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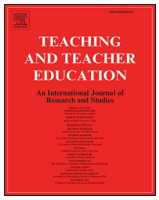

Review article

What makes a good mentor of in-service teacher education? —A systematic review of mentoring competence from a transformative learning perspective

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ABSTRACT

Previous research has explored what competence qualified mentors need to possess. However, with the increasing advocacy that mentoring can be a professional learning experience for mentors, no studies have synthesized mentoring competence reflected in their mentoring practice. By using the framework of transformative learning theory, this study systematically synthesized 56 empirical studies on in-service teacher mentoring published between 2015 and 2022. The findings provide a conceptual framework for mentoring competence in three dimensions (cognitive, social, and emotional) with eight categories and summarize mentor- and context-related influencing factors. These findings suggest theoretical and practical implications for advancing the research of teacher mentoring.

1. Introduction

Novice teachers frequently encounter substantial challenges as they enter the increasingly demanding teaching profession (Larsen & Allen, 2023). These challenges include acclimating to the school environment (Carstensen & Klusmann, 2021), addressing the needs of diverse student groups (Damico et al., 2018), and managing emotional exhaustion (Voss & Kunter, 2020). Without adequate support, these difficulties often lead to novice teachers leaving the profession within five years (Doherty, 2020; Goldhaber & Theobald, 2022).

Mentoring is widely regarded as a critical support for navigating the challenges of transition into teaching profession, enhancing job satisfaction and commitment (Auletto, 2021), reducing work stress (Mosley & McCarthy, 2023), and ultimately lowering the attrition rate of novice teachers (Maready et al., 2021). Consequently, schools in various national regions, including Australia (Wyatt & O'Neill, 2021), Canada (Brown et al., 2020), Chile (Flores, 2019), Estonia (Stingu et al., 2016), Norway (Jacobsen et al., 2023), the U.S. (Reeves et al., 2022), China, Germany, New Zealand (Kaya & Baki, 2023), France, Japan, Israel, Sweden, and Switzerland (Courtney et al., 2023; Kemmis et al., 2014), implement formal or informal induction programs with mentoring to improve novice teacher retention.

In teacher induction, mentoring typically pairs an experienced teacher (mentor) with a less experienced one (mentee) to support the mentee's professional development (Aspfors & Fransson, 2015). Effective mentoring not only assists in retaining mentees within the profession but also facilitates their professional growth, accelerating their development from novice to competent teachers (Collie & Perry, 2019). Prior studies have identified three essential functions of mentoring: relational, cognitive, and affective. These functions are usually reflected in facilitating mentees' socialization (Eisenschmidt & Oder, 2018; Shanks et al., 2022), cultivating pedagogical capabilities (Curtis et al., 2024; Symeonidis et al., 2023), and reducing emotional exhaustion (Burger, 2024; Richter et al., 2013).

To fulfill these mentoring functions, mentors need to possess competence beyond those required for teaching students (Aspfors & Fransson, 2015; Fyall et al., 2020). This competence can be acquired through formal means, such as mentor education (e.g., training courses, workshops, and certificate programs) or professional development communities. (Arnsby et al., 2023; Beutel et al., 2017; Stingu et al., 2016). With increasing studies criticizing transmissive mentorship, learning by engaging in mentoring practice has become a self-reliant and powerful source for the development of mentors' competence (Langdon & Ward, 2014; Liao et al., 2023). Researchers who advocate this view (e.g., Karathanos-Aguilar & Ervin-Kassab, 2022; Kuhn et al., 2022; Larsen, Nguyen, et al., 2023) believe that high-quality mentoring provides

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co-constructive and collegial learning experience for both mentors and mentees, not one-way learning for the mentees solely. Mentors can also benefit from interacting and collaborating with adult learners, thereby developing and improving their mentoring competence (Aspfors & Fransson, 2015; Langdon & Ward, 2014). Research has shown that engaging in mentoring deepens mentors' understanding of mentees' needs, fosters mutual understanding, re-evaluates mentoring objectives, facilitates mentees' reflection, and helps them construct teacher educator identity (Burns & Badiali, 2020; Chu, 2019; Grimmett et al., 2018; Salo et al., 2019).

With the increasing attention on these findings, several literature reviews have been conducted to summarize the attributes of a qualified mentor or an effective mentoring, with only one study by Aspfors and Fransson (2015) focusing on in-service induction, suggesting that mentors' professional development ensuing from their work with new teachers to the profession as part of school induction processes. Among them, studies by Clarke et al. (2014), Ellis et al. (2020), Orland-Barak and Wang (2021) primarily concentrated on mentoring of pre-service practicum. Crutcher and Naseem (2016), Orland-Barak and Wang (2021) partially addressed mentors' qualities and responsibilities situated in various mentoring practices, while Orland-Barak (2014) focused solely on capabilities shaped by the mentor's mediating role. No studies to date have synthesized fragmented evidence from empirical studies into a framework that acknowledges all areas of mentoring competence. To fill this gap, we systematically reviewed empirical studies on in-service teacher mentoring published between 2015 and 2022, aiming to identify the components and influencing factors of mentoring competence.

2. Rationale of mentoring competence

Mentoring is a complex and contested practice beset by diverse conceptualizations (Orland-Barak, 2023; Roberts, 2000). Over the past two decades, researchers have used various terms such as model (Ahmad, 2023; Feiman-Nemser, 2012; Larsen, Jensen-Clayton, et al., 2023), paradigm (Garza et al., 2019), perspective (Wang & Odell, 2002), style (Carmi, 2024), and approach (Orland-Barak & Wang, 2021) to conceptualize and differentiate forms of mentoring. Despite varied terms, three essential functions of mentoring can be distilled across different conceptualizations: providing technical guidance in the cognitive dimension, offering personal care in the emotional dimension, and facilitating interpersonal interactions in the social dimension.

These conceptualizations reflect a contemporary shift in mentoring from hierarchical transmission-oriented learning, where mentors act as experts transferring practical wisdom (Orland-Barak & Wang, 2021; Richter et al., 2013), to non-hierarchical constructivist-oriented learning, where mentors work as co-learners to collaborate with mentees for developing pedagogical understanding and capabilities (Burger et al., 2021; Ellis et al., 2020; Feiman-Nemser, 2001; Langdon & Ward, 2014). However, achieving a mutual learning partnership with full collegiality is often challenged by the inconsistent positioning of mentor's role (Curtis et al., 2024) and difficulties in maintaining genuine mentoring conversations (Larsen, Nguyen, et al., 2023). Our study draws on Carmi's (2024) non-binary conception of mentoring, which suggests that mentoring exists on a continuum between hierarchical and non-hierarchical poles without fully committing to either pole while prioritizing the latter. This conception suggests that mentors have the opportunity to transform their mentoring practice into a learning experience, thereby developing the capacities to support the professional growth of mentees (adult learners) (Kuhn et al., 2022; Nilsson & van Driel, 2010), which we refer to mentoring competence (MC) in our study.

Furthermore, the factors affecting mentoring reported by previous literature can be divided into internal causes and external causes. Evidence of external factors focuses on school contextual factors, such as curriculum structure and organization, leadership adherence to mentoring policy, and management of mentor selection, training and schedule. For instance, mentoring performance can be negatively affected by a decentralized curriculum structure and organization (Wang, 2001), the inconsonant expectations of school leadership and national policy (Jacobsen & Gunnulfsen, 2023), the lack of clear criteria of mentor selection and proper training (Hobson & Malderez, 2013), and providing insufficient mentoring time arrangement (Monnier et al., 2023; Pogodzinski, 2015). Internal factors normally refer to mentors' personal attributes, such as disposition and motivation. Research by Hudson (2010), Maor and McConney (2015), and Ploj Virtič et al. (2023) suggested that mentors with non-judgmental, supportive, and encouraging personalities find it easier to establish collaborative mentor-mentee relationships. Studies by Kuhn et al. (2022, 2024) indicated that extrinsic motivations (e.g., occupational aspirations) and intrinsic motivations (e.g., belief in mentees' potential for growth, and enjoyment of sharing experiences) influence mentoring performance.

Given all the evidence above, it is not hard to see that to achieve informative and constructive mentoring, mentors need to possess a repertoire of competence that will enable them to support mentees' professional learning cognitively, emotionally, and socially. This can be affected by external and internal factors.

