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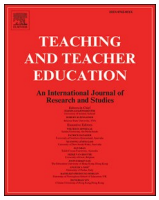

Research paper

Teacher educators' mentoring competence—commonalities and distinctions in supporting learning to teach

Xuewei Wang [a,*], J. Husu [b], A. Toom [a]

[a] Centre for University Teaching and Learning, Faculty of Educational Sciences, University of Helsinki, Helsinki, Finland
[b] Department of Teacher Education, University of Turku, Helsinki, Finland

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ABSTRACT

Learning to teach during the teaching practicum is a cognitively demanding, emotionally charged, and identity-shaping process for student teachers, requiring meaningful changes that necessitate mentoring from both university-based teacher educators (UBTEs) and school-based teacher educators (SBTEs). Grounded in Transformative Learning Theory, this study examined the mentoring experiences of two groups of teacher educators in supporting learning to teach. Using a "difference-within-similarity" analytical approach, we identified nine common traits of mentoring competence (MC) across three dimensions (cognitive, social, and emotional). We revealed distinct tendencies in how UBTEs and SBTEs enact their MC. The findings not only highlight the richness and complexity of MC as a multidimensional construct, challenging the binary view that characterizes UBTEs' mentoring as theoretical and SBTEs' as practical, but also offer practical implications for optimizing labor division and fostering more synergistic, complementary triadic mentoring.

1. Introduction

Since the "practice turn" was advocated (Reid, 2011), the teaching practicum has been recognized as a linchpin of initial teacher education, offering a transitional space for student teachers' (STs) learning to teach (Masterson et al., 2024; Orland-Barak & Wang, 2021). Existing research describes this process as multifaceted, reflective, and developmental, in which STs act as learning agents, moving beyond knowledge transmission to responsive teaching, critically examining their practices, and aligning them with student learning and professional growth (Flores, 2020; Fuentes-Abeledo et al., 2020; Nilsson, 2009). Given its cognitively demanding, emotionally charged, and identity-shaping nature (Maynard, 2000; Steadman, 2018), STs require guidance from "knowledgeable others" (Achinstein & Davis, 2014) to achieve learning transformations and develop the versatile expertise needed within the limited practicum duration.

In response, many teacher education programs have adopted university-school partnership practicum models with triadic mentoring (Bruneel & Vanassche, 2023; Montecinos et al., 2015), where university-based and school-based teacher educators (UBTEs, SBTEs) collaboratively support STs in bridging theory and practice, forming professional identity, and simultaneously developing their own competence (Ellis et al., 2020; Langdon, 2017). Although "supervision" and "mentoring" are often used to describe UBTEs' and SBTEs' roles, respectively, these terms, despite subtle differences, are frequently used interchangeably in mentoring literature (Crasborn et al., 2008; Puroila et al., 2021).

As scholars have argued, learning to teach should be understood not as training but as an educative, collaborative, and constructive process (Fuentes-Abeledo et al., 2020; Loughran et al., 2016). Unlike supervision, which often emphasizes a gatekeeping or expert role (Clarke et al., 2014; Tondeur et al., 2019), mentoring highlights collaboration and co-learning, supporting STs' pedagogical thinking, autonomy, and adaptability (Brockbank & McGill, 2012; Jyrhämä et al., 2008; Toh et al., 2022). Recent studies further show that UBTEs' supervision extends beyond pedagogy, lecturing, and performance evaluation, changing into dialogic collaboration that fosters STs' inquiry-based thinking and critical reflection (Lithoxoidou & Georgiadou, 2023; Nehez & Wennergren, 2025). Therefore, this study adopts the term "mentoring" instead of "supervision" to represent practicum guidance provided by both UBTEs and SBTEs collectively.

Effective mentoring requires teacher educators to possess professional competence to support STs in learning to teach (Orland-Barak & Wang, 2021). From a functional-pragmatic perspective, competence is

* Corresponding author.
E-mail address: xuewei.wang@helsinki.fi (X. Wang).

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conceptualized as a multidimensional construct grounded in real-world contexts and expressed through behavioral enactment (Blömeke et al., 2015). Cognitive and affective-motivational dimensions are typically latent and inferred from situated practice, as in this case, the mentoring experiences of teacher educators. There is a broad consensus that mentoring competence (MC) is critical for facilitating meaningful learning-to-teach experiences, particularly in supporting STs to bridge the theory-practice gap, develop professional identity, enhance pedagogical reasoning, and improve classroom readiness (Chaaban et al., 2021; Grima-Farrell, 2015; Izadinia, 2014).

Despite its recognized importance, existing research on teacher educators' MC remains limited in several key respects. First, most studies focus on effective practices or mentor qualities (Crutcher & Naseem, 2016; Ellis et al., 2020; Stewart et al., 2017) from a "blueprint perspective" (Vanassche & Kelchtermans, 2014), proposing elements for competency frameworks or credentialing standards, typically for either UBTEs or SBTEs (Burns et al., 2016; Garza et al., 2019). There is a need for micro-level, experience-based studies that explore how MC is enacted in the mentoring practices of UBTEs and SBTEs. Second, research on teaching practicum under university-school partnership focuses more on program-level structures and institutional collaboration in theory-practice integration (Resch et al., 2024), with limited empirical comparison of the competence of UBTEs and SBTEs, especially considering their distinct institutional roles and proximity to classroom practice. More importantly, current literature reflects an unnecessary dichotomous view: UBTEs tend to take more academic and instructional discourse informed by theory (Liang et al., 2023), while SBTEs often emphasize practical guidance and relational mentoring (Chaaban et al., 2021; Svojanovský & Obrovská, 2024). This underscores the need for a more holistic and theoretically diverse perspective to examine the MC of both groups, as well as their commonalities and distinctions.

Therefore, to fill the research gap, this study examined the mentoring experiences of both UBTEs and SBTEs in supporting STs in learning to teach. Drawing on 36 semi-structured and Mind Map-cued interviews, we aim to identify the shared characteristics of UBTEs and SBTEs in MC from their described experiences, and provide nuanced understandings of how they differ in the context of triadic mentoring. Accordingly, two research questions guide this study.

1) What are the common traits of mentoring competence that UBTEs and SBTEs enact in supporting learning to teach?
2) How does the enacted mentoring competence differ between UBTEs and SBTEs?

2. UBTEs and SBTEs' mentoring in supporting learning to teach

In triadic mentoring, UBTEs typically support STs through subject didactics courses, field visit observations, and practicum debriefings (Bozkurt & Yiğit Koyunkaya, 2022; Hogg & Yates, 2013; Tan et al., 2024). These practices contribute to STs' development across three dimensions. Cognitively, UBTEs connect professional knowledge, teaching strategies, and pedagogical frameworks through simulations, structured reflection, and teaching scenario analysis (Barahona, 2019; Cuenca et al., 2011). Socially, they engage STs in group discussions and role-plays, incorporating conflict resolution theory and practice (Tynjälä et al., 2016). Emotionally, UBTEs provide support by actively listening, offering reassurance, and sharing personal experiences (Barahona, 2019; Gao & Benson, 2012).

SBTEs typically guide STs through classroom observations, feedback conversations, and teaching demonstrations (Beek et al., 2019; Matsko et al., 2024). Cognitively, they employ reflective dialogue, practical modeling, and method experimentation to help STs adapt strategies to diverse needs (Goldhaber et al., 2022; Toom & Husu, 2021a, 2021b; Çelik & Zehir Topkaya, 2024). Socially, they foster productive relationships and create supportive environments that enable STs to work effectively with pupils, peers, and staff (Lindqvist et al., 2023). Emotionally, SBTEs employ stress management strategies to alleviate anxiety associated with classroom management, role uncertainty, and mismatched expectations (Gray et al., 2017; Lindqvist et al., 2023).

Despite the recognized benefits, triadic mentoring continues to face challenges, including conflicting expectations and misaligned priorities (Bruneel & Vanassche, 2023). A core issue is the lack of clear delineation of the specific competence expected from UBTEs and SBTEs in practicum mentoring (Manderstedt et al., 2023). Additionally, since the capabilities of STs and their needs for mentoring support vary in diverse contexts (Toom & Husu, 2021a, 2021b), examining the MC required to meet these needs necessitates starting from the practical experiences of teacher educators' mentoring. Moreover, the persistent dichotomy that casting SBTEs as focused on practical tasks and UBTEs on theory reinforces the theory-practice divide and hinders reciprocal, complementary mentoring (Ussher & Carss, 2014; Kupila et al., 2024). To address these issues, the present study investigates the multifaceted mentoring practices of UBTEs and SBTEs, identifying shared and distinct elements of their MC in supporting STs' learning to teach. In doing so, it aims to inform more synergetic and productive triadic mentoring.

3. Transformative Learning Theory as a lens to identify MC

Transformative Learning Theory (TLT) (Mezirow, 1991) was adopted to examine how teacher educators support STs in transforming their "frames of reference", such as teaching beliefs, pedagogical skills, and professional identity during the process of learning to teach (Qin et al., 2021; Zhu et al., 2020). Compared to other theories commonly found in this domain, such as Complexity Theory and Activity Theory, focusing on the impacts of broader institutional, social factors, or contradictions among different systems within teacher educators' expertise (Ell et al., 2017; Postholm, 2016; Weinberg et al., 2021; Yuan & Yang, 2022). Cross-Boundary Theory focuses on the identity reconstruction and cross-border cooperation of SBTEs (Fischer-Schöneborn & Ehmke, 2023; Trent, 2013) in the "third space" created by the teaching practicum. TLT centers on the learning process that occurs between the main stakeholders (teacher educators, STs) inside the practicum, including the mentoring dynamics and relationships. It offers a powerful analytic lens for understanding how meaningful changes occur through mentoring (Schnitzler, 2020) and holds potential for capturing and conceptualizing the MC embedded in the practice of teacher educators. A recent literature review (Wang et al., 2025) extended TLT to mentoring, conceptualizing MC as a set of multidimensional capabilities that teacher educators use to support STs' transformative learning. Building on this conceptualization, two core tenets of TLT inform the present study.

