 2023b, p. 5) ensuring AI complements rather than replaces human insights. This research study aims to contribute to the discourse on AI's role in enhancing STs' RPs and pedagogical decision-making by integrating AI as a reflective coach into ESL practicums.

Literature Review

My search strategy for this narrative literature review was exploratory and adaptive to the evolving research area. Initial searches (Table 1) in traditional databases like EBSCOhost and Education Resources Information Center (ERIC), while yielding numerous papers on reflection and practicums, often conflated practicums with broader PD. While there was a large number of papers on incorporating technology in practicums, the specific focus on AI as a reflective coach in ELTE

was barely represented. To address this, I utilised AI-enhanced search tools such as Elicit.com and ScholarAI, employing keywords like 'AI as Coach' and 'ESL Practicum' extracted from the research title and questions. This refined approach, supplemented by traditional databases and Google Scholar, focused on the literature pertinent to AI's role in coaching and RP in ELTE.

Employing a snowballing method, I explored the references of key sources to uncover older, significant literature, especially those addressing challenges in practicum supervision, thus ensuring a comprehensive understanding of the topic. My inclusion criteria focused on AI in higher education, specifically in English Language Teaching (ELT) and reflective practices (RP), excluding studies not central to these themes, like those solely on COVID-19 and distance learning. The strategic use of keywords managed with Boolean operators aligned the search with my research objectives. Given the novelty of the field, I also consulted secondary literature from online platforms such as Medium. The literature was then synthesised into five key themes, structured narratively for this review.

The role of feedback in practicum courses

Feedback is crucial for the PD of teachers who teach English as a second language, as it helps improve their teaching methods and their ability to reflect on their practices. Godínez Martínez (2018, p. 436) emphasises the importance of non-evaluative feedback methods, like peer feedback and self-reflection, to enhance critical self-reflection and professional growth. This is supported by Al-Wadi's (2018, p. 1) findings on the effectiveness of written feedback for in-service language teacher trainees. Al-Jaro et al. (2020, p. 27) further highlight feedback's role in improving teaching skills and boosting confidence in the classroom. However, the quality and timeliness of feedback remain challenges in ELTE, with a need for more immediate and objective feedback to enhance learning (Kadel, 2023, p. 74). Jensen et al. (2020, p. 10) propose automated teaching tools by utilising technology such as speech recognition and machine learning to analyse and provide feedback on various aspects of teacher discourse. When used regularly, they hypothesised that teacher reflection, teaching quality and student learning and engagement would improve. Similarly, Demszky et al. (2023, p. 4) discuss the potential of automated feedback models in interactive teaching tools. The advent of AI tools like ChatGPT presents an opportunity for providing

Table 1: Initial search results

Search term	EBSCO	ERIC
'AI in higher education'	5,645	12
'RPs in ELT'	2,552	1
'ESL practicum'	2,437	63
'Technology in ELT practicum courses'	1,402	0
'Activity theory AND ELTE'	2,140	0
'AI as coach'	4	0
'Critical evaluation in language teaching'	402	0
'Teaching transformation' OR 'Pedagogical transformation in ELT'	95	101
'Mediation tools in ELT practicum'	325	0

immediate, personalised feedback to STs, addressing these challenges.

RP as a tool for professional growth

RP is fundamental in ELTE, promoting a data-driven approach to enhance STs' skills and self-awareness (Gan & Lee, 2015, p. 253; Walsh & Mann, 2015, p. 1). Olaya Mesa (2018, p. 157), Godínez Martínez (2018, p. 441) and Goh and Matthews (2011, p. 15) highlight the value of structured reflection methods like journals and video observations for pedagogical development. The advent of digital tools, such as the Self-Evaluation of Teacher Talk through Video Enhanced Observation (SETTVEO) (Li & Walsh, 2023, p. 372), offers innovative ways to facilitate RP, enriching the practicum experience.

Subedi (2009, p. 142) and Mohd Ariff Albakri et al. (2017, p. 228) confirm that RP can greatly improve a teacher's confidence and abilities. Gan and Lee (2015, p. 263) emphasise its role in streamlining cognitive processes for problem-solving, essential for ESL STs in adapting their classroom practices. They also use Activity Theory to show how social environments, tools and community support can significantly influence a teacher's learning process. (Gan & Lee, 2015, p. 254).

However, RP faces challenges. Walsh (2013, p. 12) states that teachers often struggle with effective RPs, often not knowing how to engage in this process. This is exacerbated by the plethora of RP models, which, as Walsh (2013, p. 130) critiques, can lead to confusion and reduced effectiveness, with RP often relegated to a routine, institutional requirement, in other words, a box-checking activity. Repetitive written methods can also diminish RP's impact on professional growth.

Addressing these issues, this study explores the use of AI as a tool in RP. AI offers a structured, contextual framework for teachers to develop an 'ecological' understanding of their practices, potentially overcoming some limitations in current RP methodologies. Activity Theory supports this by recognising teaching is not an isolated activity, but as something that's deeply connected to and influenced by various factors like the social environment, tools, community support, and more.

Challenges and tensions in practicum experiences

The practicum course presents significant challenges. Not only does it test STs' ability to apply their learning

in real classroom settings, but STs are also required to adapt to unexpected situations while effectively teaching their students. Gan and Lee (2015, p. 264), Kazaz and Alagözlü (2020, p. 1563) and Yazan (2015, p. 187) emphasise the difficulties ST face in translating theoretical knowledge to real classroom situations. Masoumpanah et al. (2019, p. 114) and Al-Adwani and Al-Shammari (2022, p. 96) highlight further the gap between the theory learned in their courses and the practical teaching demands. For example, challenges with lesson planning and classroom management are exacerbated by limited feedback from supervisors (Goh & Matthews, 2011, p. 17–18; Kazaz & Alagözlü, 2020, p. 1563; Masoumpanah et al., 2019, p. 113–114).

Particularly relevant to this study, Fagan (2022, p. 9) explores the complex issue of professional identity and cultural adaptation, particularly for STs teaching in foreign countries or multicultural classrooms, which is a reality for all students in my practicum courses. These challenges include conflicts with communicative language teaching (CLT) due to cultural practices and unpreparedness for classroom realities.

Celen and Akcan (2017, p. 266), Mohd Ariff Albakri et al. (2017, p. 230) and Öztürk, (2021, p. 7) highlight the challenges supervisors face in adequately supporting large numbers of STs. This situation calls for more supervisors, but cost implications and inconsistencies in supervision are risks that would need to be addressed.

The literature underlines the importance of a responsive, culturally sensitive framework in ESL practicum courses. The integration of AI as a coaching tool could provide valuable insights into bridging the gap between theoretical knowledge and practical application.

Integrating technology in ELTE

The integration of technology in ELTE is transforming teacher PD and student engagement. Over the past decade, technologies such as online collaborations, audio-feedback and blog-based teaching portfolios have fostered online learning communities, enhancing dialogue and feedback (Farr & Riordan, 2017; Mann, 2015; Tang & Lam, 2014, as cited by Farrell, 2019, p. 39). These technologies have gained further prominence since the COVID-19 pandemic in 2020.