3. Transformative learning theory

Transformative Learning (TL) theory (Mezirow, 1991) is a contemporary and comprehensive framework designed to align with modern concepts of competence (Illeris, 2004). It has significant potential for analyzing the learning processes involved in teaching (Butler & Cuenca, 2012; Dyson & Plunkett, 2014, pp. 37–57). We applied its core tenets on learning dimensions and educator roles to understand the competence that mentors develop and apply in their mentoring experiences. TL theory posits that learning within a situated context inherently involves cognitive, emotional, and social dimensions (Illeris, 2003). Corresponding to each dimension, learners can develop a range of competence: 1) functionality in the cognitive dimension includes knowledge and skills; 2) sensitivity in the emotional dimension includes feelings, motivation, and mental regulation; and 3) sociality in the social dimension includes communication, cooperation, and adaptation

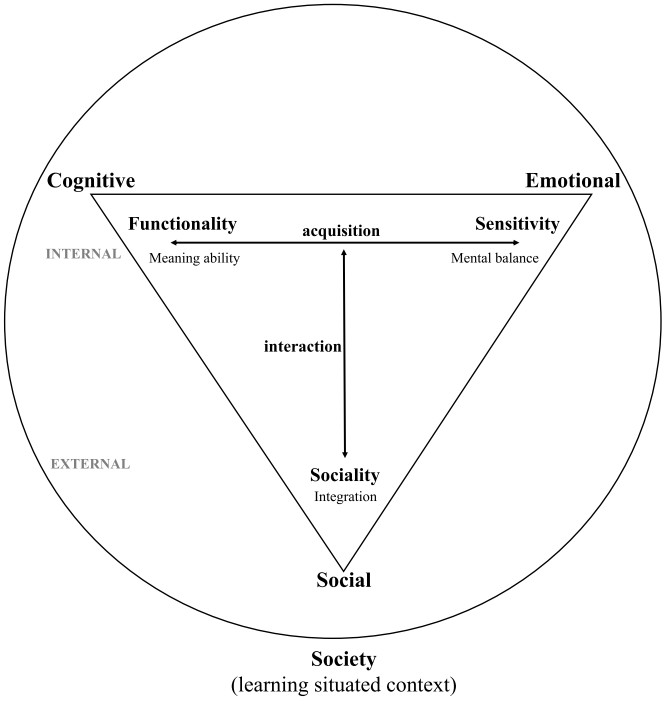

Fig. 1. The three dimensions of learning.

(Illeris, 2003, 2004) (see Fig. 1).

Educators who facilitate learners' transformative learning can also learn and benefit from the process (Cranton, 2016, p. 138). In the context of teacher mentoring, TL theory provides a pertinent framework to analyze mentors' competence, as they undertake dual roles as teacher educators and learners by mentoring. Then, we utilized TL theory's articulation of educator roles to further define the functions of mentors within each learning dimension, which served as an operational definition of MC during our coding process.

According to Mezirow (2012), the transformative learning process involves both instrumental and communicative teaching. In instrumental teaching, educators skilled in a particular subject area serve as designers of instruction, capable of elucidating the intricacies of skilled performance and making it accessible to learners (Cranton, 2016, p. 80). In the mentoring context, mentors must consider mentees' prior learning experiences, set objectives, and design strategies suitable for different learning levels, facilitating progression from one level to the next.

Communicative knowledge in TL is constructed with the educator acting as a facilitator, using methods such as collaborative learning, dialogue, and group activities to help learners understand themselves and their societal context (Cranton, 2016, p. 90). In mentoring, this involves building a trusting, open, and democratic relationship with mentees, and referring them to school policy materials, pedagogical readings, teaching experiences, or other colleagues.

Mezirow and Taylor (2009, pp. 51–53) also emphasize the importance of a holistic teaching approach, which means fostering transformative learning by engaging learners with affective knowing. By addressing emotional issues with learners, educators help them develop an awareness of their feelings in the reflective process (Mezirow & Taylor, 2009, p. 51). In mentoring, this requires creating a conducive learning environment to help mentees become more aware of their emotions and how these feelings relate to their sense-making processes.

The main goal of our systematic review was to build a conceptual framework that not only gives an overall picture of the key elements of mentoring competence but also entails its influencing factors in the in-service teacher education context. Based on theoretical framework of TL, two research questions were proposed to guide our review.

1. What components of mentoring competence have been identified in cognitive, social, and emotional dimensions?
2. What factors have been identified that influence mentoring competence in in-service teacher education?

4. Methods

4.1. Literature searching and selection process

The present review collected studies written between 2015 and 2022 from three electronic databases: the Education Resources Information Center (ERIC), Web of Science, and Scopus. Because the terms "mentoring," "coaching," and "supervision" have frequently been employed interchangeably in the literature (Ambrosetti et al., 2014; Mok & Staub, 2021), to reduce the number of irrelevant studies while searching as comprehensively as possible, we implemented a title search and included the three synonyms with their variants, such as 'mentor', 'mentorship', 'supervise', and 'coach'. Similarly, we adopted the synonyms of 'novice teacher' including 'beginning teacher', 'early-career teacher', newly qualified teacher, and 'in-service teacher', cross-combined them with mentoring's synonyms in searching. Because the term 'beginning teacher' sometimes could be used collectively to refer to the student teacher and novice teacher at different career stages (Crutcher & Naseem, 2016), we paid extra attention to ensure that we excluded pre-service mentoring studies using this term in the screening phase. The number of sources selected based on each search term and from each database can be found in Table 1. The electronic database search yielded 312 records (ERIC = 87, Scopus = 107, Web of Science = 118) from peer-reviewed journals written in English.

Table 1
Results of each database search.

Databases	Number of studies when combined synonymous keywords							
ERIC	Initially selected						87	
	Mentoring\Mentor\Mentorship			Supervision\Supervise			Coaching\Coach	
In-service teacher	7	1	2	1	0		3	0
Novice teacher	21	11	0	1	0		5	5
Beginning teacher	10	4	2	0	0		3	0
Early-career teacher	5	2	1	0	0		0	0
Newly qualified teacher	1	1	0	0	0		1	0
Scopus	Initially selected						107	
	Mentoring\Mentor\Mentorship			Supervision\Supervise			Coaching\Coach	
In-service teacher	12	1	0	0	0		2	0
Novice teacher	28	9	0	2	0		2	5
Beginning teacher	14	6	1	0	0		3	1
Early-career teacher	7	3	2	0	0		1	1
Newly qualified teacher	4	3	0	0	0		0	0
Web of Science	Initially selected						118	
	Mentoring\Mentor\Mentorship			Supervision\Supervise			Coaching\Coach	
In-service teacher	3	2	0	0	0		2	1
Novice teacher	23	21	0	0	0		6	7
Beginning teacher	12	13	1	0	0		1	1
Early-career teacher	6	6	2	0	0		1	1
Newly qualified teacher	7	4	0	0	0		0	0

Guided by the PRISMA approach (Moher et al., 2009), we established two groups of inclusion criteria for screening (see Fig. 2). After removing 173 duplicates, we selected articles that met the first group of inclusion criteria: a) empirical research (qualitative, quantitative, or mixed methods), conceptual or philosophic studies were excluded; b) focus on mentoring of in-service teacher education, while excluding the mentoring of pre-service teaching practicums; c) studies conducted within school contexts, including all pre-college educational levels. Then, we further selected articles from the 100 remaining articles according to the second group of criteria: a) mentoring between school-based mentors and novice teachers had to be (part of) the primary focus while excluding peer mentoring and mentoring between university supervisors and schoolteachers; b) studies conducted in the context of special education were excluded. To avoid the exclusion of relevant articles, we further applied the snowballing technique and bibliographic branching strategy to retrieve some publications missed in the search. Additional five articles were also examined to ensure they met the two groups of criteria. Finally, a total of 56 articles were deemed relevant for analysis in our review (see Table 2).

4.2. Data analysis

Narrative synthesis (Popay et al., 2006, p. 5), including textual description (stage 1) and thematic analysis (stage 2), was adopted for this review. In the first stage, we combined narrative synthetic tools and techniques, such as tabulation, grouping, and clustering (Arai et al., 2007), to obtain a thorough overview of the current research landscape. The results shed light on the geographical contexts, main focuses, data-collecting perspectives, and research methods of existing studies on in-service teacher mentoring. Also, they helped us treat the articles as raw data and we could familiarize ourselves with the texts during the thematic analysis stage.

In the second stage, we used a combination of deductive and inductive analysis (Nowell et al., 2017) to categorize mentoring competence and its influencing factors thematically in three steps. First, we carefully browsed the findings of all the studies we selected and searched for relevant evidence (that mentors' competence was reported as being beneficial in supporting mentees' professional learning) as units

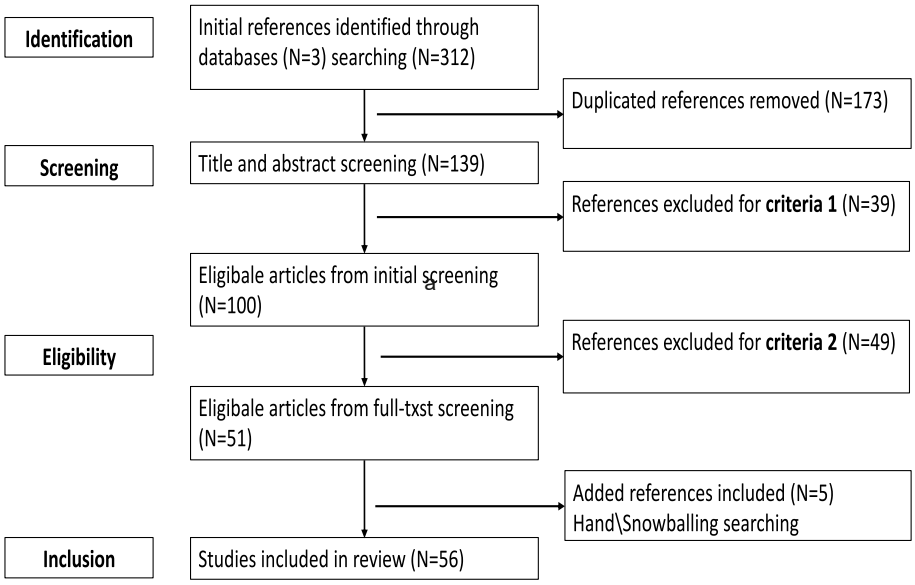

Fig. 2. PRISMA-guided process of selecting relevant studies.