First, TLT posits that competence developed through situated learning encompasses three dimensions: (1) cognitive—knowledge and skills acquisition; (2) social—communication and collaboration within a community; and (3) emotional—regulation of feelings, motivation, and emotional balance (Illeris, 2004). These dimensions align with the three primary mentoring functions identified in the existing literature, indicating that teacher educators are required to enact cognitive, social, and emotional competence to support STs' learning to teach effectively. Second, TLT emphasizes that meaning-making arises from individuals' interpretation and reinterpretation of experiences (Mezirow, 1991), shaped through social interaction and communication with educators (Mezirow, 1996). These experiences need not be profound and phenomenal, but may stem from everyday practice as self-perceived significant vignettes (Dirkx, 2008; Mezirow & Taylor, 2009). This study, therefore, explores mentoring experiences that teacher educators themselves regard as meaningful, particularly those involving support for STs' cognitive, social, and emotional challenges during practicum.

In sum, learning to teach requires STs to transform established pedagogical thinking into adaptable teaching strategies, construct their professional identity from student to teacher, and transition from being easily emotionally affected to managing their emotions in a balanced manner. Facilitating these transformations requires teacher educators to

draw on multidimensional MC. Competence is increasingly understood as a continuum in which latent traits are reflected in and can be inferred from observable behavior (Blömeke et al., 2015). TLT thus provides a comprehensive framework (see Fig. 1) for identifying context-specific traits of MC as a three-dimensional construct through the analysis of teacher educators' mentoring experiences.

4. Method

4.1. Context and participants

This study was conducted within the context of Finnish initial teacher education, characterized by a strong emphasis on research-based teacher preparation, which requires STs to complete a five-year master's program for teaching in primary schools and above (Toom et al., 2019). Some STs studying preschool education continue their master's study in early childhood education and care (ECEC) (Kupila et al., 2024). Eight universities in Finland provide pedagogical studies with similar structures for preparing ECEC teachers, class teachers (multidisciplinary), subject teachers (subject-specific), and special education teachers (Burn & Mutton, 2015; Maaranen et al., 2020). As an integral part of pedagogical studies at the master's level, the teaching practicum is conducted in two phases (basic and advanced) at university-affiliated teacher training schools or cooperative kindergartens (Lavonen et al., 2019).

During each practicum period (about four weeks), STs are typically assigned in pairs and mentored by one or two SBTEs at training schools or kindergartens (Takala et al., 2023). During the initial period, mentoring encompasses lesson observation, guided lesson planning and teaching, feedback discussions, group study, and a "school as a community" module. In the advanced period, the focus shifts to independent lesson teaching, student assessment, and school-home collaboration. Additionally, each ST has a responsible UBTE who conducts one-to-one meetings with STs and participates in field visits to attend triadic mentoring meetings with STs and SBTEs. UBTEs also oversee STs' goal-setting at the start of each period and facilitate final reflections with portfolios at the end of the practicum. All UBTEs are required to hold a doctoral degree, while SBTEs must have at least a master's degree, with some having completed their PhD studies (Byman et al., 2021).

The participants in our study consisted of 9 UBTEs (4 males, 5 females) from two universities and 9 SBTEs (1 male, 8 females) from three teacher training schools in Finland. Research permission was granted by the affiliations from which the participants are from, and each received an informed consent form after voluntarily responding to the invitation emails. The participation in the research was voluntary, and no incentives were provided. To capture a more comprehensive and inclusive understanding of MC, the principle of heterogeneous sampling was applied when inviting participants (Patton, 2015). Table 1 presents the backgrounds of participating teacher educators.

Table 1
Backgrounds of SBTEs and UBTEs.

Participants (pseudonym)	Gender	Grade & Subject of STs they mentored	Years of mentoring (as of the time of data collection)	Prior teaching experience
SBTEs				
S1	Female	Class teacher	4	7 years (primary)
S2	Female	Class teacher	14	25 years (primary)
S3	Female	Class teacher	5	6 years (primary)
S4	Male	Subject teacher	10	15 years (upper secondary)
S5	Female	Class teacher	12	23 years (primary)
S6	Female	Class teacher	10	22 years (primary, lower secondary)
S7	Female	Class teacher & Subject teacher	8	12 years (primary, upper secondary)
S8	Female	Class teacher & Subject teacher	6	7 years (primary, lower secondary)
S9	Female	Class teacher	4	12 years (primary)
UBTEs				
U1	Male	Subject teacher	6	few months (primary, secondary)
U2	Female	ECEC teacher	20	5 years (ECEC, primary)
U3	Male	ECEC teacher	12	None
U4	Male	Class teacher & Subject teacher	20	2 years (lower secondary)
U5	Female	ECEC teacher	6	8 years (ECEC, primary)
U6	Female	Class teacher	12	1 year (primary)
U7	Female	Class teacher	30	3 years (primary)
U8	Male	Class teacher	2	None
U9	Female	Class teacher	2	Substitute 2 years (primary, upper secondary)

4.2. Data collection

Because the participating UBTEs and SBTEs were not assigned STs consecutively every academic year, we politely requested in our invitation email that they participate in interviews whenever possible during their mentoring semester. By doing so, we encouraged them to draw on recent experiences and provide concrete, illustrative examples. At last, the data collection covered two autumn and two spring semesters from September 2023 to March 2025. Conducting interviews in a single language would streamline data analysis and reporting, especially in an international research team. Therefore, all data sets were collected in English to reduce the risk of meaning loss or misinterpretation during translation and transcription. Informed by TLT, two rounds of interviews (semi-structured and Mind Map-cued) were conducted to prompt participants to recall, reflect on, and describe meaningful mentoring experiences in terms of cognitive, social, and emotional support. As TLT suggests, experiences leading to transformative learning often arise through interaction and communication between learners and educators, thus typically involve two perspectives: (1) informing educators' guidance, and (2) empowering learners to address challenges.

Accordingly, the first-round interview scheme (see Appendix A) focused on probing mentoring experiences that participants perceived as successfully supporting STs cognitively, socially, and emotionally. The flexibility of the semi-structured interview allowed us to deeply inquire into the episodes described by participants through follow-up questions such as *"What happened?"*, *"Why do you think it was successful?"*, and *"How did it change your way or perception of mentoring?"* Such questions

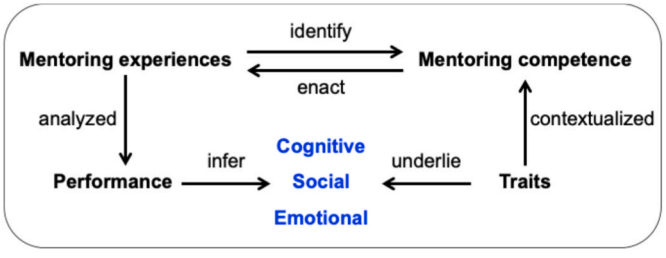

Fig. 1. Conceptual framework.

were crucial for understanding complex constructs, especially for competence in professional contexts (Husband, 2020). This initial round, which explored all participants' successful mentoring experiences, enabled us to gain a general grasp of the similarities in UBTEs' and SBTEs' MC (RQ 1). Building on it, the second round was designed to elicit specific examples and tailor individual interview questions to examine the nuanced differences in how the two groups enact MC within the similarities (RQ 2).

The second round of interviews followed a Mind Map-cued procedure (Wheeldon & Ahlberg, 2019), as shown in Fig. 2, which aimed to encourage participants to reflect on the observed challenges that STs have encountered and what they had done to help STs navigate these challenges. Prior to this interview, each participant was asked to independently draw a Mind Map within two weeks, based on the provided guidelines, and then discuss the concepts and links presented in the map with the researcher within one week after submitting the map. Fig. 3 presents an example of a Mind Map drawn by participant S4.

The use of this technique enabled us to tailor interview questions for each participant. For instance, to explore STs' changes resulting from participants' enacted MC, we asked S4: "What makes you think your student teacher was struggling with 'linking between topics'?" and "What changes did they make regarding 'motivating pupils' after your advice to 'find relevance in lived experience'?" Additionally, to gain access to participants' reasoning behind mentoring practices (Janczukowicz & Rees, 2017), they were asked to explain the relationships between drawn concepts (e.g., "Why do you link your feedback on 'deviation in lesson plan' with the STs' social change in 'giving space to pupils'?"). Although Mind Map served as a visualization tool to enhance recall and elicit richer accounts from participants (Wheeldon, 2011), it can be challenged by procedural ambiguity and expression drift (Ahlberg & Wheeldon, 2011). To mitigate these challenges, an exemplar Mind Map retrieved from a pilot interview with a high school English SBTE was attached to the guideline, along with a clear and brief explanation for concept generation, branching prompts, and note linking.

4.3. Data analysis

A hybrid approach combining deductive and inductive analysis (Fereday & Muir-Cochrane, 2006) was adopted to identify and thematize the enacted MC from the statements of UBTEs and SBTEs on their mentoring experiences. This approach aims to incorporate both theory-driven and data-driven coding, providing a clearer trail of evidence to increase the credibility of qualitative studies (Xu & Zammit, 2020). Two rounds of interview transcripts were treated as a whole dataset and coded in ATLAS. Ti 2025. For the first research question, two stages of coding were employed. Starting with deductive coding, a coding template was developed based on the literature review and the tenets of TLT. We used it as a priori to recognize, segment, and categorize the analytical units (1124 in total) into three MC dimensions. A good priori should capture the qualitative richness of the phenomenon (Boyatzis, 1998). Therefore, to make the template more inclusive in capturing the dimensional traits of MC, we enriched the original definitions after applying it in scanning the first-round interview data (see Table 2).