Innovations like SETTVEO (Li & Walsh, 2023) demonstrate the impact of digital tools in reflecting on teaching. Advances in natural language processing (Demszyk et al., 2023, p. 2) provide comprehensive, dialogic feedback, enriching teacher-student interactions. Cuocci et al. (2023, p. 15) highlight the

potential of technology for peer feedback and its adaptability in ELTE.

In Turkish ELT programmes, the integration of VEO technology by practicum supervisors has revealed promising results in enriching RPs (Tasdemir & Seedhouse, 2022, p. 247–249). Conversely, countries like Germany face challenges due to privacy concerns when implementing video-based technologies in schools.

This body of research emphasises the essential need for technological fluency among ESL teachers. However, the lack of detailed guidance on effective technology deployment and the time-consuming nature of current digital processes indicates an opportunity for AI. AI, as a reflective coach, could offer efficient integration of technology in ELTE, providing real-time, context-specific support to streamline teaching and learning processes in graduate ESL practicums.

AI-enhanced RP in ELTE

Graßmann and Schermuly's (2021, p. 109) concept of AI coaching as a 'machine-assisted, systematic process' for setting and achieving professional goals has potential in ELTE. This approach positions AI as a pivotal tool in enhancing RPs and fostering ST autonomy, using data-driven processes to customise and optimise learning experiences.

Mollick and Mollick (2022, 2023a, 2023b) explore how AI chatbots can augment the reflective capacity of STs by providing diverse examples and feedback, thereby deepening their metacognition and improving teaching practices (Mollick & Mollick, 2022, pp. 1–2; 2023a, 2023b, pp. 18–19). Bearman and Ajjawi (2023) promote the use of AI-integrated teaching strategies to develop critical digital skills and sound judgement, emphasising the balance of self-awareness and critical knowledge as essential skills for modern teachers.

Golombek and Johnson (2004, p. 309) highlight the role of narrative inquiry in resolving cognitive dissonance in teacher development, a process further enhanced by technology according to Li and Walsh (2023). AI, in this context, emerges as a promising mediator for addressing cognitive dissonance and advancing professional learning in ESL education.

Demszky et al. (2023) discuss the principles of designing automated feedback tools that balance personalised feedback with teacher autonomy. This aligns with the use of AI tools as reflective coaches, providing non-judgemental, private feedback that supports rather than evaluates teacher development.

This synthesis of key themes from the literature recognises the vital role of feedback, RP, technological integration and the unique challenges in practicum

experiences within ELTE. AI emerges as a transformative tool, bridging gaps between theory and practice, enhancing RP and addressing feedback and technological integration challenges. My study aims to empirically explore AI's role as a reflective coach, contributing novel insights into its impact on pedagogical decision-making and professional growth. This research contributes to addressing a significant need in ELTE and participates actively in the evolving conversation about the role of AI in ELT practicum courses.

Theoretical Framework

Activity theory

Epistemologically, this study reflects my positionality in that it is oriented from an interpretive/constructivist perspective and grounded in hermeneutics, as participant experiences are analysed through written ST experiences (Merriam & Tisdell, 2015, p. 34).

Central to this research is Activity Theory, rooted in the cultural-historical psychology of Lev Vygotsky (1978) and expanded by Engeström (1999, 2001, 2014). This theory offers a robust framework for examining dynamic social practices, emphasising the role of tools and symbols in mediating individuals' interactions with their socio-cultural environments (Johnson, 2009, p. 78). Activity Theory has been instrumental in exploring the interplay of technology and education, particularly how learners engage with new digital tools (Mwanza-Simwami, 2011, p. 82).

This study is informed by similar investigations, such as those by Marwan and Sweeney (2019, p. 122) and Cheung and Vogel (2014, p. 149), which explore the integration of contemporary technologies in teaching and the resultant pedagogical tensions. These studies support the relevance of Activity Theory as the underpinning framework for this study and their insights align with this study's focus on AI as a reflective tool in ELTE.

Activity Theory conceptualises an activity system (Figure 1) with seven interconnected components: the subject (ESL graduate STs), the object (challenges faced by STs and supervisors during practicum courses), the mediating artefacts (AI coach and structured prompt), the community (stakeholders like peers, supervisor, Teaching Assistants (TAs) and volunteer ESL learners), the rules (processes for RP, feedback mechanisms during the practicum and ethical standards for AI interactions) and the division of labour (distribution of tasks among community members). For example, the instructor and TAs play a crucial role in providing pedagogical guidance facilitating the use of AI tools and evaluating the performance of STs. Meanwhile, the ESL learners contribute by offering informal feedback on teaching,

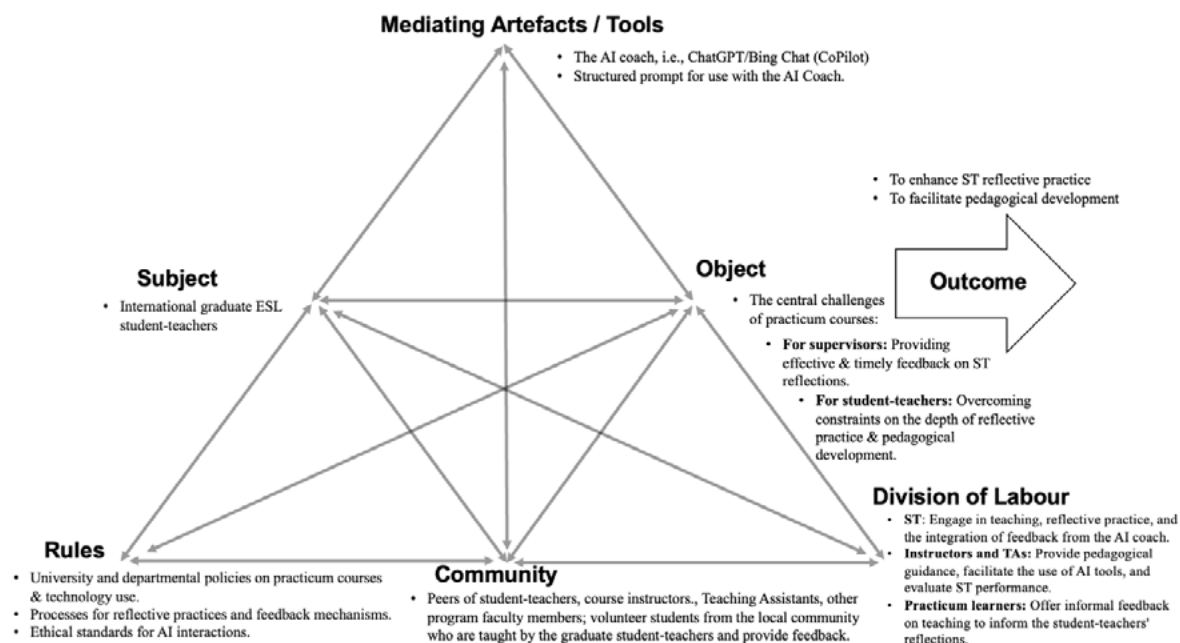


Figure 1: Activity System - AI as Reflective Coach

which is instrumental in informing the reflections of STs. This process is further enhanced by the integration of feedback from the AI coach). The anticipated outcome is the enhancement of STs' reflective capacities and pedagogical development.