Table 2
List of included articles.

Number	Author(s)	Number	Author(s)
1	Aktas (2018)	29	Maready et al. (2021)
2	Alemdag and Erdem (2017)	30	Mellor et al. (2020)
3	Ali and Cansu (2019)	31	Mhlaba and Rankhumise (2022)
4	Arroyo et al. (2020)	32	Michailidi and Stavrou (2021)
5	Attard Tonna (2019)	33	Mitchell et al. (2020)
6	Beek et al. (2019)	34	Mitchell et al. (2021)
7	Betteney et al. (2018)	35	Morettini et al. (2020)
8	Burger et al. (2021)	36	O'Sullivan and Conway (2016)
9	Cameron and Grant (2017)	37	Parker et al. (2021)
10	Dağ and Sarı (2017)	38	Paula and Grīnfelde (2018)
11	Ewing (2021)	39	Pogodzinski (2015)
12	Gabriel (2017)	40	Pylman and Bell (2021)
13	de la Garza (2016)	41	Robson and Mtika (2017)
14	Goodnight et al. (2020)	42	Schatz-Oppenheimer (2017)
15	Gordon (2017)	43	Schulleri and Saleh (2020)
16	Hobbs and Putnam (2016)	44	Shernoff et al. (2015)
17	Hong and Matsko (2019)	45	Sikma (2019)
18	Hope et al. (2022)	46	Sossick et al. (2019)
19	Hudson and Hudson (2016)	47	Sowell (2017)
20	Kaplan, H. (2022)	48	Spoon et al. (2018)
21	Karimi and Norouzi (2017)	49	Surrette (2020)
22	Keiler et al. (2020)	50	Vaitzman Ben-David and Berkovich (2021)
23	Klages et al. (2020)	51	Vaitzman Ben-David and Berkovich (2022)
24	Kutsyuruba et al. (2019)	52	van Ginkel et al. (2016)
25	Kwok et al. (2021)	53	Wexler (2020)
26	Lu et al. (2020)	54	Willis et al. (2019)
27	Mandrikas et al. (2021)	55	Wu and Ware (2022)
28	Maor and McConney (2015)	56	Yirci (2017)

of analysis. Then, we extracted and labeled the relevant phrases or sentences from these analytical units to form initial codes. Second, combined with the analytical units, we used the theoretical framework of TL to refine deductively the operational definition of mentoring competence in each dimension and categorized initial codes into corresponding dimensions (see Table 3). Also, as informed by internal and external factors affecting TL, we deductively categorized the influencing factors of mentoring competence as mentor-related factors (individual's identity, psychology, and life circumstances) and context-related factors (material conditions or institutional environment).

Third, using the above table as a coding scheme, we inductively analyzed the codes to generate categories and sub-categories within

Table 3
Coding scheme based on TL framework.

Dimension	Operational definition	Examples of analytical units with initial codes
Cognitive MC	The knowledge or skills that can build up mentees' understanding of pedagogy or enhance their proficiency in teaching	"In my first year of teaching my mentor knew the students I was working with and was able to provide me with some *background information and insights on strategies* that worked for her *with some more challenging students*. Another respondent similarly identified how their mentor had helped with *knowledge about students in my classroom in regard to their strengths, needs, and interests*." (Kutsyuruba et al., 2019)
Social MC	The participation, communication, and cooperation that can socialize mentees into professional or local educational communities	"The mentors were perceived as supporting the teachers in navigating in organizational politics, dealing with technical issues in the workplace and the bureaucracy, and *helping with social networking with the school staff*." (Vaitzman Ben-David & Berkovich, 2021b)
Emotional MC	The mental energy, motivations, empathy that can maintain mentees' psychological balance or develop their professional sensitivity	"Appropriate support such as mentoring *reduced level of stress and uncertainty* while novice teachers adapted to school during the period of transition from pre-service period to in-service period." (Paula & Grīnfelde, 2018)

Note. 1. The italic texts in each analytical unit are the initial codes showing why these labeled units were included in the corresponding dimension.

each dimension and influencing factors. To increase the reliability of analysis, all authors first independently used the consentaneous coding scheme to retrieve excerpts of each article and categorized different wordings conveying the same meaning into the same theme. Then, all authors contributed their ideas before we came to a collaborative decision on generating, naming, and refining the categories and subcategories.

5. Findings

In this section, we begin with an overview of geographical and methodological distributions of the studies and a discussion on general trends of in-service teacher mentoring research. Then, we outline the synthesis of the 56 studies in terms of the two research questions.

5.1. Overview of geographical and methodological distributions

Tables 4 and 5 display the geographical and methodological distribution of 56 reviewed articles, exhibiting a regional imbalance and a preference for collecting information from a single participant group. Due to the incompleteness of the background information of the participants in the literature, no detail in our methodological analysis is given regarding the context (rural, remote, or metropolitan areas) where mentoring was conducted, the years of mentoring experience, and the phase of professional development achieved by the mentee. However, we believe that such information may have an impact on analyzing mentoring competence, which could be worthwhile for subsequent research to explore what impact this might have, and how it is enacted.

The results show that the studies are predominantly qualitative, small-scale, and interpretative research approaches, which imply that many researchers value the individual perceptions, lived experiences, and contextual intricacies inherent in the mentor-mentee relationship. However, collecting data only from mentors (n = 12) or only from mentees (n = 23) may lead to a situation in which the details of the research findings from various studies are not augmented, but rather they remain at the same level of detail. Thus, more quantitative studies that investigate diverse groups of mentoring stakeholders, generate large-scale and longitudinal data, and employ multivariable measurements are needed to identify detailed indicators of effective mentoring and explore the multifaceted mentoring competence reflected in these practices.

Among the qualitative studies reviewed, conducting individual or focus group interviews and triangulating them with observation or physical collection were the main data collection methods used by researchers. Our analyses identified several methods that have not been widely used but have great potential for studying mentoring. For example, Karimi and Norouzi (2017) employed the stimulated recall technique to collect more immediate pedagogical reflections on mentors' interactions with mentees. The follow-up interviews offered mentors the means to interpret the reasoning behind the mentoring behaviors evident in the video. From a transformative perspective, since mentoring competence accumulates over time through interacting and collaborating with a range of mentees, it sometimes can be difficult to uncover. Thus, there is a definite need for more qualitative research using this interview technique to unpack more implicit details about mentors' cognitive, social, and emotional competence in supporting novice teachers.

Additionally, using focus group interviews (e.g., Lu et al., 2020; Maor & McConney, 2015) was found to be beneficial for exposing the gaps between mentees' learning needs and mentors' mentoring knowledge. For example, by creating an opportunity for mentors and mentees to discuss and reflect together, some studies (e.g., Dağ & Sarı, 2017; Mandrikas et al., 2021; Paula & Grīnfelde, 2018; Robson & Mtika, 2017) have identified aspects of mentees' learning needs that did not match what the mentors provided, such as time management, educational planning, documentary demands, learner diagnosis, national

Table 4
Geographical information, main focuses, and data collecting perspective of selected studies.