Through an iterative reading of the analytical units, we inductively identified themes and sub-themes that reflected the traits of MC in the second stage. Specifically, in each analytical unit that captured participants' mentoring experiences in supporting STs' learning to teach within a particular dimension, we annotated and categorized statements related to MC traits as descriptive codes. For example, the statement, *"as an old auntie, is to open up my work, to explicitly tell how certain theories can be seen in my classroom teaching, how to turn those theories into live pedagogy,"* was coded as "translating theory into teaching." To address the second question, we applied Hofmann's (2020) difference-within-similarity approach, which enabled new codes to emerge that reflected similar traits but differed in their manifestation. Continuing the above example, while all related to the theory-practice relationship, the codes "interpreting teaching with theory" (bottom-up) and "identifying anchors or mismatches" (parallel) were distinguished from "translating theory into teaching" (top-down) based on the directionality of the participants' guidance to connect theory with practice. This approach is beneficial for "identifying things that are similar, and then identifying and examining differences within those" (Hofmann et al., 2024).

Then, we identified patterns that, at a minimum, represented common traits across the two participant groups, and at most, highlighted distinctions between them. This pattern recognition was based on intergroup comparisons of intra-group coding frequencies. Specifically, for each group, we calculated the proportion of recurring codes within the total number of codes for a shared theme. Codes showing evident proportional differences between groups were retained and refined into

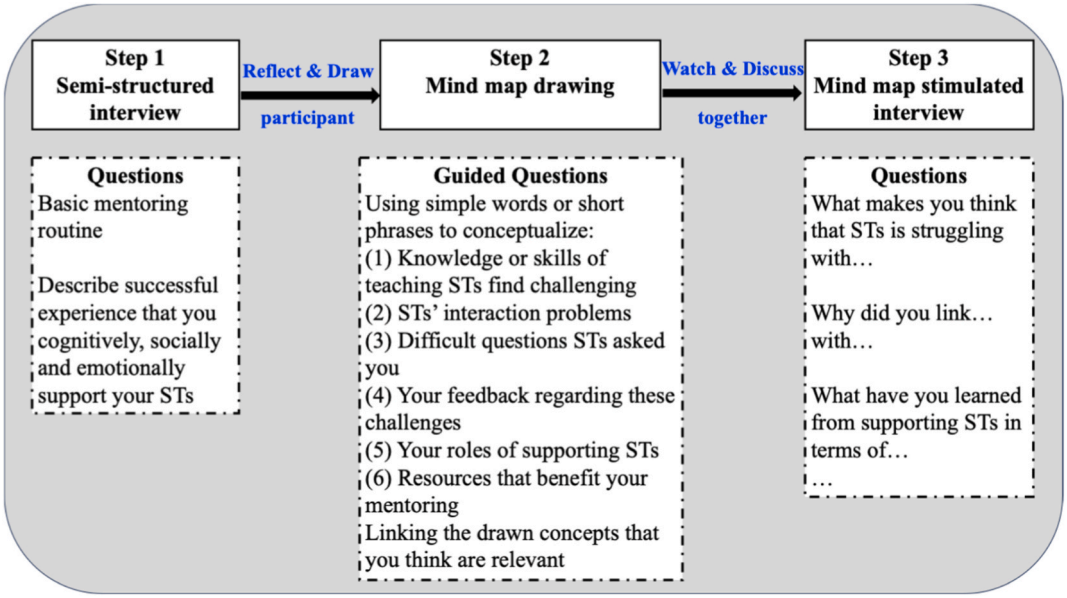

Fig. 2. The procedure of mind map-cued interviews.

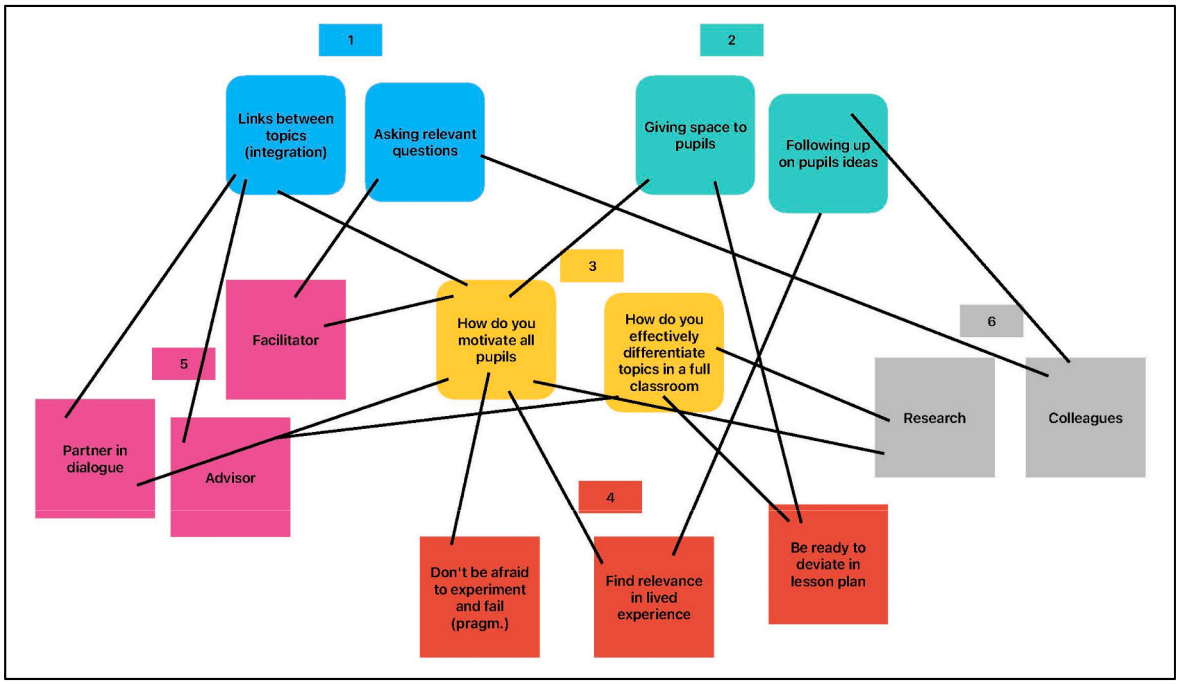

Fig. 3. Mind map example (The handwriting has been anonymized by digitization).

Table 2
Coding template.

Dimensions of MC	Definitions
Cognitive MC	Enhancing STs' understanding of pedagogy and their proficiency in teaching.
Social MC	Building mentoring relationships and expanding STs' networks with the broader professional community in the local context.
Emotional MC	Attending to and alleviating STs' emotional distress and empowering professional confidence.

sub-themes. For example, within the theme "question-driven feedback," the sub-theme reflecting for teaching plan (SBTEs: 29.09 %) was not present in UBTEs' data, while "reflecting on teaching performance" appeared in both groups but at different rates (SBTEs: 70.91 %; UBTEs: 100 %), indicating distinct tendencies in how SBTEs and UBTEs guide STs before and after lessons. It is important to note that we acknowledge frequency counts do not determine analytical significance (Gibbs, 2018). In this study, they were employed as a categorization technique to help identify which statements or themes were common or infrequent, facilitating further qualitative data interpretation (Saldaña, 2021).

Finally, we consolidated sub-themes and defined overarching themes (e.g., integrating theory and practice, question-driven feedback) under each dimension (coding results shown in Appendix B). To enhance the reliability of the coding, any disagreements regarding categorization or thematization were resolved through multiple discussions among all researchers until no further refinements were necessary (Corbin & Strauss, 2015).

5. Findings

First, we provide an overview of common traits in three MC dimensions identified across two participant groups. Then we zoom in on each theme using specific cases to illustrate how UBTEs and SBTEs differ in enacting MC to support STs' teaching practice.

5.1. Common traits of SBTEs' and UBTEs' MC

Guided by the theory-informed coding template, nine common traits of UBTEs' and SBTEs' MC across cognitive, social, and emotional dimensions were identified and thematically organized. The performance corresponding to each MC trait (see Table 3) represents the participants' behavioural manifestations, refined through the analysis of mentoring experiences. Each performance demonstrates the commonality of how UBTEs and SBTEs support STs' learning to teach in a certain dimension.

5.2. Distinctions between SBTEs' and UBTEs' MC

To address the second research question, after identifying the sub-themes for each trait, we calculated the intra-group evidence encoding percentages for each. By comparing the encoding percentages of the same sub-themes between the two participant groups, we further interpreted the nuanced distinctions in MC traits across cognitive, social, and emotional dimensions between SBTEs and UBTEs.

5.2.1. Cognitive MC

Coordinating dual-order knowledge. Research indicates that supporting learning to teach requires teacher educators to draw on two orders of knowledge. First-order relates to classroom teaching and aims to enhance student learning, it typically includes content knowledge, pedagogical content knowledge, and contextual knowledge (Murray & Male, 2005). Second-order relates to teacher learning and aims to support STs' professional development, generally encompassing the knowledge and skills the teaching profession requires, why they are necessary, and how to guide novices in acquiring them (Liao et al., 2023). According to this, we identified the types of first- and second-order knowledge used (examples shown in Table 4) within the mentoring experiences of UBTEs and SBTEs, which contributed to STs' understanding and proficiency in teaching.

As shown in Fig. 4, SBTEs exhibited a relatively balanced application of student learning knowledge (48.3 %) and teacher learning knowledge (51.7 %), whereas UBTEs predominantly emphasized teacher learning knowledge (71.2 %) over student learning knowledge (28.8 %).