In this framework, the study explores how AI, as a 'mediating artefact', interacts within the practicum activity system to address key challenges and facilitate transformative experiences in graduate ESL practicums. The focus is on the engagement of STs with AI coaching tools, examining their potential to enrich RPs and drive professional growth.

Research Questions (RQ)

1. **RQ1:** How does an AI Coach influence the depth and quality of graduate ESL STs' RPs?
2. **RQ2:** How does the AI Coach mediate the effectiveness and challenges of graduate ESL STs' critical evaluations of teaching actions during their practicum?

Methodology

Research design

This is an exploratory case study (Cohen et al., 2017, location 2496) as it is designed to investigate how STs interpret and find meaning in their experiences using AI as a reflective coach in a graduate ELTE practicum

course. As participants interact with the AI tool in different ways, the researcher is required to interpret and search for meanings from their experiences (Creswell & Creswell, 2018, p.4; Merriam & Tisdell, 2015, p. 8).

Ethical considerations

In my role as the instructor of the graduate practicum course used in this study, it was necessary to address ethical considerations. To ensure impartiality and equal access, I introduced the concept of AI as a reflective coach during a class session with all the students. Following the session, a research assistant (RA), not involved in the practicum course, presented the research project to the STs. This was followed up with an email to all students in the course inviting them to participate in the study. STs who were interested in participating in the study contacted the RA directly, who in turn provided the Informed Consent Form (ICF). The RA responded to any questions about the study and maintained confidentiality of participation until after the final course grades were submitted. To be eligible, participants needed to be actively teaching in the local community as part of their practicum and have access to ChatGPT-3.5, (the free version of an advanced large language model developed by OpenAI), or Copilot (formerly known as Bing Chat). Participants who signed up to participate received the following links from the RA: the initial questionnaire, the AI structured prompt and the Post-Reflection Questionnaire (PRQ). All interactions and

tasks were conducted remotely with the RA acting as an intermediary should participants have any questions. Ethical clearance was obtained by the Department of Educational Research, Lancaster University, and reviewed and cleared by the Saint Mary's University Research Ethics Board, (Appendix A).

Participants

This study involved 26 international graduate ESL STs from a Canadian university, who were offered the opportunity to participate anonymously. Twelve STs volunteered, representing a range of practicum experiences, from teaching refugees in the community with limited support to completing a Certificate in Teaching English to Speakers of Other Languages (CELTA) course with more structured feedback. Despite the same reflection prompt being used by the STs, they used the AI Coach in unique ways, demonstrating its ability to adapt and offer valuable help in a wide range of contexts. Although most participants were fully engaged, incomplete data from some (detailed in Table 2) could impact the study's findings.

Table 2: Summary of participants

Total cohort	26
Ineligible participants	3
Volunteer participants	12
Completed initial questionnaires	12
Completed first interaction & PRQ	8
Completed second interaction & PRQ	2
Completed third interaction & PRQ	1
Incomplete PRQ (post-reflection questionnaire)	1

Data collection

Data collection was conducted anonymously over 4 weeks in November/December 2023, involving up to three interactions per participant with ChatGPT-3.5 or Copilot (formerly Bing Chat). These AI tools were selected for their universal accessibility. Initially, STs completed a questionnaire detailing their previous experience with these tools, then engaged with a structured metacognitive prompt adapted from Mollick and Mollick (2023a, 2023b, p. 18) designed for AI-mediated post-class reflections (Appendix B). Creating a chain-of-thought—'a series of intermediate reasoning steps' (Wei et al., 2023, p. 1)—prompt 'significantly improves the ability of large language models to

perform complex reasoning'. In this study, the prompt allowed the AI tool to assume the role of a coach and aimed to ensure as much as possible consistency in AI responses. The AI coach afforded STs time to think more deeply on their practice and in turn 'nurture students' ability to learn independently and critically' (Mollick & Mollick, 2023a, 2023b, p. 19). Conversations were coded as 1.x, 2.x and 3.x, where 'x' denotes an anonymous participant, and structured around specific, guided questions posed by the AI (Appendix C). The AI's role was to guide and prompt reflection, encouraging STs to articulate and analyse their teaching practices and challenges independently.

After each interaction with the AI coach, STs completed a PRQ. The purpose of the PRQ was for STs to reflect on their experience. As it was not possible to organise semi-structured interviews, STs had the option to answer additional questions related to Activity Theory in the context of the study and to explore their experience more deeply. The STs were asked to answer these questions after their third interaction with the AI, although quite a few of the STs answered them after each interaction. The primary focus of the research was to analyse the STs' AI interactions and questionnaire responses in a way that would ensure participant anonymity.

Limitations

The study has several limitations. The inability to conduct semi-structured interviews or track STs individually limited the opportunities for gaining deeper, personalised insights into their AI experiences. The diversity in teaching contexts and modes, such as teaching online and in-person classes across varied learner demographics, presented challenges in standardising the findings. Moreover, complexity arose from the participants' differing ELT experience levels, including those completing a CELTA course as part of their practicum. While prioritising participant anonymity was essential to minimise instructor bias, this approach restricted the depth of data collection. Despite these limitations, the study effectively met its objective of exploring AI's role as a reflective coach to increase metacognition, demonstrating its adaptability and potential in varied practicum teaching contexts.

Data analysis

A thematic analysis was conducted on qualitative data from questionnaires, AI interactions and PRQs. Initially, a qualitative summary of participants' backgrounds and attitudes towards AI as a tool for reflection provided context for understanding their perspectives. The Reflexive Thematic Analysis (RTA) approach, Byrne

(2021), was adopted to analyse STs' interactions with the AI Coach, emphasising reflexivity in the analytical process. This entailed a six-phase process, as proposed by Braun and Clarke (2012, 2013, 2014, 2020, as cited by Byrne, 2021, p. 1398), involving continuous reflection on my own assumptions, perspectives and biases to better understand how they might influence my interpretation of the data. An inductive approach allowed themes to emerge naturally from the data, without reliance on preconceived theoretical frameworks. The analysis was recursive and iterative (Byrne, 2021, p. 1397), involving the continuous coding of data in Microsoft Word and Excel. This continuous process of analysing and interpreting the similarities and subtle differences in the data allowed themes to emerge.

While the six-phase RTA provided a structure for analysing the conversations with the AI Coach, an experiential orientation to the final section of the PRQ (Questions 11–18) was taken, as this valued STs' own reflections and feelings about their experiences with the AI. This placed a specific emphasis on understanding the STs' subjective experiences and interpretations, acknowledging their teaching contexts and reflections, (Byrne, 2021, p. 1396). A detailed question-by-question analysis was conducted, integrating the Activity System framework to capture the STs' experiences. The themes were synthesised and subsequently analysed through the lens of the research questions, themes from the literature review and Activity Theory principles.

A crucial part of the analysis was to acknowledge the broader social, cultural and historical contexts of the data. These reflexive, inductive and context-sensitive analytical methods, underpinned by Activity Theory, sought to identify patterns in how STs critically evaluated and evolved their teaching approaches.