Geographical contexts	Data collecting perspective	Main Focuses
USA: **24** (4, 12, 15, 16, 17, 18, 22, 25, 30, 29, 30, 33, 4, 35, 37, 39, 40, 44, 45, 47, 48, 49, 55)	Mentor: **2** (18, 37) Mentee: **11** (14, 16, 17, 29, 35, 39, 45, 47, 49, 53, 55) Both: **10** (4, 12, 15, 25, 30, 33, 34, 40, 44, 48) Both and other stakeholders: **1** (22)	Impacts of mentoring: **5** (17, 18, 22, 35, 55) Mentoring interactions: **1** (49) Influencing factors of mentoring: **2** (17, 39) Mentoring conversation: **1** (12) Effective mentoring elements: **5** (14, 16, 37, 47, 48) Mentor-mentee relationships: **5** (15, 25, 33, 34, 35) Mentoring activities: **3** (29, 40, 53) Mentors' roles: **2** (30, 44)
Turkey: **5** (1, 2, 3, 10, 16)	Mentee: **3** (3, 10, 56) Both and other stakeholders:**2** (1, 2)	Challenges in mentoring: **1** (1) E-mentoring: **1** (2) Mentees' needs: **2** (10, 56) Mentoring evaluation: **1** (3)
Australia: **4** (11, 19, 28, 54)	Mentor: **3** (19, 28, 54) Mentee: **1** (11)	Mentor-mentee relationships: **1** (11) Mentoring activities (goal setting): **1** (19) Mentors' roles and leadership: **1** (54) Effective mentoring elements: **2** (11, 28) Influencing factors of mentoring: **1** (54)
Israel: **4** (20, 42, 50, 51) UK: **4**(7, 9, 41, 46)	Mentor: **1** (32, 42) Mentee: **3** (20, 50, 51) Mentee:**2**(9, 46) Mentor:**1**(7) Both and other stakeholders:**1**(41)	Mentor-mentee relationships: **2** (50, 51) Mentors' roles: **1** (42) Impacts of mentoring: **1** (20) Impacts of mentoring: **3** (9, 41, 46) Mentors' motivation: **1** (7) Challenges in mentoring: **2** (9, 41)
Netherlands:**2** (6, 52)	Mentor	Mentoring activities: **2** (6, 52) Mentoring feedback: **1** (6)
Greece: **2** (27, 32)	Both	Mentors' roles: **1** (32) Mentoring activities: **1** (27)
Canada: **1** (24)	Mentee	Impacts of mentoring
China: **1** (26)	Mentee	Mentoring types
Germany: **1** (8)	Mentee	Impacts of mentoring
Guatemala: **1** (13)	Mentee	Impacts of mentoring
Iran: **1** (21)	Both	Impacts of mentoring
Latvia: **1** (38)	Both	Mentees' needs
Kazakhstan: **1** (43)	Mentor	Mentee resistance
Ireland:**1**(36)	Mentee	Impacts of mentoring
Norway:**1**(23)	Mentor	Mentors' roles
Malta:**1**(5)	Mentor	Impacts of mentoring
South Africa:**1**(31)	Both	Impacts of mentoring

Note. Bold numbers represent the number of studies; the integers in the brackets are the serial numbers from Table 2, while the sum from the 'Main Focuses' column in each geographical context is greater than the total because some studies included more than one topic of focus.

Table 5
Key information from methodological review.

Aspects	Specific information	Number of studies
Sampling scale		
	n = 1	**2** (15, 30)
	n < 10	**19** (3, 4, 6, 7, 11, 14, 16, 19, 21, 23, 26, 31, 36, 45, 46, 47, 48, 49, 53)
	10 ≤ n < 20	**14**(5, 9, 10, 12, 18, 27, 35, 38, 41, 43, 52, 54, 55, 56)
	20 ≤ n < 100	**11** (1, 2, 13, 22, 28, 32, 37, 44, 50, 51, 56)
	n ≥ 100	**10** (8, 17, 20, 24, 25, 29, 33, 34, 39, 42)
Educational level		
	Pre-school	**4** (9, 14, 20, 23)
	Primary school	**13** (10, 11, 12, 17, 24, 27, 31, 36,40, 44, 45, 48, 53)
	Secondary school	**9** (6, 9, 15, 18, 28, 30, 47, 49, 52)
	Primary school and secondary school	**15** (7, 1, 2, 4, 8, 16, 19, 21, 25, 26, 29, 32, 33, 34, 41)
Subject		
	Science (chemistry, physics, biology) & math & technology	**13** (9, 15, 18, 22, 16, 26, 27, 28, 31, 32, 39, 47, 49)
	English or other languages	**8** (12, 13, 16, 18, 21, 39, 47, 55)
	Social science	**2** (16,18)
	Music	**1** (16)
	PE & Arts	**2** (30, 46)
Research approach		
	Qualitative	**43** (1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 18, 19, 22, 23, 26, 27, 30, 31, 32, 35, 36, 37, 38, 40, 41, 42, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56)
	Quantitative	**6** (8, 14, 17, 20, 29, 39)
	Mixed	**7** (21, 24, 25, 28, 33, 34, 44)
Data collection methods		
	Interviews	**39** (1, 2, 3, 7, 9, 10, 13, 15, 16, 18, 19, 21, 22, 23, 26, 27, 28, 30, 31, 35, 36,37, 38, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56)
	Observations or video recording	**15** (6, 12, 13, 14, 15, 21, 22, 26, 27, 28, 40, 45, 47, 48, 53)
	Open-ended questionnaires	**9** (2, 6, 24, 27, 28, 33, 37, 42, 56)
	Artifacts, journals, or materials	**9** (4, 15, 19, 22, 30, 37, 44, 47, 53)
	Questionnaire survey	**7** (8, 17, 24, 28, 29, 33, 39)
	Other type of collection sheet or checklist	**3** (6, 14, 44)
Data analysis methods		
	Content & thematic analysis	**20** (4, 10, 22, 23, 27, 30, 31, 32, 33, 37, 38, 41, 42, 43, 44, 46, 48, 53, 55, 56)
	Interpretative\descriptive (phenomenological) analysis	**8** (1, 3, 9, 11, 12, 16, 35, 54)
	Comparative analysis	**3** (15, 18, 28)
	Idiographic analysis	**1** (11)
	Evaluative and type-building text analysis	**1** (26)
	Typological analysis	**1** (49)
	Social network analysis	**1** (45)
	Simple descriptive and variances statistics	**6** (8, 24, 25, 33, 34, 44)
	Regression analysis	**3** (29, 33, 39)
	Mediation analysis	**1** (8)
	Score checklist and percentage calculation	**1** (14)
	Template analysis	**1** (52)
	Quantitative-qualitative method	**1** (21)

Note. The numbers in the brackets are the serial numbers from Table 2.

educational system or principles. However, even though some of our studies managed to reveal a range of such 'unmatched' needs, the existing gap has not received sufficient attention. Therefore, further steps need to be taken to explore the specific competence of mentors in flexibly meeting the individual learning needs of mentees.

5.2. Three dimensions of mentoring competence

5.2.1. Cognitive dimension of mentoring competence

As Table 6 illustrates, two categories were identified in the cognitive dimension of mentoring competence: mentoring knowledge and mentoring skills. Six sub-categories are presented in greater detail as follows.

5.2.1.1. Mentoring knowledge

5.2.1.1.1. Knowledge about learners (students and mentees). In the process of mentoring, mentors simultaneously undertake dual roles, working as teachers of K-12 students (first-order teaching) and teacher educators of mentees (second-order teaching) (Dille, 2022; Salo et al., 2019; White et al., 2015). Two orders of teaching necessitate mentors to possess two layers of knowledge about learners (students and mentees). Concurring with this view, one group of the studies underlined the importance of mentors collecting students' background information (e.g., strengths, needs, and interests) (Ewing, 2021; Kutsyuruba et al., 2019), to help mentees figure out how to resonate with students having problematic issues (Ewing, 2021). Another group of studies in the literature emphasized that mentors should learn about mentees' prior experiences and ability levels (Hudson & Hudson, 2016; Parker et al., 2021), thereby drawing up measurable mentoring goals with mentees step by step.

5.2.1.1.2. Knowledge about how to teach students. In addition to knowledge about students, three aspects of knowledge of how to teach students were evident in the literature we reviewed. Subject-specific instructional knowledge (Michailidi & Stavrou, 2021) has been highlighted in one group of studies. For example, according to novice English teachers' assessments in de la Garza's (2016) study, mentors were expected to provide mentees with pedagogical content knowledge of language teaching, such as bilingual reading and writing techniques, introduction of the national English curriculum's competency standards, and teaching strategies for reading comprehension. In the case of STEM

Table 6
Mentoring competence in cognitive dimension.

Category	Sub-categories	Themes
Mentoring knowledge	Knowledge about learners (students and mentees)	• Collecting students' background information • Learning mentees' prior experiences and ability levels
	Knowledge about how to teach students	• Mastering subject-specific instructional knowledge • Applying a learner-centered teaching approach • Sharing classroom management principles and techniques
	Knowledge about how to mentor mentees	• Scaffolding mentees' learning plans in goal-setting sessions of mentoring • Simplifying complicated pedagogical notions into understandable ones
Mentoring skills	Classroom observation and evaluation	• Reviewing and assisting in revising mentees' lesson plans • Producing rubric-guided observations and actively initiating post-observation discussions • Recommending assessment strategies to enrich the contents of learning and teaching assessment
	Feedback literacy	• Posing skillful questions to reveal mentees' learning gaps • Facilitating 'evidence-based' reflective discussion • Demonstrating teaching advice and updating feedback
	Self-reflection	• Identifying own strengths and weakness • Adapting mentor-mentee conversations

subjects, Mandrikas et al. (2021) suggested that mentors who are familiar with the essential nature of complex scientific terminology were greatly helpful in assisting mentees in directing students' inquiry-based learning. In the case of chemistry teacher mentoring, mentees reported that their mentors' knowledge of scheduling teaching episodes was beneficial to them when they had to handle laboratory classes in which there had been effective arrangement of the instruction and experiment.

Knowledge about how to apply a learner-centered teaching approach was identified as the second aspect under this sub-category. For instance, mentors interviewed by Mhlaba and Rankhumise (2022) often remind mentees to pay attention to how students grasp knowledge. de la Garza (2016) and Surrette (2020) both reported that mentors can be significantly helpful if they can share tips about how to consider students' prior knowledge and conduct formative assessments according to students' learning progress.