The findings also revealed how UBTEs and SBTEs differed in

Table 3
The common MC traits and performance of UBTEs and SBTEs.

Dimensions	Traits (theme)	Performance	Number of participants
Cognitive MC	Coordinating dual-order knowledge	Transferring or transforming first-order knowledge (for teaching students) and second-order knowledge (for mentoring STs).	9 UBTEs 9 SBTEs
	Integrating theory and practice	Interpreting teaching practice with theory (bottom-up), translating theory into teaching practice (top-down), or identifying anchors or mismatches between the two.	8 UBTEs 8 SBTEs
	Question-driven feedback	Using questions to prompt STs to reflect on lesson planning or teaching performance.	7 UBTEs 9 SBTEs
	Problem-solving modelling	Proposing alternative teaching strategies or collaboratively analyzing unfamiliar situations and developing countermeasures with STs.	9 UBTEs 9 SBTEs
	Goal-oriented instruction	Clarifying, refining, and monitoring the progress of STs' goals for their learning to teaching or students' learning in teaching.	7 UBTEs 9 SBTEs
Social MC	Adapting roles	Shifting among roles as instructor, partner, and co-learner, based on situational needs and STs' developmental stages.	8 UBTEs 9 SBTEs
	Bonding professional relations	Enhancing peer collaboration or facilitating home-school communication.	5 UBTEs 9 SBTEs
Emotional MC	Noticing and Empathizing	Discerning and attuning to STs' emotional changes with their own experiences.	7 UBTEs 9 SBTEs
	Emotional counseling	Helping STs manage stress, overcome frustration, and build professional confidence.	9 UBTEs 9 SBTEs

coordinating the application of two orders of knowledge. SBTEs tailored their use of teacher learning knowledge by drawing on student learning knowledge. This coordination involved bridging "what and how students need to learn" with "what STs need to learn and how they learn to teach." For instance, S4 used a psychology lesson on brain structure to highlight the importance of holistic understanding, noting that both students and STs "struggle to focus on how the brain works as a whole" and often "find it difficult to connect one topic with another" through a plain introduction. Thus, rather than modelling a fixed solution, he preferred collaborative planning with STs: "We brainstorm how to link those topics … what questions could you put in between to show how everything forms a bigger picture."

UBTEs utilized student learning knowledge to contextualize teacher learning knowledge, particularly when ideal models conflicted with classroom realities. U1, for example, promoted inquiry-based and problem-based teaching but found these often "too ideal" during school visits where STs were "managing very practical matters like how to use the projector or deal with equipment." He acknowledged this tension, explaining that STs "need to maintain theoretical understanding while managing the practical demands of the classroom."

Integrating theory and practice. Supporting STs in navigating the relationship between theory and practice was evidently reflected in participants' enactment of cognitive MC. As shown in Fig. 5, SBTEs and UBTEs demonstrated similar levels of support in interpreting teaching with theory (SBTEs: 28.57 %, UBTEs: 27.27 %). However, UBTEs (51.52 %) more frequently helped STs identify anchors or mismatches between theory and practice than SBTEs (25.71 %), whereas SBTEs more focused on translating theory into practice (45.71 %) than UBTEs (21.21 %).

When UBTEs and SBTEs guided STs in translating theory into teaching practice, they differed in how they selected which theories to apply. UBTEs tended to guide STs to start from their own interests or from the practical challenges they were currently facing, as discussed during their one-to-one meetings (e.g., analyzing and interpreting students' attitudes or behaviours (U4)), to choose relevant theories. As U1 noted, "I first asked them to list some concepts or models that they found interesting in our courses and then implement those with the list in their teaching." Unlike UBTEs, SBTEs often began with actual classroom incidents to suggest which theories were appropriate to apply, focusing on breaking down abstract concepts into smaller, more easily understood pieces, such as "even a 9-year-old can understand" (S2). For instance, S4 explained: "I think it is always easier to find certain incidents in the classroom, such as how the pupils have received the material … and then try to extrapolate what theories fit in."

Although both UBTEs and SBTEs underscored guiding STs to interpret teaching practice through theoretical lenses, their approaches differed. UBTEs tended to position theory as a tool for justifying STs' teaching actions. For example, U1 noted that he pushed STs to justify each step of their lesson planning with theory, thereby fostering deliberate, theory-grounded reasoning about their teaching. Rather than justification, SBTEs were more inclined to treat theory as a tool for interpreting pedagogical phenomena and frequently initiated theoretical discussions based on real classroom incidents. As S2 noted, she often reminded STs: "Nothing that happens in my classroom just comes out of the blue, everything is reasoned." This led to STs' interpretation of what theoretical tenets could be behind and what can inform them in the

Table 4
SBTEs' and UBTEs' dual-order knowledge.

Dual-order knowledge		Examples of SBTEs	Examples of UBTEs
Student learning knowledge	Content knowledge	Fractions in Math **(S6-I2)**	The connections between issues (e.g., democracy, politics, economy) in social studies and history with adolescents **(U4-I1)**
	Pedagogical content knowledge	The differentiated instruction (e.g., tools for ADHD pupils, visual cues, differentiated learning tasks) **(S1-I2)**	The sensitivities and aims of religious education **(U6-I2)**
	Contextual knowledge	Teacher autonomy in Finnish school education, whole school-day, school-based curriculum **(S2-I1&I2)**	The different assessment criteria in schools **(U9-I2)**
Teacher learning knowledge	Knowledge about STs	The differential learning motivations for practicum among adult learners, especially STs who had transferred many jobs **(S4-I1)**	The dilemma of STs who already have working experience in kindergarten changing their identity from child carer to ECEC teacher **(U3-I2)**
	What and why STs need to learn	**S2 (I1)** described that STs must learn the subject didactics and the whole school-day approach according to the different focuses in different practicum periods.	**U8 (I2)** described why STs need to learn how to translate the Curriculum objectives into their own teaching objectives and student learning goals as they progress through the practicum.
	How to support STs learn	**S6 (I2)** took 'percentage' in Math as an example of how to scaffold STs to concretize the teaching objectives based on the Curriculum.	**U2 (I1)** took video-based mentoring as an example to describe how to assist STs with in-depth reflection on their teaching.

Note: I1 = first interview, I2 = second interview.

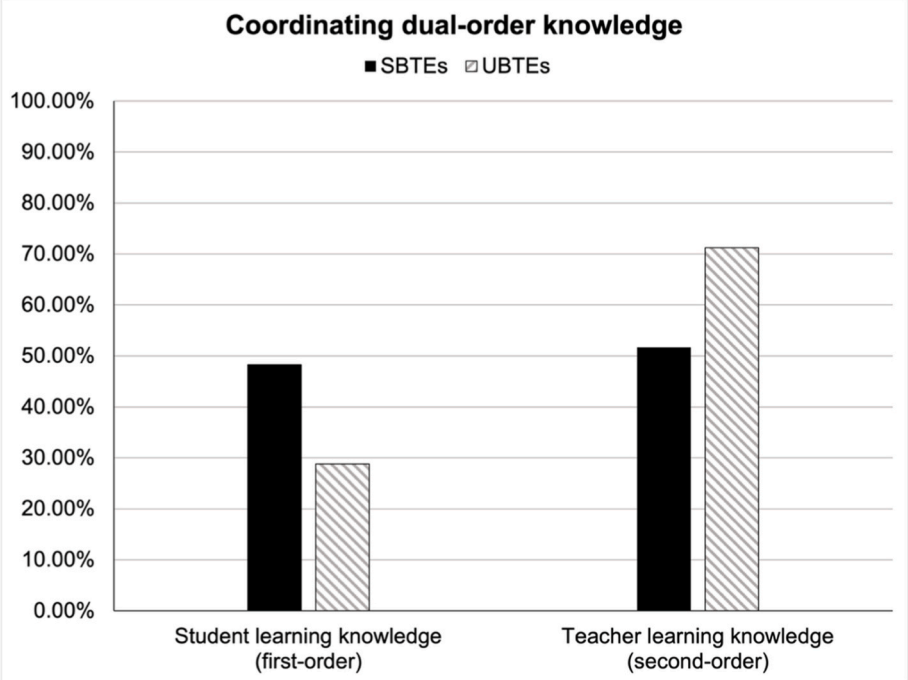

Fig. 4. Encoding percentages for coordinating dual-order knowledge.

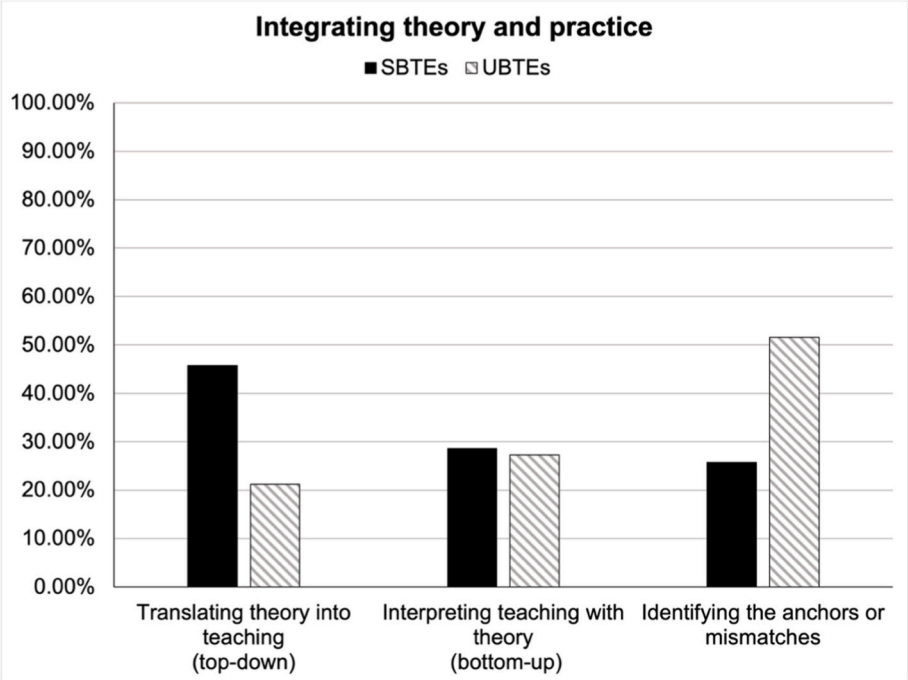

Fig. 5. Encoding percentages for integrating theory and practice.

current situation (S3).