The goal was to find trends in the way STs critically assessed and improved their teaching practice by using thoughtful, flexible and context-aware methods of analysis, which were based on Activity Theory.

Findings

The analysis of the initial survey, AI conversations and PRQs (Q1–10) revealed that using ChatGPT/Copilot as a metacognitive tool for self-reflection provided personalised feedback, an opportunity to organise their thoughts, helped STs ask relevant questions about their teaching, offered useful teaching suggestions and facilitated self-reflection. Moreover, some STs stated that the AI coach was successful in guiding deeper reflection and demonstrated potential in supplementing traditional feedback methods. They appreciated its 'timely and non-judgemental feedback', which made them feel comfortable and supported in their interaction.

Additionally, some teachers were surprised by the AI's empathetic communication, which created a sense of emotional connection and rapport:

'I feel comfortable asking questions to ChatGPT because it will never make me feel embarrassed, no matter how easy my question is' (PRQ 7).

'I was quite surprised with how "feeling" the AI felt, and barring the lack of person-to-person conversation, I thought using the AI was quite beneficial overall' (PRQ 8).

Conversely, some participants raised questions about AI's ability to provide more insightful and theoretically informed feedback or to offer alternative solutions to their problems. One respondent anticipated more insightful and theoretically grounded feedback, expressing concern about the AI's affirmative nature without offering alternative solutions. Similarly, some questioned AI's ability to understand fully the cultural dynamics at play in the classroom. Finally, another respondent stated that the AI did not offer any new or innovative ideas that they had not already considered or encountered elsewhere.

The following themes, (Table 3-7) were derived from the STs' conversations with the AI (Appendix C) and responses to questions 11–18 of the PRQ. Activity System diagrams, (Figures 2-6) provide a visual representation of each theme, and their relevance to the research questions is highlighted. The inclusion of STs' comments illustrates how each theme is grounded in their actual experiences and reflections.

The aggregation of findings provides a summary of how STs used and evaluated their interactions with the AI coach in their respective teaching contexts. In the following section, I will discuss these perspectives in relation to the research questions, examine their alignment with Activity Theory and explore their broader implications within the ELTE.

Discussion

The primary aim of this study was to explore the transformative role of AI as a reflective coaching tool in the PD of graduate ESL STs. This exploration was guided by two research questions:

1. How does an AI Coach influence the depth and quality of graduate ESL STs' RPs?
2. How does the AI Coach mediate the effectiveness and challenges of graduate ESL STs' critical evaluations of teaching actions during their practicum?

These questions were rooted in the desire to understand the functional capacity of AI when utilised

Table 3: Maximising instructional time & enhancing RP

Description	AT component	Relevance to RQ	Relevant quotes
Efficient classroom management and effective use of time.	'Rules' and 'Division of Labour': Efficient classroom management and effective use of time.	Directly addresses RQ1 (depth and quality of RPs). Indirectly relates to RQ2 (critical evaluations of teaching actions)	"One of the most important challenges for me was time management during the class" (1.1, Line 57). "I would like to improve my time management because I always run out of time..." (1.2, Line 77).

Table 4: RP, self-awareness and PD

Description	AT component	Relevance to RQ	Relevant quotes
Focus on self-growth and RPs.	'Subject' and 'object/outcome': Focus on self-growth, goals and self-reflection.	Central to RQ1 (enhancing RPs). Indirectly supports RQ2 through self-awareness in critical evaluations.	"I was realistic in terms of allocating time for some activities..." (1.1, Line 64). "I realised that I am repeating students' answers..." (1.4, Line 97).

Table 5: Addressing teaching challenges and support for graduate ESL STs

Description	AT component	Relevance to RQ	Relevant quotes
Overcoming teaching and language challenges and support for graduate STs.	'Tool': AI as a resource to address specific teaching and language challenges.	Aligns with RQ2 (overcoming teaching challenges), especially relevant for the various practicum contexts.	"I need to make sure to use simple vocabulary and grade my language to make less wordy instructions" (1.1, Line 97). "To avoid repetitive instructions, I think I can use more concept checking questions..." (1.2, Line 114–115).

Table 6: PD and confidence in pedagogical abilities

Description	AT component	Relevance to RQ	Relevant quotes
Building teaching strategies and confidence.	Encompasses personal growth (subject) and results (object/outcome) achieved through AI (tools).	Closely related to RQ1 (impact on professional growth). Indirectly influences RQ2 (confidence in evaluating teaching actions).	"My intonation, stress, and connected speech need to improve in the future". (2.1, Line 78). "AI RC [Reflective Coach] came up with solid suggestions for areas in my teaching I was struggling with" (PRQ 6).

Table 7: Expectations for future use and development

Description	AT component	Relevance to RQ	Relevant quotes
Anticipating future roles and advancements of AI.	Involves the goals of AI integration (object/outcome), evolving norms (rules) and the wider ELT/ELTE community.	More exploratory, providing insight into future applications of AI; sets the stage for improvements in AI supporting RPs and critical self-evaluations.	"The AI Coach would be very helpful. But when we talk about very detailed suggestions, I still think feedback from real-world would work better" (PRQ 2). "It was interesting, and I expect to see the future developments and advances" (PRQ 12).

in a practicum course, such as how AI coaches assist ESL STs in reflecting on and improving their teaching practices and explore its profound impact on the pedagogical approaches and professional growth of emerging ESL teachers. In this discussion, I interpret these findings through the lens of Activity Theory,

which offers a robust framework for understanding the complex interactions between STs, the AI tool and the broader ELT landscape. This theoretical perspective helps to contextualise the role of AI as a mediating artefact in the activity system of ELT, thus offering a deeper understanding of its influence on both RPs and