Another prevalent aspect emerging from the data is classroom management principles and techniques (Hudson & Hudson, 2016; Maready et al., 2021). Specifically, Schatz-Oppenheimer's (2017) study stated that mentors are responsible for sharing suggestions about how to organize classroom discussions and arrange the routine workload. Sowell's (2017) study revealed mentees' implicit need to receive guidance on how to create a supportive learning classroom environment, especially regarding how to set boundaries while simultaneously building a harmonious relationship with students. Moreover, novice preschool teachers from Ali and Cansu's (2019) study highlighted the challenges they face in communicating with preschool children and the need for advice about how to conduct effective classroom management from their mentors. In another challenging case, mentees from the study by Vaitzman Ben-David and Berkovich (2022) noted that their mentors played a vital role in showing them how to apply differential teaching strategies to encourage students while coping with students' misbehaviors.

5.2.1.1.3. Knowledge about how to mentor mentees. In the domain of 'second-order teaching', knowledge about how to mentor mentees has also been demonstrated in the literature as requisite competence of mentors. Parker et al. (2021) suggested that mentors need to know how to scaffold learning plans with mentees during their goal-setting sessions. Likewise, Arroyo et al. (2020) proposed that mentors should be able to help mentees understand and practice layered learning theory so that they can continue progressing toward higher levels of teaching performance. Furthermore, mentors should know how to make complicated pedagogical terminology more understandable for mentees (Schulleri & Saleh, 2020; van Ginkel et al., 2016). For example, Wexler (2020) has emphasized the importance of mentors breaking down the reasoning behind their mentoring behaviors to mentees.

5.2.1.2. Mentoring skills

5.2.1.2.1. Classroom observation and evaluation. The routine work of mentors includes lesson observation and teaching assessments, and it has been consensually suggested in a group of studies (Ewing, 2021; Mandrikas et al., 2021; Vaitzman Ben-David & Berkovich, 2021) that mentors should carefully review mentees' teaching plans based on the reasonableness of applying the subject-specific content knowledge and assisting in revision of the plan. Beyond that, Gabriel (2017) and Lu et al. (2020) believe that mentors need to produce rubric-guided observations and should initiate post-observation discussions with mentees. In addition, other studies suggested that mentors can recommend assessment strategies to mentees to enrich the content of learning and teaching assessment.

For instance, Wexler (2020) noted the important role of mentors in assisting mentees in using formative assessment strategies and reviewing students' responses to assessments at each step before helping students make next learning plans. This also can help mentees to evaluate whether their teaching goals have been achieved to make 'data-driven plans' (Arroyo et al., 2020) for the next step. Hudson and Hudson (2016) recommended that mentors can also encourage mentees to use a self-reported scale, thereby optimizing mentees' own teaching assessments. Schatz-Oppenheimer (2017) further added that it would be better if mentors could conduct a joint assessment with their mentees to consider the teaching methods mentees adopted and general pedagogical issues comprehensively.

5.2.1.2.2. Feedback literacy. Informed by the studies of Keiler et al. (2020) and Wexler (2020), feedback in mentoring can be conceptualized as a process of modeling effective questioning to facilitate mentees' reflection on their teaching performance and collaboratively thinking of ideas for further improvement. The first group of the selected literature suggested that posing skillful questions is conducive to revealing mentees' learning gaps, thereby generating ideas for the next step of progress (Hudson & Hudson, 2016; Kutsyuruba et al., 2019). As Beek et al. (2019) suggested, skillful questions are those that could lead mentees to find the gap between their current teaching performance and desired teaching practice. Similarly, mentors interviewed by Attard Tonna (2019), and Wu and Ware (2022), shared the same belief that facilitative feedback is not about giving advice, but about using "questioning to lead the mentees to identify any issues which needed to be worked on". For example, good open-ended questions in feedback sessions could serve as scaffolding to address mentees' emergent learning needs (Wu & Ware, 2022).

The second cluster of researchers advocated the need for mentors to facilitate reflective discussions with mentees based on evidence from their teaching practice during feedback conversations. The evidence here comprises the mentees' teaching behaviors and the behavioral changes their teaching has made to students' learning. Specific strategies for mentees' self-reflection reported by the literature include designing standardized reflection protocols (Gabriel, 2017; Hope et al., 2022; Hudson & Hudson, 2016), and encouraging mentees to clarify the logic behind their didactic behaviors (Karimi & Norouzi, 2017). Another set of studies exemplified how mentors guide mentees to build the reflection on the assessments of students' learning (Cameron & Grant, 2017). For instance, Wu and Ware (2022) introduced a method containing critical incident identification, theory-situation connection, interpretation, and reasoning. Shernoff et al. (2015) and Wexler (2020) emphasized that diagnosing students' achievements of learning objectives could provide helpful evidence for mentees to reflect on their own professional development goals.

The third group of studies highlighted the need for mentors to integrate feedback with demonstration and update feedback according to development in the mentees' progress. Studies by Goodnight et al. (2020), Lu et al. (2020) and Mandrikas et al. (2021) suggested that mentors should combine verbal feedback with teaching demonstrations to exemplify how their advice can be actioned. Studies by Goodnight et al. (2020), Keiler et al. (2020), and Kwok et al. (2021) indicated that follow-up feedback needs to be given constantly, to help mentees to self-evaluate the progress they have achieved, and to identify the areas requiring more effort.

5.2.1.2.3. Self-reflection. In addition to facilitating mentees' reflection, it has been suggested in the literature that mentors' self-reflection on their own mentoring practices is an important skill. First, several studies reported that reflecting on mentoring feedback can result in better mentoring conversations. In particular, mentors should review the critical elements of their feedback (Beek et al., 2019) given to mentees during mentor-mentee conversations and adapt the discourse to match mentees' reflective capacity (van Ginkel et al., 2016). Moreover, mentors need to identify their strengths and weaknesses in mentoring performance. For instance, Schatz-Oppenheimer (2017) claimed that having a clear understanding of their strengths in mentoring will increase mentors' self-confidence and simultaneously increase mutual trust with mentees. Parker et al. (2021) reported that mentors were expected to reflect on what they could do to improve the promotion of a mutual engagement of mentors and mentees in a collaborative reflection process.

5.2.2. Social dimension of mentoring competence

As Table 7 indicates, the analysis of the studies on mentors' social competence points to three categories: bridging the mentor-mentee distance, designing interactive activities, and extending professional networks. The first two categories focus on what mentors should do to strengthen their social bonds with mentees, while the third concentrates on assisting mentees in socializing with others.

5.2.2.1. Bridging the mentor-mentee distance

5.2.2.1.1. Role positioning. Mentors interviewed by Hudson and Hudson (2016) underlined that mentors should always remember they are not experts dominating or 'overcrowding' mentees' learning, but rather, they are helpers who have been through a similar transactional process. Similarly, two studies applying the MERID model (Henissen et al., 2008) further indicated that mentors should gradually shift their role from instructor, advisor to initiator and encourager (Michailidi & Stavrou, 2021; Shernoff et al., 2015). This requires mentors to tailor their mentoring approaches to align with the individual learning needs of mentees, considering the diverse competence levels exhibited by the mentees.

5.2.2.1.2. Responding and exchanging. Another group of researchers found that responding appropriately to mentees' learning needs with respect and recognition is conducive to maintaining a collaborative mentor-mentee relationship. In particular, Beek et al. (2019), in line with Hudson and Hudson (2016), concluded that mentors should listen attentively to mentees' opinions and needs, thereby being able to actively respond with encouraging praise or critical advice. Maor and McConney (2015) stated that in developing a solution-focused mentorship, mentors should trust mentees' teaching decisions and encourage them to independently figure out solutions to deal with the challenges occurring in their classroom. In addition, Mitchell et al. (2021) and Gordon's (2017) study reported that exchanging ideas about teaching approaches, pedagogical philosophies, and personal interests frequently could help mentors and mentees understand each other's values and beliefs, thereby maintaining a "meaningful interactive relationship" (Nolan & Molla, 2018).

Table 7
Mentoring competence in the social dimension.