In addition to top-down application and bottom-up interpretation, both groups of participants played an active role in helping STs identify anchors and mismatches between theory and practice. However, UBTEs tended to use prior coursework or conceptual models as "openings where academic theories can be reintroduced to reframe practice" (U3). For example, U2 often reminded STs during meetings: "Do you remember this classic model … what we've learned in didactics courses?" In contrast, SBTEs more frequently focused on mismatches that emerged during real-time classroom teaching, aiming to help STs recognize the inconsistencies between idealized models and practical realities. As S2 often told her STs, "Even though theory says like this … in the classroom, you can leave this theory aside."

Question-driven feedback. A notable feature of the feedback provided by the participants in this study is that it was not delivered as declarative comments, but rather driven by open-ended questions, aiming to facilitate STs' reflection on their teaching plans before lessons and their teaching performance afterward. Fig. 6 illustrates that a clear distinction exists between UBTEs and SBTEs: only SBTEs demonstrated this practice across both sub-themes, and they focused more on post-lesson

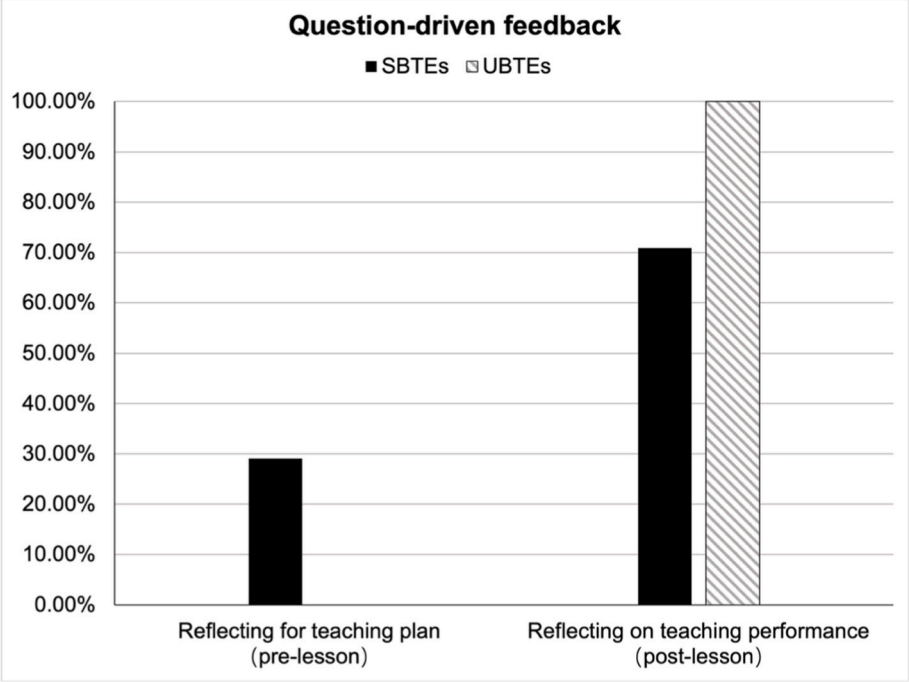

Fig. 6. Encoding percentages for question-driven feedback.

questioning (70.91 %) than on pre-lesson questioning (29.09 %).

Analysis of seven SBTEs' pre-lesson questioning revealed three consistent focal points: (1) Pedagogical purpose and relevance - e.g., S7 asked, "Why is it important for students to study this topic?" prompting STs to articulate the value of learning and align it with curricular goals; (2) Lesson design and implementation - e.g., S8 posed detailed, context-specific questions such as, "How will you proceed in this section?" and "Where will you position yourself in the classroom?" to guide practical planning; (3) Student responsiveness and differentiation - e.g., S6 frequently asked, "What do you want the students to do?" ensuring instructional objectives were framed around observable student behaviour rather than teacher actions.

All nine SBTEs and seven UBTEs regularly used post-lesson questions to foster STs' self-assessment and critical reflection. A shared focus was evaluating pedagogical decisions and student engagement through questions like, "What worked, what didn't, and why?" However, UBTEs placed additional emphasis on identity development and long-term professional vision. For example, U3 asked, "Did you approach the teacher you want to become in today's lesson?" encouraging STs to see practicum as part of their evolving teacher identity. Differently, SBTEs

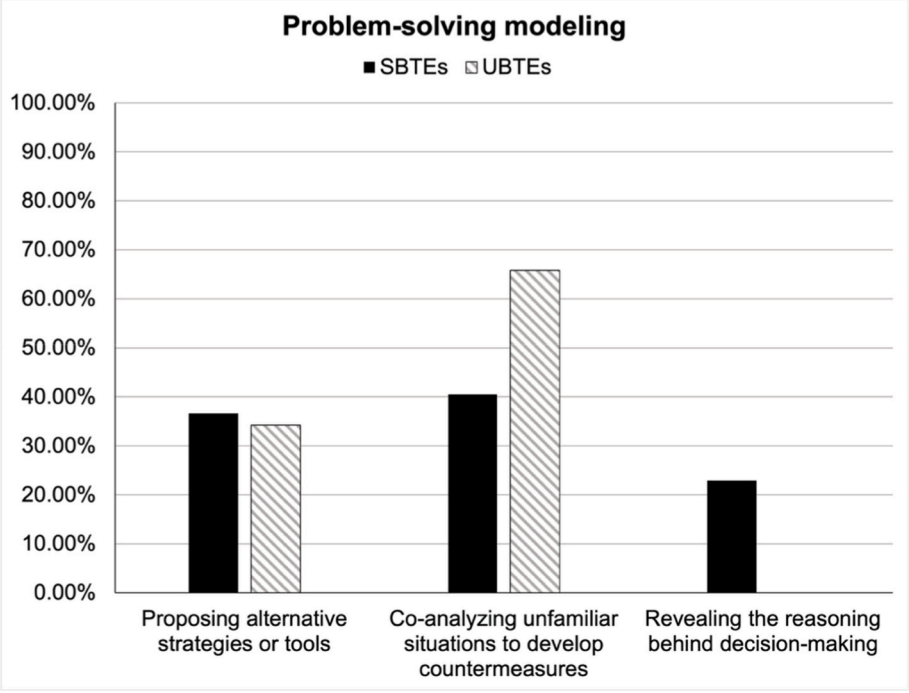

Fig. 7. Encoding percentages for problem-solving modelling.

(e.g., S5, S6, S9) prioritized immediate instructional improvement, focusing on questions like, "What did I do well?" and "How can I improve tomorrow?" to help STs enhance student engagement, clarity, and classroom management.

Problem-solving modelling. The modelling presented in our study is not limited to teaching demonstrations observed by the STs but refers to participants' exemplary proposals while collaboratively solving problems with STs. As shown in Fig. 7, SBTEs demonstrated a balanced enactment by proposing alternative strategies or tools (36.64 %) and co-analyzing unfamiliar situations to develop countermeasures (40.46 %). On the contrary, UBTEs focused more on the latter and were not represented in revealing the reasoning behind decision-making like SBTEs (22.9 %).

For proposing alternative strategies or tools, both UBTEs and SBTEs emphasized the importance of offering flexible options rather than prescriptive methods. However, they differed in how they demonstrated such flexibility to STs. Fitting in the broader pedagogical principles, UBTEs focused on guiding STs to conduct open-ended evaluations—examining "the possible outcomes of different strategies" they proposed (U4). They also more frequently introduced theory-informed tools, such as conceptual frameworks and planning templates (e.g., U1, U6, U8), explicitly linking them to objectives of The National Core Curriculum for Basic Education (hereafter the Curriculum)[1] and student thinking. By comparison, SBTEs placed greater emphasis on modifying their proposed strategies or tools, such as emergency response plans (S1), "pedagogical toolboxes (S6)," and "class manual (S6)," according to the realities of classroom management and student diversity. As S5 consistently reminded her STs: "So, you can make it into a version that helps you in your teaching context the best."

When facing unfamiliar classroom situations, both groups invited STs to make hypotheses (e.g., "sophisticated guesses" about sudden impatience among students (S2)) while discussing reasons behind, and testing collaboratively developed countermeasures (e.g., try innovative strategies when prior ones failed (U1, U2). The difference in this category was that SBTEs grounded the discussions in specific student interactions and school culture (e.g., addressing misbehaviours, adapting lesson flow, managing classroom presence (S3, S7)). UBTEs contextualized the unfamiliar situations within broader pedagogical frameworks, guiding STs to check on planning logic, instructional clarity, and alignment with the Curriculum objectives (e.g., U1, U3).

Only SBTEs (n = 8) described making their pedagogical reasoning explicit through think-aloud strategies. S2 noted that she regularly verbalized her intentions in real-time, "What I want to do and why," to expose the complexity of decision-making. This approach was particularly helpful in complex scenarios, such as supporting anxious students, designing inclusive tasks (S1), or resolving behavioural conflicts (S2, S3). In everyday planning, S9 illustrated how she aligned Curriculum objectives with students' life experiences, explaining to STs how abstract objectives could be translated into observable, measurable goals: "I always explain why I translate those goals and how I evaluate them in practice."