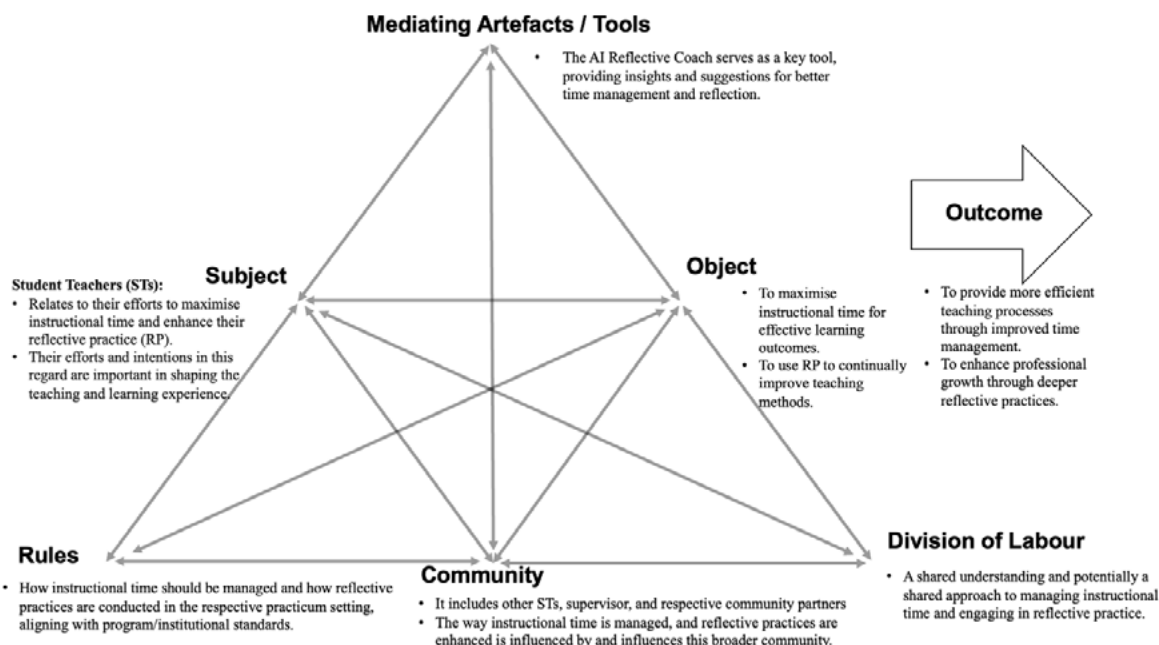


Figure 2: Theme: Maximising Instructional Time & Enhancing Reflective Practice (RP)

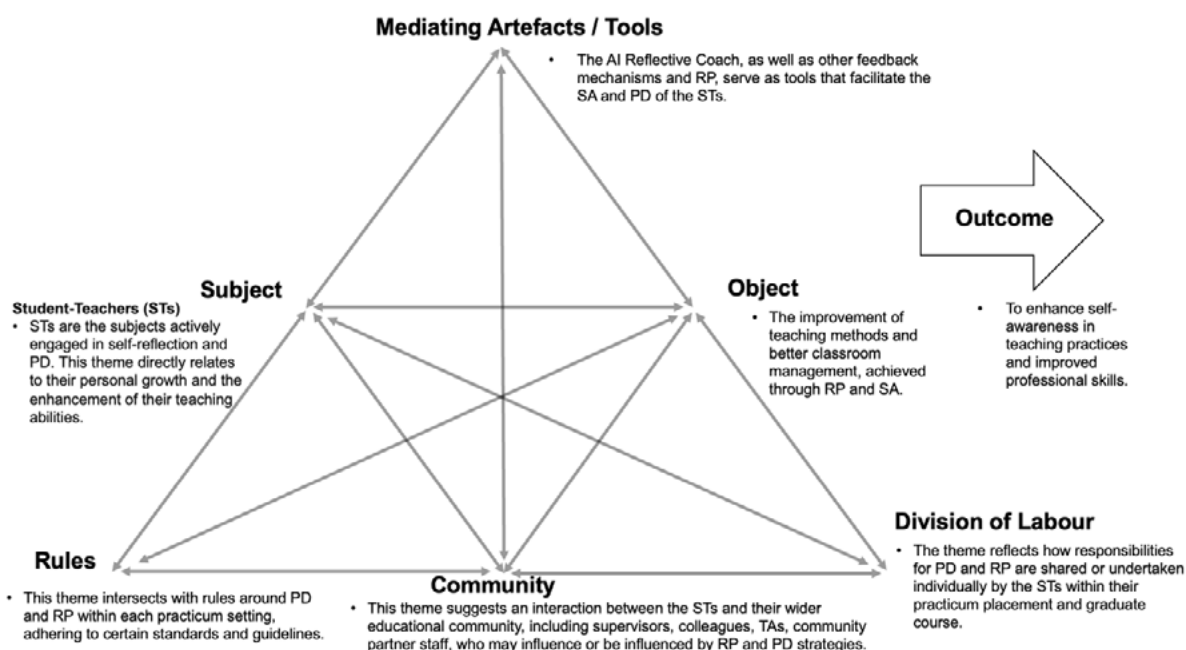


Figure 3: Theme: Reflective Practice (RP), Self-Awareness (SA), and Professional Development (PD).

the critical evaluation of teaching actions. By aligning the findings with this theory and comparing them with existing literature, I attempted to draw out the broader implications of AI's integration in ELTE and identify potential avenues for future research.

RQ1: How does an AI coach influence the depth and quality of graduate ESL STs' RPs?

The findings revealed a significant impact of the AI Coach on enhancing the RPs and self-awareness of graduate ESL STs. The collected data shows that AI coaching

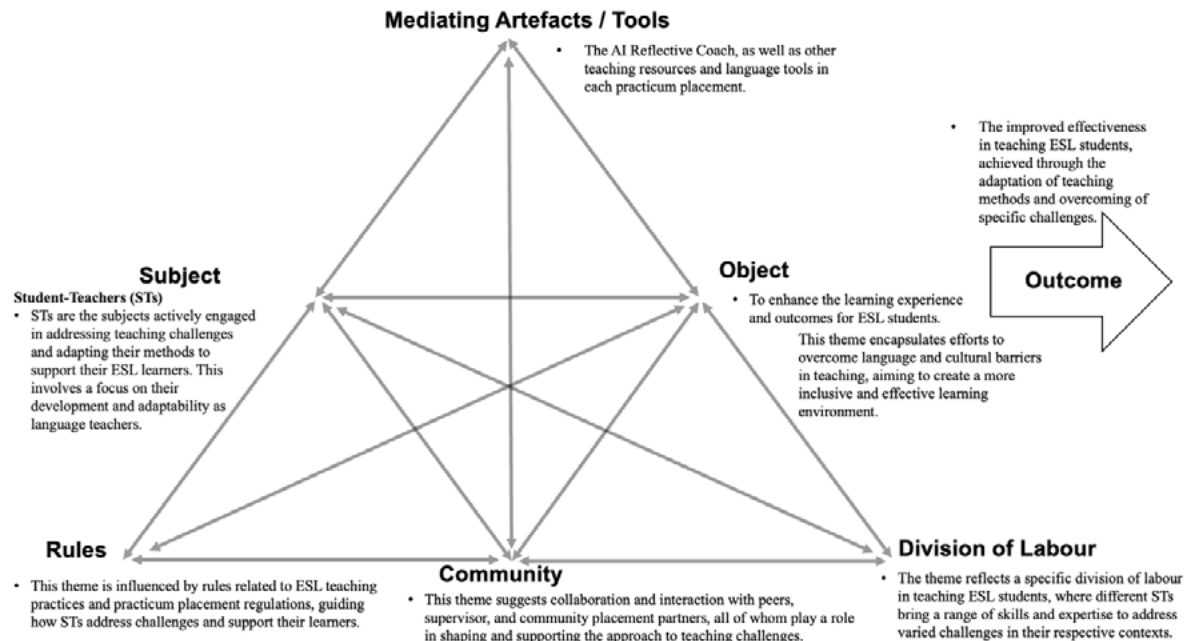


Figure 4: Theme: Addressing Teaching Challenges and Support for Graduate ESL Student-Teachers (ST).