Category	Sub-category	Themes
Bridging mentor-mentee distance	Role positioning	• Identifying the self as a helper rather than an expert • Shifting roles from instructor and advisor to initiator and encourager
	Responding and exchanging	• Listening attentively and actively to mentees with timely and appropriate responding • Trusting mentees to generate their solutions when facing challenges • Sharing personal interests, teaching approaches, and philosophies with mentees
Designing interactive activities	Co-planning	• Conducting, observing, and reflecting on the goal setting • Guiding mentees to articulate reasons why and what should be considered in plans • Aligning mutual expectations of mentoring progress
	Co-teaching and demonstration	• Presenting teaching demonstrations while giving corresponding teaching advice • Giving side-by-side coaching in difficult teaching units • Employing different co-teaching models
	Collaborative problem solving	• Predicting possible challenges and providing potential coping strategies • Presenting problematic teaching scenarios and encouraging innovative solutions
Extending professional network	Providing 'insider' information	• Familiarizing mentees with students' background information • Introducing contextual information of school and wider professional community
	Supporting mentees' communication with students or parents	• Modeling mentees' conversations in difficult situations • Preparing mentees for teacher-parent interviews

5.2.2.2. Designing interactive activities

5.2.2.2.1. Co-planning. Ewing (2021), Hudson and Hudson (2016) both argued that mentors should conduct productive goal-setting exercises when co-planning teaching activities with mentees. The findings of their study specified that mentors were expected to work together with mentees in setting goals, observing the progress of achieving goals, and reflecting on goal setting. Additionally, van Ginkel et al. (2016) noted that conducting effective questioning procedures and aligning mutual expectations has proven to be beneficial when mentors co-plan the mentoring with mentees. More specifically, Pylman and Bell (2021) proposed four effective questioning procedures based on the analysis of co-planning videos, mentors' written reflections, and interview transcripts. The procedures include (a) checking on mentees' current knowledge base; (b) judging whether mentees can apply their current knowledge to design teaching activities and asking mentees to explain the rationale behind these teaching activities; (c) Transferring responsibility for decision-making and lesson-planning to mentees; and (d) examining mentees' reasons for making such decisions.

5.2.2.2.2. Co-teaching and demonstration. Another group of studies proposed that providing relevant teaching demonstrations (Goodnight et al., 2020; Schulleri & Saleh, 2020) together with side-by-side coaching (Vaitzman Ben-David & Berkovich, 2022) in difficult teaching units, and employing different co-teaching models (Parker et al., 2021) can potentially improve mentees' teaching practices.

5.2.2.2.3. Collaborative problem solving. The last group of studies added a unique view: apart from affirming the importance of co-teaching and demonstration, 'collaborative problem-solving' has been proven to be beneficial for maintaining a collaborative mentoring relationship. Exemplifying this idea, mentors were expected to predict some potential challenges that mentees might encounter in teaching practice and provide optional coping strategies in advance (Hudson & Hudson, 2016; Schulleri & Saleh, 2020). There were other instances in which mentors presented mentees with challenging scenarios from their classroom experiences and encouraged mentees to explore innovative strategies (Attard Tonna, 2019). During the scenario-based discussion, mentors would encourage mentees to articulate the teaching principles that guided their decisions, which proved to be beneficial to mentees' analytic reflections (Wu & Ware, 2022).

5.2.2.3. Extending professional network

5.2.2.3.1. Providing 'insider' information. The first group of researchers focused on two kinds of 'insider' information that mentors need to provide to mentees. For example, Kutsyuruba et al. (2019) and Surrette (2020) found that to help mentees build close teacher-student relationships, mentors can share students' background information, such as where they grew up and their personality traits. Another cluster of researchers insisted that mentors also should introduce contextual information about the school to mentees, including educational resources, staff members, classroom facilities, cultural traditions or values, management system, and internal rules (Cameron & Grant, 2017; Ewing, 2021; Hobbs & Putnam, 2016; Paula & Grīnfelde, 2018;

Vaitzman Ben-David & Berkovich, 2022; Betteney et al., 2018), thereby offering mentees with quick access to a wider professional community. Furthermore, Yirci (2017) added that mentors need to support mentees in navigating organizational policies and dealing with bureaucracy in some cases.

5.2.2.3.2. Supporting mentees' communication with students or parents. The second group of researchers pointed out that mentors need to support mentees' communication with students or parents, especially in certain difficult situations. For example, Kutsyuruba et al. (2019) suggested that mentors would be tremendously helpful if they could help mentees make tough calls, such as handling course-absence cases or misbehaving students (Surrette, 2020), and contacting parents about plagiarism. Also, mentors can help mentees prepare parent-teacher interviews by drawing upon "clear, accurate, and reliable records" of standard school policies (Hudson & Hudson, 2016). Mentees interviewed by Wu and Ware's (2022) study said that it was helpful when mentors prepared them with culturally responsive skills and dispositions about working with the families of students from diverse backgrounds. However, it should be noted that it is not enough for mentees to rely exclusively on mentors' social support in extending professional networks. School organizational and administrative support is beneficial in increasing mentees' sense of collective efficacy and relational trust, thus enabling them to develop a sense of inclusion within the professional community (Tiplic et al., 2015).

5.2.3. Emotional dimension of mentoring competence

Table 8 presents the three categories of emotional competence we identified from the literature: relieving pressure, reducing loneliness, and professional empowerment. A detailed overview of the studies based on the six sub-categories is presented below.

5.2.3.1. Relieving pressure

5.2.3.1.1. Listening with empathy. One group of studies suggested that mentors should listen to mentees' concerns or confusion with patience, and always be open to new ideas (Kutsyuruba et al., 2019; Maor & McConney, 2015). One study in this group suggested that mentees' need for professional autonomy could be satisfied by mentors' openness to their new ideas. This study examined mentees' emotional exhaustion by investigating the relationships between the mentoring approach and their 'autonomy need satisfaction'[a], concluding that mentors' openness can support mentees' autonomy and reduce their emotional exhaustion (Burger et al., 2021).

Another group of studies stated that allowing mentees to discuss negative feelings and giving non-judgmental feedback would help attune to mentees' emotional states (van Ginkel et al., 2016). For example, Shernoff et al. (2015) emphasized the importance of mentors' empathy in listening and alleviating mentees' feelings of frustration, stress, and uncertainty (Sowell, 2017). This is probably because listening with empathy can allow mentees to express their negative feelings without hiding anxiety (Schatz-Oppenheimer, 2017; Vaitzman Ben-David & Berkovich, 2022). Additionally, mentors were expected to give non-judgmental feedback and negotiate mentoring plans with mentees step by step (Kutsyuruba et al., 2019), to avoid overwhelming mentees with critiques or plans that go beyond mentees' current level.

5.2.3.1.2. Reassuring. Reassuring through honest and informal mentoring dialogues was evident in the studies as another emotional competence that can help mentors reduce mentees' stress. The mentors interviewed by Hudson and Hudson (2016) for their study found that mentees are often hesitant to ask questions during mentoring conversations, due to the anxiety of exposing weakness or deficiency. Therefore, they ought to create a more supportive dialogic environment by encouraging proactive questioning. Similarly, Parker et al. (2021) advocated that mentors need to be prepared to initiate or handle 'difficult conversations' with mentees when they are facing challenges but are still reluctant to ask for help, thereby engaging mentees in productive discussions with honesty. Another set of studies highlighted the important impact of informal conversations on emotional reassurance and interpersonal communication with mentees (Beek et al., 2019; Gordon, 2017; Klages et al., 2020; Morettini et al., 2020). These studies illustrated that extended discussions beyond formal meetings like lunch or after-school talks can help mentees build resilience, overcome stress, and reduce unpreparedness. It is because mentors can share personal experiences or interests to close the gap between them and their mentees, on these occasions.

5.2.3.2. Reducing loneliness

5.2.3.2.1. Showing affability. In a mentorship, mentors usually serve as 'convener of relations' not only constructing mentee-mentor relationship but also attuning mentees to the wider professional community (Matsko et al., 2023). A couple of reviewed studies suggested that mentors should show affability to mentees all the time by maintaining warm, amiable, conscientious, and approachable (Maor & McConney, 2015; Vaitzman Ben-David & Berkovich, 2022). On many occasions in these studies, using humorous expressions could help mentors create an ambiance of warmth and establish a solid rapport with mentees. Moreover, Schulleri and Saleh (2020) introduced the concept of 'mentee resistance' and suggested that it could be the greatest impediment to building a close mentee-mentor relationship. The findings of their study advised that mentors should unstintingly provide appropriate praise and affirmation to avoid mentees' hesitation, stagnation, fear, unavailability, and mistrust of the mentor.

5.2.3.2.2. De-marginalizing. Another group of studies demonstrated that mentors' emotional power of de-marginalization could alleviate mentees' social isolation and build up their sense of belonging within the school education community. For instance, Kutsyuruba et al. (2019) suggested that mentors should frequently encourage mentees to network with other teaching staff in the school as much as possible. Chatting with colleagues through daily informal talk could help mentees "mediate the

Table 8
Mentoring competence in the emotional dimension.

Category	Sub-category	Themes
Relieving pressure	Listening with empathy	• Listening to mentees' concerns or confusion and being open-minded to new ideas • Allowing mentees to discuss negative feelings and giving non-judgmental feedback
	Reassuring	• Encouraging mentees' honesty in difficult mentoring conversations • Using informal talks to help mentees build resilience and navigate unpreparedness
Reducing loneliness	Showing affability	• Maintaining warm, amiable, conscientious, and approachable • Bonding with unstinting praise and affirmation
	De-marginalizing	• Alleviating mentees' social isolation • Building up mentees' sense of belonging
Professional empowerment	Building confidence	• Enhancing mentees' self-confidence in daily work • Cultivating mentees' professional confidence regarding subject knowledge and corresponding teaching methods
	Promoting self-efficacy	• Encouraging mentees to take risks with high expectations • Arousing mentees' spirit of overcoming obstacles and self-doubt

[a] Note.Autonomy need satisfaction refers to an item used to capture the support felt by novice teachers in satisfying their basic intrinsic needs based on a German adaptation of the Basic Need Satisfaction at Work Scale.

organization's culture and values" (Klages et al., 2020). In addition, several studies (i.e., Aktas, 2018; Cameron & Grant, 2017; Morettini et al., 2020; Vaitzman Ben-David & Berkovich, 2022) all emphasized that mentors need to provide mentees with psychological support to cultivate mentees' sense of belonging. This psychological support can be reflected in celebrating the process of being acquainted with the school's professional community step by step so that mentees' confidence in actively enlarging interpersonal communication would be strengthened.