Goal-oriented instruction. The participants in this study were concerned with two layers of goals: one is STs' goals for learning to teach during practicum, and the other is their teaching objectives for student learning. Fig. 8 illustrates distinctions between the two participant groups in clarifying and refining goals (SBTEs: 66.67 %, UBTEs: 78.57 %) and in monitoring the goal attainment process (SBTEs: 33.33 %, UBTEs: 21.43 %).

While both groups emphasized the importance of clarifying and refining goals, UBTEs focused more on the first layer, encouraging STs to integrate teacher identity and professional development with goal-setting based on their individual strengths and weaknesses. For example, at the beginning of each practicum, U1 asked STs to "list their strengths and weaknesses as a teacher … along with at least five different objectives." U1, U3, and U8 all reminded STs to look beyond immediate teaching objectives and instead consider broader goals such as "What do you personally want to achieve?" and "How do your goals relate to your teaching beliefs?" In contrast, SBTEs supported goal concretization on the second layer through modelling and co-planning, such as helping plan unit-level objectives or linking general Curriculum objectives to students' needs (e.g., S6, S7).

In monitoring goal attainment, UBTEs typically tracked STs' progress toward their goals through self-reported reflections during individual meetings, while SBTEs tended to connect STs' goals to real-time teaching moments, encouraging them to evaluate observable changes in their own and students' behaviours. For example, U1 scheduled one-on-one meetings in which STs were asked to write down the types of feedback they had received and how they experienced them. U3 frequently asked, "Did we see a new teacher you want to become today?" to reinforce the alignment between daily progress and long-term professional identity development. By comparison, S3 regularly prompted STs to justify their progress based on observed student changes, asking questions like, "How do you think you achieved this goal by this teaching activity?" Similarly, S5 emphasized that if an ST's goal was to foster students' teamwork, "then how do they know whether that is actually happening?"

5.2.2. Social MC

Adapting roles. Although the mentoring role has been categorized in diverse ways in previous research based on varying standards and conceptualizations, it has been confirmed that teacher educators' role positioning shapes their mentoring relationships with STs and significantly influences their support for STs' professional socialization during practicum (Ambrosetti & Dekkers, 2010; McDonough & Brandenburg, 2012). Three roles evidently surfaced in this study: instructor, advising plan and implementation of STs' teaching; partner, facilitating STs' self-regulation and reflection; and co-learner, engaging in mutual learning with STs. While both SBTEs and UBTEs demonstrated fluid role shifts throughout the practicum, Fig. 9 shows that SBTEs most frequently adopted the partner role (47.06 %), followed by the co-learner (32.35 %), and with fewer mentions of the instructor (20.59 %). UBTEs, by comparison, leaned more toward the instructor role (40.00 %), with equal emphasis on partner and co-learner (30.00 %).

The findings reveal that SBTEs adapt their roles in response to STs' readiness, teaching confidence, and contextual classroom demands. As instructors, SBTEs often stepped in during the early stages of the practicum to scaffold STs' planning and teaching implementation. For example, S7 emphasized guiding STs "step by step" in classroom routines and structure, particularly when STs lacked clarity or direction: "I told them exactly what to prepare and how to execute the plan." As STs gained confidence and familiarity with the class, SBTEs increasingly shifted into the partner role to encourage self-regulation and reflection. S6 illustrated this adaptation, stating: "Once they become more independent, I ask more questions like a colleague instead of giving answers." When novel teaching situations arise or new pedagogical ideas are experimented with, SBTEs often take on the role of co-learner. For instance, S3 described that mutual inquiry created a "safe space where we both learn, particularly when analyzing unexpected students' responses."

UBTEs tended to adapt their roles based on STs' developmental levels and individual teaching experiences reflected in their dialogue with STs. UBTEs often undertake the instructor role when they find inappropriate teaching beliefs or practices in STs. For example, as U4 stated: "I will be critical if I find that they are expecting too much or expecting too little of their pupils in the class, or if they are putting too much material in their lesson plans." When STs demonstrated strong teaching autonomy and no

[1] The National Core Curriculum for Basic Education (2014) in Finland provides a uniform foundation for local curricula. It comprises the objectives and content described for different subjects, which are connected to the description of policies on underlying values, the conception of learning, and school culture.

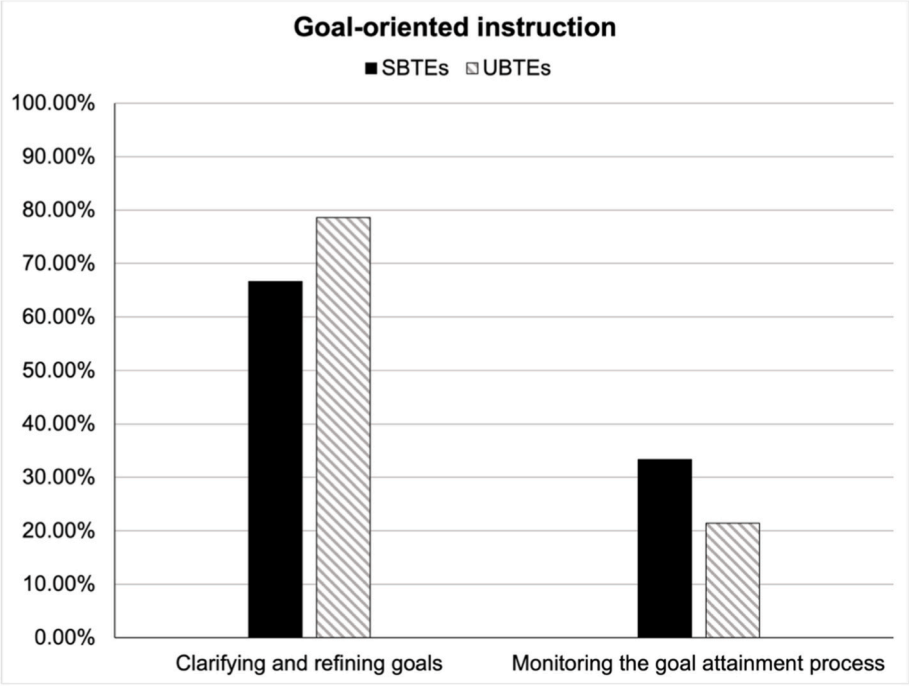

Fig. 8. Encoding percentages for goal-oriented instruction.

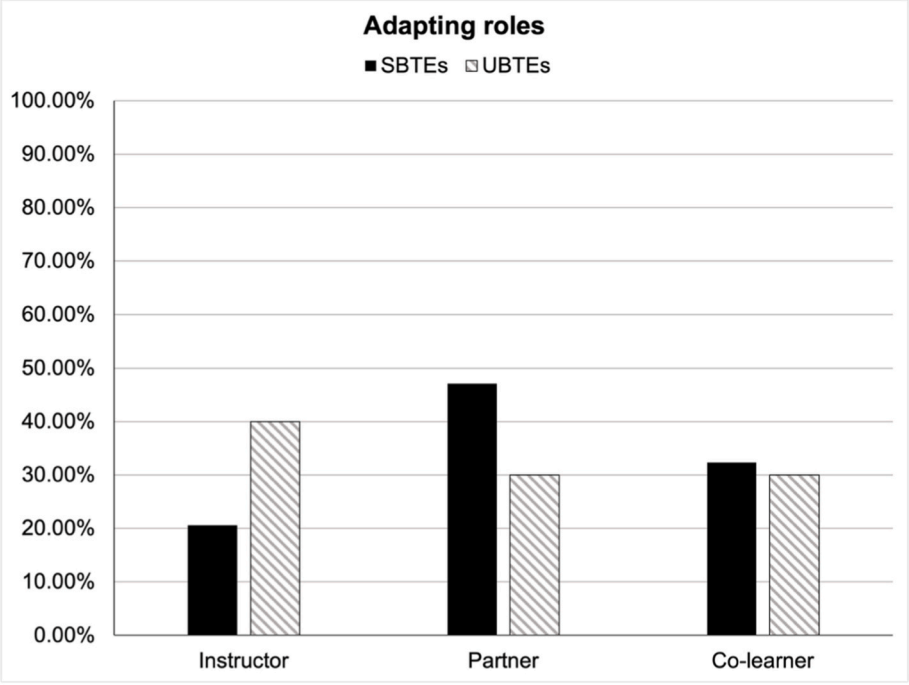

Fig. 9. Encoding percentages for adapting roles.

longer strictly followed their lesson plans, UBTEs such as U2 would act as "encourager" or "sounding board," inspiring them to follow their own pedagogical thinking and giving them the courage to do what they had been thinking. The co-learner role often emerged when UBTEs recognized the value of STs' experiences within diverse teaching contexts. For instance, U6 mentioned learning many "brave ideas they [STs] put into the interaction with pupils," which she could later incorporate into her own mentoring practices, helping to bridge the gap created by her years away from direct classroom teaching.

Bonding professional relations. In addition to bonding relationships between teacher educators and STs, Fig. 10 illustrates that facilitating peer feedback and co-teaching was evident among both SBTEs (58.14 %) and UBTEs. Furthermore, creating opportunities for home-school communication emerged exclusively in the SBTEs' data (41.86 %).