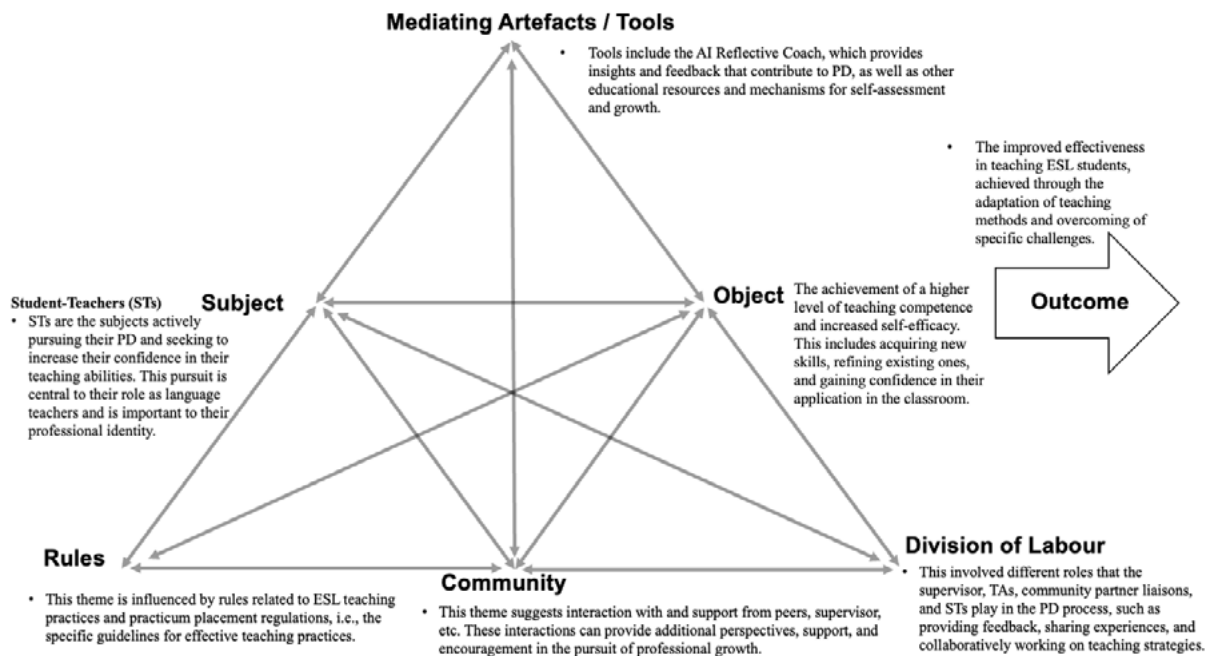


Figure 5: Theme: Professional Development (PD) and Confidence in Pedagogical Abilities

enabled STs to engage in deeper and more systematic reflection on their teaching methods, which aligns with the literature that emphasises the importance of RP in language teacher education (Gan & Lee, 2015, p. 253; Gebhard, 2009, p. 250; Mpofu, 2019, p. 63; Walsh &

Mann, 2015, p. 1). Specifically, the AI Coach facilitated a more detailed understanding of classroom dynamics and language use, enabling STs to critically analyse and refine their teaching strategies.

This enhancement in RPs answers my first research

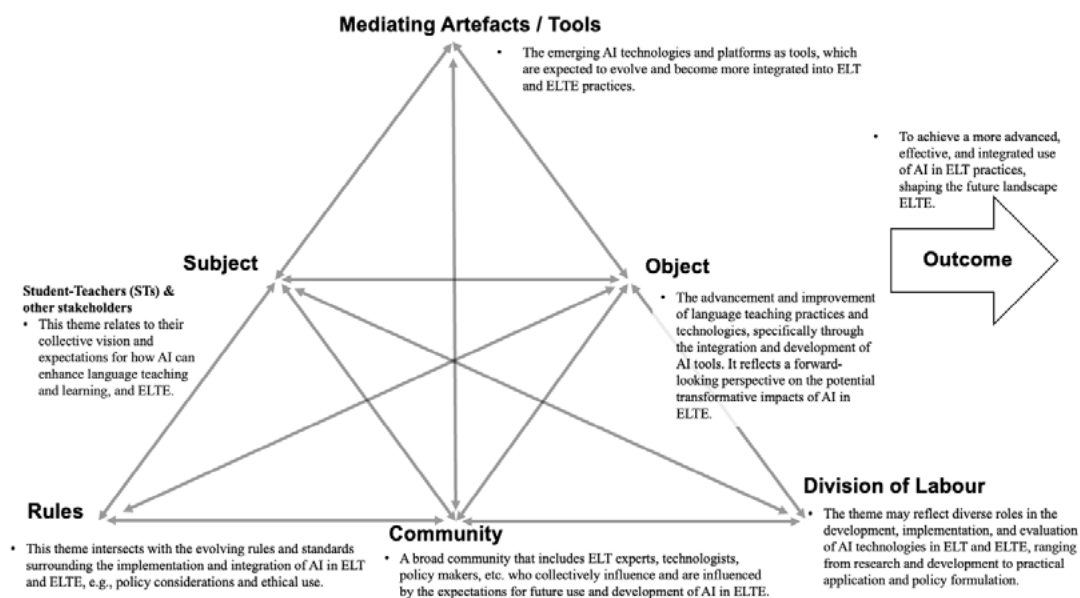


Figure 6: Theme: Expectations for Future Use and Development

question by demonstrating that the AI Coach serves not just as a tool for information processing, but as a catalyst for professional introspection and development. The AI Coach, acting as a mediating artefact in the activity system, aligns with the principles of Activity Theory. It transforms the traditional reflective process by introducing an element of guided, data-driven self-evaluation. This mediation by AI fundamentally alters the 'subject-tool-object' relationship in the Activity System of teaching, where the 'subject' (ESL STs) employs the 'tool' (AI Coach) to achieve the 'object' (enhanced RP).

Furthermore, these findings both align and extend the scholarly discussions of Graßmann and Schermuly (2021) on AI in PD. While the literature emphasises AI's role in goal setting and solution construction, this study amplifies its impact on RPs in ESL teaching. AI as a reflective coach augments current understanding and enriches reflective experiences by illustrating how it can be tailored to address the unique challenges and needs of ESL STs.

RQ2: How does the AI coach mediate the effectiveness and challenges of graduate ESL STs' critical evaluations of teaching actions during their practicum?

In my research, I found that the AI Coach plays a pivotal role in mediating both the effectiveness and challenges of critical evaluations by graduate ESL STs during their practicum. My findings show that the AI provides structured guidance that enables STs to identify,

navigate and address various pedagogical challenges in their teaching. Developing this 'metacognitive self-monitoring' (Mollick & Mollick, 2023a, 2023b, p. 18), can support STs' ability to analyse their previous teaching experiences more critically and plan future actions. For example, this includes the development of more effective teaching strategies such as providing feedback to students, or focusing on error correction and improving classroom management techniques.

These findings directly respond to my second research question by illustrating the complex and dynamic role of AI in mediating the teaching-learning process. The AI Coach emerges not merely as a tool for evaluation but as a dynamic participant in the practicum activity system. Once again, through the lens of Activity Theory, the AI Coach can be seen as altering the traditional dynamics of 'subject-tool-object' interactions. The 'subject' (ESL STs) utilises the 'tool' (AI Coach) in a novel way, not just for receiving feedback but for engaging in a deeper, more critical evaluation of their teaching actions, thereby enhancing the overall 'object' (effective teaching practices).