5.2.3.3. Professional empowerment

5.2.3.3.1. Building confidence. Novice teachers who feel professionally empowered can develop clear career plans with firm goals and well-organized practical steps in their first years of teaching (Hord & Sommers, 2008, p.14). Professional empowerment was perceived to be an important emotional support from mentors. to make mentees feel good about themselves and their work, thereby making it more enjoyable to move forward (Wexler, 2020). A group of studies advocated that building confidence is beneficial for increasing mentees' sense of empowerment. In two studies, it was suggested that mentees' self-confidence could be enhanced by comforting mentees whenever they have self-doubts in their daily work (Mandrikas et al., 2021; Vaitzman Ben-David & Berkovich, 2022). Also, two studies attached importance to the need to cultivate mentees' professional confidence regarding subject knowledge and corresponding teaching methods (Cameron & Grant, 2017; Vaitzman Ben-David & Berkovich, 2022). This was especially true when novice teachers were most likely to be afraid of a lack of subject content knowledge and exposing their pedagogical insufficiency in front of students. As a mentee mentioned in an interview by Vaitzman Ben-David and Berkovich (2022), "when there is someone really professional and knowledgeable, you no longer walk around feeling as if you know nothing".

5.2.3.3.2. Promoting self-efficacy. Research has shown that the level of teachers' self-efficacy has an impact on self-assessments of their coping potential in challenging classroom teaching, thereby affecting teachers' emotions (Sliskovic et al., 2020). In the context of teacher mentoring, mentees' self-efficacy often benefits from the vicarious experience as a teacher model provided by mentors while helping them cope with challenging teaching scenarios (Watson & Marschall, 2019). In this regard, the last group of reviewed studies provided evidence from two aspects of how mentors could emotionally empower mentees. Parker et al. (2021) and Shernoff et al. (2015) suggested that mentors need to encourage mentees to take risks on innovative teaching moves and show high expectations for risk-taking. Klages et al. (2020) and Sossick et al. (2019) advocated that mentors need to create a risk-free space for mentees to test and learn from their mistakes so that mentees' self-efficacy won't be inhibited by a feeling of incompetence. However, mentees' self-efficacy can also be affected by a variety of factors, such as mentors' verbal persuasions, teaching difficulties, and mentees perceived mentoring quality (Burger, 2024; Devos et al., 2012; Klassen & Durksen, 2014). It appears that the reviewed studies have not yet provided an in-depth and complex discussion on how the multiple factors interplay and influence mentees' self-efficacy.

In line with Kutsyuruba et al. (2019), Cameron and Grant (2017) suggested that mentors can infect mentees with their enthusiasm to arouse mentees' spirit of overcoming obstacles and self-doubt. For instance, Kutsyuruba et al. (2019) found that physics novice teachers were infected by their mentors and thus developed a sense of enthusiasm to bravely face and endure challenges in teaching. Mentees interviewed for Cameron and Grant's (2017) study mentioned that mentors' responses can add a sense of assurance to their difficult decision-making, especially when they lack self-efficacy.

5.3. Factors enhancing or impeding mentoring competence

Compared with the ample evidence of mentoring competence that exists in these studies, the current review found limited evidence of influencing factors. Two categories, including context- and mentor-related factors, were identified as being influential in mentoring competence.

5.3.1. Context-related factors: school administration

Within the literature, school administration was evidently reported as the main context-related factor that directly and indirectly affected mentors' practice and competence (Pogodzinski, 2015). The school administration can directly coordinate the conditions in which mentors' competence takes effect and develops through the institutionalization and management of mentoring programs. The conditions include mentor selection and assignment, mentor training, management of mentoring meetings, organization of mentor communities, and mentoring evaluation. Indirectly, school leaders and administrators play a significant role in affecting mentors' engagement by regulating mentors' teaching workload, administrative duties, access to resources, and administrator-teacher relationships. As follows, we summarized the positive and negative impacts of supportive and problematic school administration on mentoring competence based on our literature pool.

Positively speaking, the administrators organizing regular meetings with mentors and mentees can help school leaders keep abreast of the current progress and challenges of mentoring programs, ensuring that valuable feedback can be received for timely resource allocation and training support (Spoon et al., 2018). School leaders can show their support by inviting mentors and mentees to share their experiences in various staff meetings or development sessions, therefore giving mentoring more recognition as a part of collective endeavors for school professional development (Attard Tonna, 2019). Additionally, school administrators can also improve mentoring practice by negotiating appropriate expectations with mentors and providing guidelines or standardized checklists for mentoring assessment (Sikma, 2019). Furthermore, a study by Robson and Mtika (2017) found that organizing professional dialogue and teamwork across the mentor community can be an effective way for school administrators to facilitate the mentors' networking and collaboration.

Negatively speaking, a tense political relation between levels of school leadership and an intensive working schedule could hinder the development and utilization of mentoring competence. In a study by Willis et al. (2019), mentors who are responsible for induction and mentoring sometimes take on the role of a middle leader in their schools. The tension between their mid-leadership and school administration could cause relational dilemmas, such as uncertainty about role conflicts and violating the expectations of school leaders. In addition, mentors interviewed by Attard Tonna (2019) emphasized that an inadequate understanding among school leaders regarding the fundamental aspects and requisite support mechanisms of mentoring may lead to its inefficacy. Furthermore, time conflicts caused by disorganized teaching schedules can also bring challenges to mentors' competence (Attard Tonna, 2019; Vaitzman Ben-David & Berkovich, 2022), primarily because it would compromise mentors' availability (Hobbs & Putnam, 2016), making them unable to fulfill their mentoring responsibilities without compromising their own teaching effectiveness (Mellor et al., 2020).

5.3.2. Mentor-related factors

5.3.2.1. Motivations for being a mentor. Traditionally speaking, external benefits such as promotion, salary increase, or workload reduction could be the incentives for mentors to take on mentoring, whereas several studies in our review revealed the influence of intrinsic and extrinsic professional motivation. To be specific, mentors with extrinsic professional motivation are driven by the desire to develop mentees' professional competence by co-creating a collaborative learning environment (Maor & McConney, 2015), encouraging collegiality among both

mentors and mentees (Vaitzman Ben-David & Berkovich, 2022). Mentors with intrinsic professional motivation tend to consolidate and enhance constantly their own competence in both teaching and mentoring through reciprocal learning with mentees (Willis et al., 2019). Except for the desire for personal development, mentors with intrinsic professional motivation often have a sense of 'altruism', pushing the boundaries constantly to contribute to cultivating the next generation of teachers (Maor & McConney, 2015). For instance, mentors in the study by Betteney et al. (2018) consider mentoring to be a rewarding process in which they are willing to provide continuous support to mentees' professional transition from novice teachers to competent teachers. However, given the complexity of the motivational aspects of mentors and their interaction with the range of contextual factors, the evidence we synthesized here could risk a justification challenge in a deeper discussion.

5.3.2.2. Compatibility and relationship with mentees. Another factor that received considerable attention in the reviewed studies is mentors' compatibility and relationship with mentees. Aktas (2018) and Sikma (2019) both reported that the compatibility between mentors and mentees can affect the efficiency of the mentoring relationship to some extent. Two studies further illustrated that a good match between a mentor and mentee should include pedagogical and dispositional compatibility (Kwok et al., 2021; Spoon et al., 2018). As for pedagogical compatibility, whether mentors and mentees share a similar teaching philosophy may determine the concordance of the mentoring relationship. As for dispositional compatibility, sharing similar personalities and teaching motives can likewise deepen the professional bond, thus reducing interpersonal strains and conflicts between mentors and mentees (Vaitzman Ben-David & Berkovich, 2022).

5.3.2.3. Perception of mentoring effectiveness. In addition, Lu et al. (2020) found that mentees' perception of whether a mentoring relationship is supportive strongly correlates with mentors' enthusiasm for mentoring. If mentees do not have faith in or appreciate the value of mentoring, then mentors' activeness will be reduced. Similarly, mentors who deny the substantial and meaningful influence of mentoring on mentees will hardly devote themselves to this extra work on top of classroom teaching (O'Sullivan & Conway, 2016). Vaitzman Ben-David and Berkovich (2022) stated that a healthy and balanced professional commitment can also determine how much mentors devote to the mentoring process. A lack of understanding about the requirements of the mentoring or induction program can hinder mentors' good judgment in supervising novice teachers (Mitchell et al., 2020).