Facilitating peer feedback and co-teaching were key aspects of social MC for both groups. UBTEs fostered peer interaction mainly through guided group dialogue. For example, U1 used a digital observation tool that allowed STs to "click what their peer is doing," producing a visual graph to guide post-lesson feedback among STs. U5 organized group discussions, encouraging STs to share their own teaching experiences

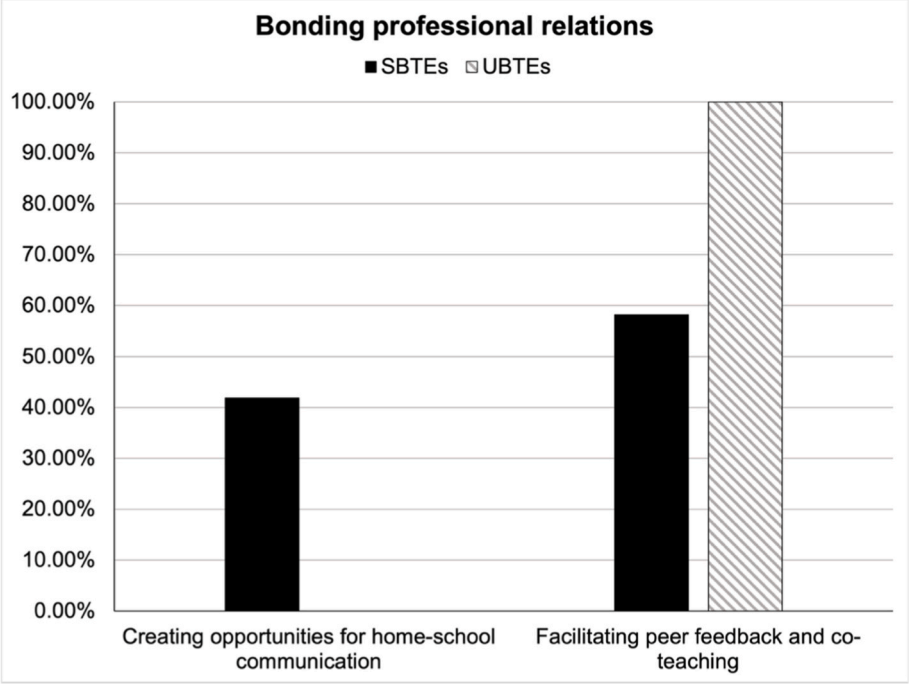

Fig. 10. Encoding percentages for bonding professional relations.

while critically considering what type of peer feedback would be most constructive to give to avoid superficial exchanges. Differently, SBTEs embedded peer feedback into every mentoring meeting and assisted in STs' co-teaching. S5 explained that "We always ask STs to give their comments about the observed peer lessons" before giving her feedback, thereby cultivating a "professional support system." S4 further described a scenario in which he, two STs, and a special education ST collaboratively addressed the challenge of catching all children's attention while balancing the special needs.

Creating opportunities for home-school communication was reported exclusively by SBTEs (n = 6). SBTEs adopted a developmental approach, progressing from observation to partial and full participation under supervision. For instance, S1 invited STs to observe her phone calls with parents: "Stay and listen to how I handle the situation." S2 included STs in parent meetings to help introduce teaching objectives and classroom activities. S1 and S7 also had STs draft weekly home-school messages, which they reviewed and approved before sending via Wilma. All six SBTEs agreed that these strategies help STs authentically experience school-home communication for STs while ensuring professional oversight.

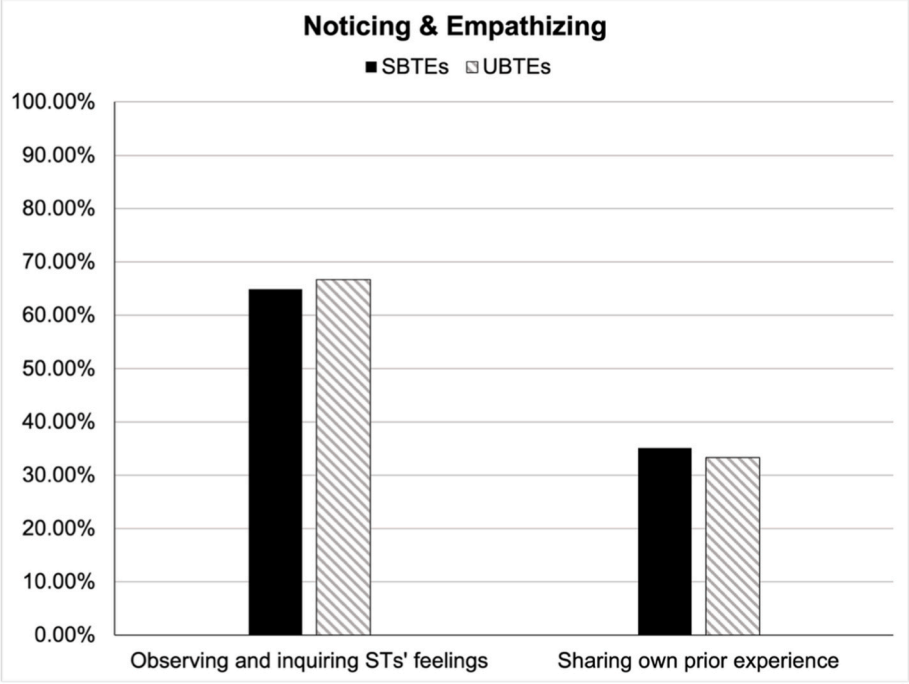

Fig. 11. Encoding percentages for noticing and empathizing.

5.2.3. Emotional MC

Noticing and empathizing. Fig. 11 shows that the MC of SBTEs and UBTEs in noticing and empathizing showed no significant differences, with both groups more prominently enacting observing and inquiring about STs' feelings (SBTEs: 64.86 %, UBTEs: 66.67 %) than sharing their own prior experiences (SBTEs: 35.14 %, UBTEs: 33.33 %).

Although both groups emphasized the importance of observing and inquiring about STs' feelings—such as nervousness, frustration, or withdrawal—they differed slightly in how they detected emotional cues. UBTEs typically identified such changes indirectly through STs' discourse about their own emotional states. For instance, U4 and U5 mentioned recognizing an ST's distress through expressions like "I said the wrong thing," "I was in a bad mood," or "I can never become a teacher" in their meetings. In contrast, SBTEs demonstrated this subtheme through direct, routine, and embodied attention to STs' emotional well-being, such as frequent check-ins. For instance, S6 often opened conversations with "How are you feeling? What happened?" while S1 regularly asked, "Did you sleep?" or "Did you remember to exercise?" S3 used emoji cards to help STs externalize unspoken emotions, facilitating open and supportive dialogue.

Both SBTEs and UBTEs reported sharing their own prior experiences to help STs normalize emotional challenges, though they differed in depth and intent. UBTEs used personal anecdotes to challenge STs' perception that experienced teachers don't have difficulties in teaching. For example, U6 shared experiences as a novice to show vulnerability, while U9 noted that frustration is a routine part of teaching, using such stories to reduce pressure without delving into emotional detail. Unlike UBTEs, SBTEs employed emotional narratives more deliberately to resonate with STs' struggles and lower their perfectionist expectations. S4 emphasized sharing past difficulties to comfort STs, "there are always solutions," while S9 described making intentional classroom mistakes to convey that imperfection is "only human" and central to teacher professional development.

Emotional counseling. Fig. 12 shows that SBTEs' MC of emotional counseling was evenly distributed between relieving stress or frustration and building professional confidence. In contrast, UBTEs more frequently focused on stress relief (71.43 %) than confidence building (28.57 %)

Regarding relieving stress and frustration, UBTEs tended to reassure STs by normalizing imperfection, reframing the practicum as a learning process, and emphasizing long-term professional growth. In contrast, SBTEs were more likely to offer immediate emotional responses, affirmation, and empathy, often grounded in a close relationship. For example, U9 frequently reminded STs that "You don't have to be perfect" and encouraged them to "be kind to yourself," reinforcing the idea that becoming a teacher is a journey of "lifelong learning." Similarly, S1 and S4 actively created a "safe space for emotional expression," in which STs "can completely fall apart … and I will always be here to support you." Similarly, S8 sometimes took empathetic delay and pacing, holding off on critical feedback until STs were emotionally ready to engage.

Although both groups demonstrated MC in building professional confidence, UBTEs were more inclined to link confidence with professional identity development and emphasize the broader societal contributions of STs' teaching. In contrast, SBTEs tended to boost STs' confidence through individual encouragement and recognition of little progress. For instance, U8 routinely anchored STs' growth within a broader professional trajectory and explicitly highlighted how their teaching could contribute to society, which he described as "one possible way to enhance efficacy." S1 affirmed STs' progress by referencing tangible changes in well-regulated classroom management: "These children haven't changed much, but you have."

6. Discussion and implications

6.1. Shared traits in MC: insights into common ground

Responding to the first research question, this study adopted a rarely used yet analytically effective conceptualization of MC as teacher educators' comprehensive expertise in helping STs navigate multifaceted challenges and achieve meaningful change during practicum. Drawing on TLT, nine shared traits were identified from UBTEs' and SBTEs' enacted MC across cognitive, social, and emotional dimensions, which broadly align with the instructional, relational, and affective components highlighted in prior mentoring studies (Orland-Barak & Wang, 2021; Jenssen & Haara, 2024; Väätäjä, 2025).

On the whole, the identified traits showed a strong cognitive

Fig. 12. Encoding percentages for emotional counseling.

orientation, consistent with the emphasis on cognitive support in some representative and widely regarded mentoring frameworks such as the five-factor model (Hudson, 2004) and seven-domain standards (Ellis et al., 2020). Within cognitive MC, both groups emphasized the *coordination of first- and second-order knowledge*, through which participants sought to reinforce the dual layers of student learning and teacher learning simultaneously. This supplements the prior work on knowledge coordination of dual-order teaching among non-university-based teacher educators (Liao et al., 2023) by illustrating how the coordination was enacted through customization (SBTEs) and contextualization (UBTEs), often embedded in their *goal-oriented instruction* that clarified, refined, and monitored STs' dual objectives of professional growth and classroom instruction.