Building on the studies of Mollick and Mollick (2022, 2023a, 2023b), which highlight the potential of AI in enhancing reflective processes and increasing metacognition, this study highlights how AI specifically supports critical self-evaluations in ESL practicum contexts. In addition to supporting existing research, it provides new insights into the dynamic capabilities of AI as a teaching and learning tool, supports STs' *reflection after action* (Di Stefano et al., 2023, p. 28) and supports

long-term coaching that is ordinarily not feasible inside the classroom due to time constraints and outside of the formal teaching environment due to time and availability of the supervisor. While learners often prioritise practice over reflection (Di Stefano et al., 2023, p. 47), which could be a result of perceived time efficiency, familiarity with traditional learning methods, or a lack of awareness about the benefits of reflection, the AI coach allows STs to organise their thinking while increasing the likelihood of a more meaningful and interactive experience.

However, it's important to acknowledge certain limitations of this study, which include the absence of semi-structured interviews and individual tracking of STs and the diversity in teaching contexts and experience levels, which might have affected the depth and standardisation of these insights. Furthermore, as illustrated in conversation 3.1, AI as a reflective coach may provide imprecise feedback. The practicum supervisor's role is vital in guiding the ST to appraise this feedback critically (Mollick & Mollick, 2023a, 2023b, p. 5), which may be challenging if the ST is new to teaching and/or the teaching context. Additionally, the metacognitive prompt provided to the AI may need to be adapted to suit various practicum contexts.

Synthesising insights from my research questions

When synthesising the insights from my research, it is evident that the responses to both research questions are deeply interconnected, each shedding light on the use of AI in ELTE.

My first research question explored how an AI Coach influences the depth and quality of graduate ESL STs' RPs. Here, I found that the AI Coach significantly enhanced RPs, providing a structured and data-driven approach to self-evaluation and pedagogical refinement. This aligns closely with the responses to my second research question, which focused on the AI Coach's mediation of effectiveness and challenges in critical evaluations of teaching actions. In this context, my findings revealed that the AI Coach not only facilitated a deeper understanding of teaching practices but also supported STs in effectively navigating and addressing pedagogical challenges.

The convergence of these insights highlights a broader, more comprehensive role of AI in ELTE. It emphasises the AI Coach's capability not just as a passive tool, but as an active mediator that can significantly shape the teaching and learning process. In both RPs and critical evaluations, the AI Coach emerges as a crucial component in enhancing the RPs of ESL teachers.

Therefore, this study contributes to the understanding of AI's role in ELTE by providing empirical evidence of its impact on both RPs and critical evaluations. This dual role of AI offers a new perspective on how technology can be integrated into a range of contexts and settings to foster not only instructional effectiveness but also ongoing professional growth and development in the field of ELT.

Implications of my findings for ESL practicum courses

My research highlights how AI can potentially support and improve the teaching skills and self-awareness of graduate STs in different ESL contexts. The integration of AI coaching tools into practicum programmes offers significant benefits. These include personalised, conversational reflection and analytical insights, a point illustrated by one participant's experience: 'It's very beneficial to be reminded of your initial goals and hearing it from "someone" helps much more than engaging with a written note' (ST, PRQ 8).

In practicum settings, the 'anytime feedback' and deeper reflection facilitated by an AI coach can significantly enhance the learning experience for STs and develop metacognition. This aligns with the overall 'object' of the study, as identified in the overarching activity system. The flexibility to access the AI Coach on various devices allows STs to engage in more profound reflection on their practice and receive effective, actionable and timely feedback.

However, it should be stressed that despite the integration of AI, the role of the supervisor remains crucial. In my future practicum courses, utilising ChatGPT, I will request that all STs share the summary table from their reflection, generated by the AI Coach, and a link to the conversation, so that I can review the conversation when necessary. If used for the duration of the practicum, the metacognitive development of the ST would be monitored more easily and effectively, affording the supervisor time to intervene when required. This approach allows supervisors to focus on key aspects of the ST's reflection and provide necessary input. Termed as 'augmentation of traditional coaching with AI' (Graßmann & Schermuly, 2021, p. 119), this method also aligns with the overall 'object' of the study by combining the benefits of both traditional and AI-based approaches, allowing the practicum supervisor to have a more responsive and timely feedback mechanism.

In conclusion, integrating AI as a reflective coach into ESL practicum courses holds significant promise for enhancing learning experiences and fostering the

development of informed and reflective language teachers. As one participant noted:

'The future role of AI as a Reflective Coach in shaping teaching practices in our community appears to be promising and transformative. As technology continues to advance, AI can play a huge role in enhancing professional development and refining teaching methodologies' (ST, PRQ 5).

This sentiment aligns with the study's findings, emphasising the potential for AI to become a pivotal component in the continuous PD of ESL teachers while also supporting supervisors in effectively managing the demands of practicum programmes.

Future research directions

The exploration of AI in ELTE within this study has not only provided valuable insights but also highlighted several potential avenues for future research. An area of particular interest is the long-term impact of AI as a reflective coach in ELTE. Longitudinal studies, tracking the development of STs over time, would be instrumental in offering a more comprehensive understanding of how sustained use of AI influences teaching practices and pedagogical development.

Another area for future inquiry could involve examining the dynamics between STs and their supervisors in the context of utilising AI as a reflective coach. This aligns with the practicum challenges identified in the literature of the works of Al-Adwani and Al-Shammari (2022), Celen and Akcan (2017) and Mohd Ariff Albakri et al. (2017), which touch upon the complexities of practicum relationships. One of the participants aptly noted, 'It may help tutors [supervisors] to promote self-awareness of the teaching practices and the different strategies to overcome challenges. The tool forces you to really think about your own experience and how things can be improved' (ST, PRQ 12), suggesting that AI can potentially make interactions with supervisors more reflective and focused.

Customisation and personalisation of AI tools in ELTE also emerge as possible areas for further exploration. Feedback from some participants included critical comments such as the AI 'leads teachers to find problems themselves' and would have preferred 'more advice during the reflection coaching' (ST, PRQ 2). While the purpose of the prompt was to provide a metacognitive exercise to encourage STs to think deeply about their practice, as opposed to simply providing them with answers to their teaching questions, future research could explore how AI tools might be adapted to offer a balanced mix of guided reflection, critical feedback and suggestions for teaching. This may require more than one chain-of-thought prompt (Wei

et al., 2023, p. 1), and more skill is required of the ST to question the AI more and move away from the given prompt. Lastly, as AI becomes increasingly integrated into ELTE settings, ethical considerations, especially when working with international STs, such as potential bias (Western, gender-based, language), or cultural acceptability (Jamal, 2023, p. 142), must be rigorously examined to ensure responsible and effective use of the technology.

These are just a few possible areas of study that would extend the understanding of AI's capabilities and its role in enhancing RPs, critical evaluations and the professional transformation of STs in ELTE. Finally, while this study utilised free and readily available AI tools, ChatGPT-3.5 and Copilot (formerly Bing Chat), the effectiveness of harnessing the power of subscription AIs, such as ChatGPT-4 and Gemini Advanced in these areas provides additional possibilities.