6. Conclusions and discussion

The multidimensional analysis guided by TL theory in the present review has allowed for a more extensive and comprehensive description of what mentoring competence entails and what factors may affect it. To achieve the overarching aim of our review, based on the findings, we developed a framework consisting of eight categories in three dimensions of mentoring competence (see Fig. 3). The fundamental claim of our framework is that mentoring competence can be seen as mentors' learning outcomes through a constructive process of collaborating with mentees. The angles of the triangle depict three dimensions of mentoring competence as learning outcomes, while the inside double arrows illustrate the processes involved. Drawing on Illeris's (2003) model, TL learning implies the integration of two essential processes (i.e., interaction, acquisition) and includes both environmental (external) and individual (internal) layers. When combined with our findings, we made one modification by shifting the emotional dimension from the internal to the external layer. We did this because emotional mentoring competence doesn't mean securing the mental balance of mentors themselves but regulating mentees' emotional fluctuation. Inside the

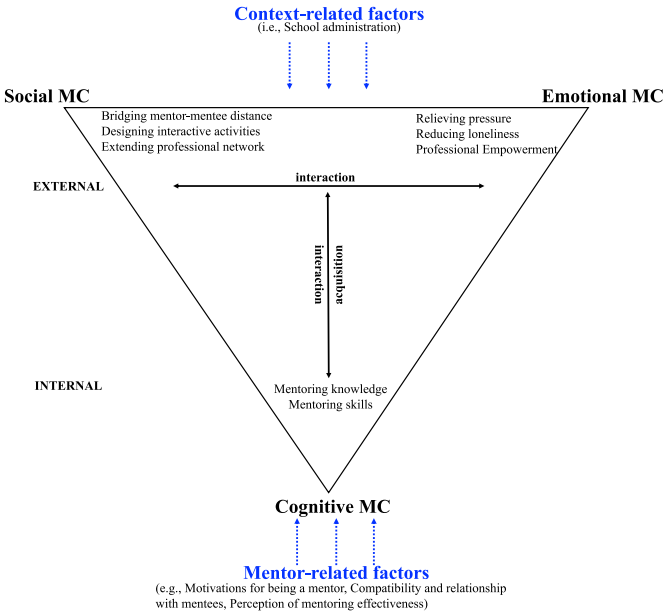

Fig. 3. Conceptual framework of mentoring competence.

triangle, the vertical double arrow depicts not only an interactive process in which cognitive mentoring competence can inform and be informed by the other two but also an acquisition process through which cognitive mentoring competence develops through mentors' social and emotional engagement with mentees. The horizontal double arrow reveals an intra-layer interactive process where social and emotional mentoring competence work by relying on each other.

The conceptual framework we built here provides a theoretically informed, empirically driven, and wide-ranging list of mentoring competence in in-service teacher education. Our findings tend to concur with and particularly add to research findings supporting the claim that a "mentor's function is similar to that of a teacher" (e.g., Schatz-Oppenheimer, 2017). Within the cognitive dimension, we found that to some extent, pedagogical knowledge and the skills required to teach students are interwoven with mentoring knowledge and the skills of supporting mentees. For instance, the sub-categories we identified, such as feedback literacy and self-reflection can also be applied in categorizing teaching competence when replacing learners. This might be because mentors' two orders of teaching are tightly interconnected in the daily interactions with students and mentees (Liao et al., 2023; Ping et al., 2018; Stanulis et al., 2019).

Similarities notwithstanding, the special competence required to be a qualified mentor can be distinguished from teaching competence based on the themes we identified under each sub-category. For example, in the cognitive dimension, knowledge about students' demographic and personal information, the school's organizational culture (Ewing, 2021; Kutsyuruba et al., 2019) has been widely recognized as being quite useful in mentoring knowledge. If we connect it with mentoring competence in the social dimension, it can help mentors further facilitate mentees' socialization in the wider professional community (Cameron & Grant, 2017; Paula & Grīnfelde, 2018; Surrette, 2020; Vaitzman Ben-David & Berkovich, 2022). Meanwhile, supporting mentees to acclimatize themselves better into the school or other professional communities can reduce their sense of loneliness and marginality during their early career (Aktas, 2018; Cameron & Grant, 2017; Kutsyuruba et al., 2019; Vaitzman Ben-David & Berkovich, 2022). Such a chain effect reveals that the three dimensions of mentoring competence are not separated from one another; rather, they are interconnected. However, how mentors utilize the interrelated mechanism between three dimensions of mentoring competence to support mentees' professional learning still needs to be explored in future research.

Another important finding from the review is that, according to the studies conducting data merely from mentors, despite their increasing consensus on the complexity of mentoring (Arroyo et al., 2020; van Ginkel et al., 2016), the theoretical principles underpinning daily mentoring practices have been unnoticed by most of the mentors (Schatz-Oppenheimer, 2017). Thus, researchers also need to inquire further into mentors' ideological and theoretical thinking behind their mentoring behaviors. Furthermore, even though many studies underline the need for high-quality mentoring feedback that includes differentiated feedback strategies compared to the traditional feedback given in transmissive mentoring, few studies on how to give 'skillful' feedback that can satisfy the professional learning needs of different mentees have been done.

In the end, we identified context- and mentor-related factors that have a positive or negative impact on the development or enactment of mentoring competence. Most of the facilitating factors reported by the literature we reviewed were attributed to a supportive school administration (Ewing, 2021). However, our findings have shown that only providing a supportive administrative environment might not be enough, because mentors need to be motivated by intrinsic professional incentives. As suggested by the studies (e.g., Betteney et al., 2018; Maor & McConney, 2015; Willis et al., 2019), mentors' initiatives in improving mentoring practices are commonly motivated by the enhancement of their teaching skills through interacting with mentees. Echoing the argument with Kuhn et al. (2022), mentors who hold an 'intrinsic personal value' are willing to dedicate themselves to interacting with mentees because "they regard mentoring as a part of their own professional development". This finding implies that mentors can promote their teaching competence in the process of developing their mentoring competence, which may in turn expand or deepen their mentoring competence. Thus, it is meaningful to examine such an interactional relationship through more longitudinal inquiries, with multiple data sources, conducted in subject-related contexts.

7. Implications

The above findings have implications for both theory and practice. Theoretically, our synthesis of mentoring competence expanded the application of the three dimensions of TL in the field of teacher education, especially for in-service teacher mentoring. The conceptual framework of mentoring competence that we proposed can provide a common language and expectations for researchers to define or assess what constitutes a qualified mentor teacher. Second, the constructive view of the mentoring process as a transformative learning process and a mentor's role as a learner have been justified in our narrative analysis. Based on this constructive view, mentoring competence can be seen as the learning outcome of the mentoring process, providing a dynamic and developmental perspective for future researchers investigating the underlying mechanisms of effective mentoring.

Practically, the conceptual framework that we presented can be used as a competence framework to guide school leaders in preparing and selecting qualified mentor teachers. Since this competence framework derives from empirical studies employing different research paradigms and conducted in diverse contexts, school-based teacher mentoring can be enhanced by an evidence-based approach. Second, the framework can also facilitate mentors in changing their professional identity from teachers to teacher educators by providing a standard that they can follow in their mentoring practice. By reference to the detailed categories of this framework, mentors could identify their own shortcomings and strengths, then further initiate relevant action research to address practical problems in their mentoring.

8. Limitations

Some limitations need to be noted in terms of the study selection, theoretical framework, and data analysis. Regarding the selection process, gray literature such as dissertations, conference reports, and book chapters was not included in our literature sources, which could lead to a publication bias (Dwan et al., 2013). In addition, the synonym 'coaching' we used in searching has a terminological difference compared with mentoring, which could have brought studies concentrating more on mentors' short-term, task-specific, instructional support (Liao et al., 2023; Yariv, 2009) into our literature pool.

Even though the theoretical framework of TL we adopted is comprehensive and inclusive for identifying specific constituents of mentoring competence, it is still possible that additional categories beyond the three dimensions could emerge. Also, we acknowledge that using the theoretical framework of TL could lead our synthesis into the argument by Blömeke et al. (2015) on one of the dichotomy views (analytic view), seeing competence as a set of multidimensional dispositions and skills instead of a continuum combining its constituents with corresponding performance. Regarding Santagata and Yeh's (2016) model by considering teacher competence as a complex system of knowledge, beliefs, and practices, TL's perspective of competence might impose taxonomic limits on validity and underrepresentation in identifying mentors' competence through their mentoring performance.

Given the conceptual interplay between the three dimensions of TL, it is difficult to categorize and thematize components of mentoring competence in an exclusive manner. Also, due to the insufficient evidence on the influencing factors of mentoring competence in our data pool, we attempted to extract themes from influencing factors affecting mentors' mentoring practice. In this case, it would be difficult to establish an exact match between the influencing factors and the identified elements of mentoring competence.

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CRediT authorship contribution statement

Xuewei Wang: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Jukka Husu:** Writing – review & editing, Validation, Supervision, Formal analysis. **Auli Toom:** Writing – review & editing, Supervision, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that there is no conflict of interest.

Data availability

Data will be made available on request.

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