Also, both groups demonstrated a strong cognitive MC on *theory-practice integration*, using various approaches (e.g., top-down application, bottom-up theorization, and parallel comparison) to help STs transform abstract theories into tangible and actionable teaching strategies. This challenges the persistent binary view of UBTEs as theory providers and SBTEs as practice facilitators during practicum mentoring (Ulvik & Smith, 2011; Van der Haar et al., 2022). Furthermore, *question-driven feedback* and *problem-solving modelling* emerged as evident traits in both UBTEs' and SBTEs' mentoring conversations, playing an important role in surfacing teaching dilemmas and scaffolding STs' critical reflection (Maijala, 2023). Enriching the existing evidence on mentoring feedback facilitating STs' reflection (e.g., Pousi et al., 2025; Schutz & Danielson, 2019), our findings indicate that raising open-ended questions related to professional standards (UBTEs) and real-time pedagogical reasoning or decision-making (SBTEs) are beneficial for developing STs' higher-order thinking. Besides, a shared emphasis on pedagogical risk-taking encouraged by both groups when trouble-shooting with STs coincides with what Kang (2021) advocated that teacher educators need to show "supportiveness for experimentation" in enabling STs to make desirable changes during practicum.

In addition, both groups presented social MC in a flexible role adaptation for building a trust-based and constructive mentoring relationship with STs. This highlights the need for a dynamic mentoring positioning (switching between instructor, partner, and co-learner) that avoids "judgementoring" (Hobson & Malderez, 2013) while also resisting absolute egalitarianism that may limit learning from "experienced others" (Weiss et al., 2024). Moreover, building on this adaptable mentoring relationship, the UBTEs and SBTEs in our study also enacted social MC by connecting STs with a broader range of practicum stakeholders. This finding corroborates the prior evidence on effective mentoring relationships supporting STs' socialization (Dreer-Goethe, 2025) and suggests that support is often reflected in facilitating collaborative teaching with peers and communication with parents or guardians. Emotionally, both groups enacted emotional MC by attending to affective cues, sharing empathetic experiences, and encouraging positive attributions, thereby helping STs navigate challenges and build professional confidence.

6.2. Distinct enactments of MC: implications for labor division

The second major finding nuances the enactments of UBTEs' and SBTEs' MC with shared traits across three dimensions. Regarding cognitive MC, UBTEs were characterized by their customization of first-order knowledge, bottom-up theorization, pre-lesson questioning, articulation of decision-making, and translation of curriculum goals into teaching objectives. In contrast, SBTEs emphasized contextualization of second-order knowledge, top-down application or parallel comparison, post-lesson questioning, joint problem-solving analysis, and alignment of teaching objectives with practicum goals. In terms of social MC, while both groups demonstrated co-learner roles, UBTEs tended to adopt an instructor role, guiding STs toward peer mentoring, paving the way for a professional learning community. SBTEs more frequently assumed a partner role, preparing STs for teaching collaboration, and smoothing STs' access to home-school communication. However, the data did not indicate substantial group differences in emotional MC. This may reflect sample size or the absence of psychometric tools; it may also suggest that emotional support is embedded in cognitive understanding of STs' needs and trust-based social interaction. As such, future studies should incorporate participatory observation and multi-method triangulation to better capture emotional dynamics in mentoring.

To better understand these distinctions within commonalities, it is essential to consider the professional paths of Finnish teacher educators, shaped by their respective work expectations, institutional roles, and professional identities. Within a research-based teacher education system, UBTEs are expected to engage in academic research and publishing, with professional development tied to research productivity and its integration into teaching (Byman et al., 2021; Cao et al., 2023). This dual role as researcher and educator positions UBTEs to translate research-informed theories into identity development frameworks and foster pedagogical understanding through bridging concepts (Loukomies et al., 2022), orienting their MC toward theoretical grounding, identity formation, and inquiry-based learning (Cao et al., 2023; Maaranen et al., 2019). By contrast, considering student learning outcomes and teaching experimentation as central to their responsibilities (Jakku-Sihvonen et al., 2012; Maaranen et al., 2020), SBTEs avoid projecting authority in the classrooms. Instead, they act as partners, sharing practice-tested experiences through situated, real-time mentoring interactions. This aligns with their MC focusing on behavioral modeling, responsiveness to student learning evidence, collaborative decision-making, and professional socialization (Mononen et al., 2023; Lavonen et al., 2019; Tiainen & Lutovac, 2024).

Together, these findings have practical implications for fostering collaborative mentoring that leverages shared MC traits while accommodating institutional differences. Drawing on participants' insights into common learning challenges faced by STs, we propose strategies for organizing the division of labor in triadic mentoring. First, to narrow down the theory-practice gap, UBTEs and SBTEs can collaborate through joint design, conceptual dialogue, and reflective debriefing. Before the practicum, they can co-select curated readings (e.g., journal articles, school publications) based on theoretical relevance and practical applicability, encouraging STs to select anchor concepts aligned with their goals. This approach, illustrated by the "learning bridges" described by U1 and U3, reflects Stenberg et al.'s (2016) findings on the role of purposeful readings in transformative reflection. During practicum, SBTEs support STs in translating these concepts into teaching practice and justifying pedagogical decisions (Gravett et al., 2019; McNeilly et al., 2022), while UBTEs facilitate mid-term conceptual dialogues to help STs critically evaluate their experiences in relation to theory (Betlem et al., 2019). In final debriefings, both groups can revise reading selections based on STs' portfolios and presentations, reinforcing the continuous integration of theory and practice.

Second, to tackle social challenges such as peer feedback and co-teaching, SBTEs can pair STs across qualification tracks (e.g., class, subject, and special needs teachers) and scaffold co-planning, co-teaching, and reflection around practice-relevant themes (e.g., differentiation, behavior management) (Korhonen et al., 2017). UBTEs can support these efforts by introducing reflective tools and frameworks that promote peer learning, the sharing of challenging experiences, and critical incident analysis during post-practicum group sessions (Geeraerts et al., 2015). Finally, both groups emphasized supporting STs through emotional disequilibrium caused by the mismatch between expectations and classroom realities (Kavanagh et al., 2023). Our findings suggest that SBTEs can share context-specific examples to guide STs' attributions in response to challenges, helping them avoid self-doubt or withdrawal. UBTEs, drawing on a professional development perspective, can help STs normalize such an imbalance as a critical step in professional growth.

6.3. Theoretical contributions

Combining the methodological strengths of the "difference-within-similarity" approach, this study shows the theoretical power of TLT in identifying, demonstrating, and nuancing teacher educators' MC in three dimensions. Moreover, our findings suggest that these dimensions do not function independently. While this supports TLT's view of competence as an interconnected construct, our study extends it by uncovering varying interactiveness among dimensions. Contrary to Illeris's (2003) claim that cognitive and emotional competence are usually initiated by sociality, our data indicate that cognitive MC often drives the enactment of both social and emotional MC, which, in turn, mutually reinforce each other. For example, U3 drew on his knowledge of an ST's transition from child carer to ECEC teacher to adopt a co-learner role, encouraging the ST to integrate prior experience into pedagogical discussions. He also helped the ST manage emotional tension by mediating identity conflict. However, the dynamic interrelations both across and within MC dimensions remain underexplored. Future research should investigate these interaction mechanisms to gain a more comprehensive understanding of how teacher educators draw on and integrate multiple facets of MC to support student teachers in learning to teach.

7. Conclusion

This study contributes to the expanding body of literature on teacher mentoring in teaching practicum by identifying the common traits of UBTEs' and SBTEs' MC as well as the distinct ways in which they enact it. The findings not only illuminate the richness and complexity of MC among Finnish teacher educators but also offer insights applicable to triadic mentoring in university-school partnership practicum across diverse contexts and regions.

First, the identified commonalities of MC across both groups provide a foundation for strengthening collaborative mentoring in the teaching practicum. These include but are not limited to constructing a dual-order knowledge base, selecting bridging concepts, organizing triadic meetings, building aligned mentoring expectations, enhancing peer mentoring, and attending to emotional cues. Second, the findings reveal distinct tendencies in how UBTEs and SBTEs enact MC, offering practical strategies to leverage their complementary strengths. Division-of-labor strategies were proposed in the areas of theory-practice integration, peer mentoring, and the mitigation of disequilibrium. However, as Gravett et al. (2019) pointed out, collaborative mentoring alone is not enough to resolve longstanding problems such as the theory-practice divide without supportive program-level structures, curriculum construction, and systemic efforts. Therefore, optimizing practicum design to maximize the synergistic potential of MC that responds to STs' needs across both groups is essential for facilitating STs' learning to teach.

This study also presents several limitations. First, the sample included mentoring across varied educational levels and subject areas, without explicitly examining their potential influence on MC. Future research should enlarge the sample across diverse national contexts to explore how MC is enacted globally. Comparative studies focusing on specific educational levels or subjects may further clarify how context shapes UBTEs' and SBTEs' MC. Second, given the self-reported nature of the data, it remains unclear whether STs experienced substantive transformation due to teacher educators' MC. Future research should incorporate STs' feedback on received guidance and adopt longitudinal designs with multiple data sources (e.g., observations, practicum artifacts) to trace concrete changes in teaching practices.

CRediT authorship contribution statement

Xuewei Wang: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **J. Husu:** Writing – review & editing, Validation, Supervision, Resources, Data curation, Conceptualization. **A. Toom:** Writing – review & editing, Validation, Supervision, Resources, Project administration, Data curation, Conceptualization.

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Declaration of competing interest

No potential conflict of interest was reported by the following authors.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tate.2026.105408.

Data availability

Data will be made available on request.

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