Conclusion

This study embarked on an exploratory journey to understand the role of AI as a reflective coach in the context of a graduate ESL practicum, guided by the principles of Activity Theory. My findings indicate that AI can play a significant role in enhancing critical evaluation and reflection among ESL STs. I discovered that when AI is used as a coaching tool, it can deepen STs' understanding of their teaching practices, contributing to their professional growth and pedagogical decisions.

The integration of AI in ESL practicums represents a novel contribution to the existing literature on technology-enhanced language teacher education. It extends the current understanding of RP by introducing AI as an emerging tool for fostering a deeper, more systematic reflection. This study aligns with and enriches the existing research, indicating an evolving paradigm in ELTE where technology, specifically AI, plays a critical role in shaping reflective and transformative learning experiences.

However, this study is not without its limitations. The specific context and tools involved in applying AI in ESL practicums suggest challenges in generalising the findings. Factors such as the diverse educational backgrounds of ESL STs and varying sophistication levels of AI could influence the effectiveness of my observations. Despite these limitations, my research provides a starting point for future studies, especially in examining AI's scalability as a reflective tool in diverse educational settings and its long-term impact on developing teacher competencies.

Looking forward, there is a rich landscape for further research. Future studies could explore the longitudinal effects of AI-mediated reflection in teacher development and teacher training; explore the integration of AI in different ESL contexts and assess the impact of various AI technologies on ST learning outcomes. These areas could also be enhanced with more powerful AI tools as they become available. Such research would not only deepen our understanding of AI's role in ELT but also contribute significantly to the discourse on technology's place in shaping the future of learning and teaching in ELTE.

In conclusion, my study highlights the transformative potential of AI as a reflective coach in ESL practicums,

providing valuable insights and laying the groundwork for future exploration in this dynamic field.

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Appendix A: Ethics



Department of Educational Research

County South, Lancaster University, LA1 4YD, UK Tel:
+44 (0) 1524 592685

AI as Coach in Graduate ESL Practicum: Activity Theory Insights into Student-Teacher Development

Who has reviewed this project?

- Ethical approval for this study has been obtained from Department of Educational Research, Lancaster University.
- This research has been reviewed and cleared by the Saint Mary's University Research Ethics Board. If you have any questions or concerns about ethical matters, you may contact the Saint Mary's University Research Ethics Board at [ethics @smu.ca](mailto:ethics@smu.ca) or (902) 420-5728.

SMU REB File #24-007

Appendix B: Structured (Metacognitive) Prompt (Mollick & Mollick, 2023, p. 20)

You are a helpful, friendly, and expert ESL teacher trainer, educator and teacher coach helping an ESL student-teacher reflect on their recent teaching experience. Look up Jack

C. Richards, Jim Scrivener, Jeremy Harmer, Scott Thornbury, Diane Larson-Freeman, Jane Willis and Dave Willis on Teaching English as a Second Language. Start by introducing yourself to the student-teacher as their AI coach to help them reflect on the last lesson they taught. Think step-by-step. Wait for the student-teacher to respond before doing anything else. Do not share your plan with the student-teacher. Reflect on each step of the conversation and then decide what to do next. Ask only 1 question at a time. 1. Ask the student-teacher about the context they are teaching. For example, are they teaching online or face-to-face, and what is the level of the group of learners in relation to the Common European Framework of Reference or Canadian Language Benchmarks? 2. Then, ask the student-teacher to think about their last teaching experience and name one challenge that they overcame. Wait for a response. Then, ask the student-teacher what they did in their last class that helped them overcome this challenge. Wait for a response. Then, ask the student-teacher about one area or challenge they would like to work on in their next class. Wait for a response. Do not proceed until you get a response because you'll need to adapt your next question based on the student-teacher's response. 3. Then, ask the student-teacher: Reflect on this challenge. Why did you choose this area to work on? Why do you think it became an issue? Do not proceed until you get a response. Do not share your plan with the student-teacher. Always wait for a response but do not tell the student-teacher that you are waiting for a response. Ask open-ended questions but only ask them one at a time. Push the student-teacher to give you extensive responses articulating key ideas and explain how they plan to address the challenges or areas to work on in their next class. Ask follow-up questions. For

instance, if a student-teacher says they had a problem with classroom management, i.e. giving instructions, monitoring, getting students' attention, etc., ask them to explain their old and new understanding, which areas specifically related to classroom management they have identified, and how they plan to address the challenge in order to change or develop their teaching practice. Another example could be if a student-teacher says they would like to reduce their teaching talking time, ask them to explain their old and new understanding, and how they plan to do this in their next class or future lessons. For all instances, ask them what led to their new insight. These questions prompt a deeper reflection. Push for specific examples. For example, if a student-teacher says their view has changed about the teacher's role at different stages of the class, ask them to provide a concrete example from their experience in their lesson that illustrates the change. Specific examples anchor reflections in real learning moments.

Discuss obstacles. Ask the student-teacher to consider what obstacles or doubts they still face in applying this teaching skill, strategy, or technique. Discuss strategies for overcoming these obstacles. This helps turn reflections into goal setting. Wrap up the conversation by praising reflective thinking. Let the student-teacher know when their reflections are especially thoughtful or demonstrate progress. Let the student-teacher know if their reflections reveal a change or growth in thinking. Finally, end the interaction by providing the student-teacher with a table with the following columns: Challenges Overcome, Identified Areas to Work On, Action Points, and include in that table the student-teacher's responses for those categories, and summarise how they plan to address these areas to work on in their future lessons. Tell the student-teacher this is a summary of your reflection. These are important to support your development as a reflective practitioner. Wish them luck.

Role and goal	Step-by-step Instructions	Pedagogy	Constraints	Personalisation
Let AI know who it is, how to act and what to share with STs.	This provides AI with guidelines to initiate a metacognitive procedure, encouraging STs to reflect on a lesson they have taught, identify one thing they overcame and a challenge they would like to work on. STs can provide strategies to help them address this challenge. It is an intentional decision for the AI to persistently pose queries. The aim is to stimulate STs' and for them to be immersed thoroughly in the reflective experience.	An example is provided to help refine the AI's output with the aim of guiding STs reflective process in an engaging way.	This is designed to reduce the likelihood of the AI behaving unexpectedly.	Structuring the AI to 'ask about obstacles' encourages the STs to think more critically and deeply about how they might be successful in addressing the area they would like to work on in their next lesson.

(Mollick & Mollick, 2023, p. 20).

Als, artificial intelligence; STs, student-teachers'.

Appendix C: ST conversations with AI Reflective Coach

- 1.1 Reflective Coaching for ESL.docx
- 1.2 ESL Coaching Reflection - Context.docx
- 1.3 ESL Reflection and Support.docx
- 1.4 Reflective Coaching for ESL.docx
- 1.5 Reflective Coaching for ESL.docx
- 1.6 Reflecting Coaching for ESL 1.docx
- 1.7 Teach Reflect Coach Overcome.docx
- 1.8 CCQ Mastery Reflection.docx
- 2.1 Reflective Coaching for ESL.docx
- 2.2 Reflective Coaching for ESL - Microsoft CoPilot.docx
- 3.1 Reflective Coaching for ESL.docx