



Review article

## Challenges of the supervision process in the teacher education practicum – A qualitative research review

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### ARTICLE INFO

#### Keywords:

Teacher education  
Practicum  
Mentor  
Supervision process  
Observation  
Supervision session

### ABSTRACT

Extensive research has identified many quality-related challenges in the K-12-practicum. However, no previous literature reviews have synthesised the challenges of the various activities involved in the practicum supervision process (planning, teaching and observation, preparations for supervision, supervision sessions and post-supervision reflection). This review identifies interrelated challenges for the experiential supervision process, such as limited student activity, and qualitative challenges of observation, feedback, reflection and collaboration. The review highlights the lack of research on certain components and the need for a more holistic research focus regarding the interrelationship of activities involved in the supervision process, specifically in terms of quality.

### 1. Introduction: quality in the practicum supervision process

Supervised practicum in schools is imperative for the qualification of student teachers entering the teaching profession (Collinson et al., 2009; Ezer, Gilat, & Sagee, 2010). The specific characteristics of the supervised practicum element vary internationally. Two large-scale reviews involving a total of 230 studies state, for example, that diversity is the most prominent characteristic (Cohen, Hoz, & Kaplan, 2013; Lawson, Cakmak, Gunduz, & Busher, 2015). On the whole, teacher training programmes in the Western world are dominated by theoretical teacher training models in which a small percentage of the education involves practicum training at schools, and in which student teachers are typically supervised individually by a local mentor teacher (Bullough et al., 2003; Hagger & McIntyre, 2006).

In recent years, however, increasing attention has been devoted to the significance of experiential learning in K-12 practicum, mainly supported by mentor teachers at schools (hereinafter also referred to as ‘mentors’) with a corresponding focus on developing the quality of the supervision practices (Sorensen, 2014). Moreover, a study involving more than 1,000 student teachers indicates that it is the quality of the practicum period, not its length, that is essential for the student teachers’ learning outcomes (Ronfeldt & Reininger, 2012), a finding previously indicated by Sharon et al. (2005).

The focus on quality has led to changes that are often based on

criticism of apprenticeship models, which are said to have dominated practicum supervision in the past. This model has a particular emphasis on student teachers’ learning through observation and imitation of a more experienced professionals and on the student teachers’ professional practice being continuously evaluated or corrected by the mentor. These changes refer to, for example, switching from an apprenticeship model to a professional development model (Hascher, Cocard, & Moser, 2004), personal growth model (Cohen et al., 2013), reflective practitioner model of practicum (Maynard & Furlong, 2017) or ‘dialogic approach’ (Sorensen, 2014). Similar changes and a greater emphasis on the significance of practicum training in schools are also referred to as the ‘practicum turn’ in teacher education (Mattsson, Eilertsen, & Rorison, 2012). These models imply a particularly strong emphasis on student teachers’ independent reflection on and participation in dialogues about practicum experiences.

#### 1.1. Experiential learning: a perspective underpinning the practicum supervision process

The practicum is often highlighted as a core example of an educational context that holds the potential for deep experiential learning (e.g. Kolb & Kolb, 2008; Williams & Sembiente, 2022). Furthermore, experiential learning theory is claimed to be the most important theoretical base when it comes to understanding and designing the

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practicum (Fowler, 2011), which can provide an insight into why the practicum supervision process works, or does not, work (Fowler, 2011; Roland, 2017).

Experiential learning theory draws on a number of scholars, especially within philosophy and psychology, who emphasise the importance of experience when it comes to human learning, for example through Dewey, Habermas, Kolb, Levin, Piaget, Freire, Mezirow, Schön and Rogers (Kolb & Kolb, 2008; Roberts, 2011). There are a number of different understandings and definitions of experiential learning (Moon, 2000). However, six common features can be highlighted (Kolb & Kolb, 2008): Learning a) is best understood as a process, b) is about always re-learning, c) requires solutions for the incompatibilities between dialectically opposing modes of adaptation (action and reflection or feeling and thinking), d) is a general adjustment process, e) is a result of synergetic transactions between people and the environment and f) is a process that creates knowledge.

A foundational feature of experiential learning is based on the fact that, in line with the aforementioned common features, learning can be understood as a cyclical process with several continuous activities or phases. The most basic example of this is Dewey's (1938) statement that is it not enough to experience something in order to advance one's learning, but rather, that this must be combined with reflective activity. The literature that would go on to be published about experiential learning can be characterised as a long series of more detailed, cyclical models that include a varied number of activities or phases (Fowler, 2011).

### 1.2. The model of the practicum supervision process used in the review

Despite the variations between the practicum contexts mentioned above, there are basic similarities in the descriptions of the supervision process in professional literature published in recent decades. The literature on teaching practicum is strongly influenced by theories of experiential learning, and learning is understood in line with this as a complex cyclical process in which the teacher student, over a long period of time, repeats activities such as planning, teaching, observing, giving and receiving feedback, reflecting and participating in dialogue etc. Such activities must be of good quality and well connected in order to create a good, holistic learning process (Acheson & Gall, 1997; Barnes, 2013; Handal & Lauvås, 1987; Roland, 2017).

Reflectivity (e.g. Schön, 1983) which has been claimed to be the most important dimension through which teachers develop competence (Brantley-Dias, 2008; Posner, 2009), is a prominent ideal in the mentor literature's presentation of the supervision process. One example of this can be seen in Handal and Lauvås' (1987) model for reflective supervision, which has dominated Scandinavian practicum supervision in teacher education and other professional education programmes since the 1980s. Here, special emphasis is placed on activities, such as: written preparations before pre-supervision, reflective pre-supervision, observation of teaching, and reflective post-supervision. There are numerous homogenous models based on this process, which include a varied number of phases or activities (Acheson & Gall, 1997; Kayıkç, Yılmaz, & Şahin, 2017).

The model for the reflective supervision process used in this review (Fig. 1), divides this process into five activities, which are then referred to more or less explicitly, and to varying degrees, in the literature.

Reflective supervision has been criticised as being too individualistic and has placed far too little emphasis on the social aspects of the

students' learning process (e.g. Bryant, Johnston, & Usher, 2004). This has contributed to a stronger focus on collaborative learning in the practicum itself, often with reference to Lave and Wenger's (1991) social learning theory, which is seen as an important contribution to experiential learning theory (Kolb & Kolb, 2008). This is used, among other things, to argue in favour of introducing paired and multiple placements in the practicum (Gardiner, 2010; Goodnough, Osmond, Dibbon, Glassman, & Stevens, 2009; Sorensen, 2014), as well as co-planning and co-teaching (Guise, Habib, Thiessen, & Robbins, 2017). The model this review is based on embraces challenges regarding both individual and collaborative learning activities.

### 1.3. The need for a qualitative review of challenges in the supervision process

In recent years, numerous research reviews have been published that focus on practicums in a K-12 context, in which a local mentor supports the students. Many of the studies touch upon general challenges during the period of the practicum, but most have a limited focus on the various activities involved in the practicum supervision process, in addition to having a timespan dating back to the 1990s (Clarke, Triggs, & Nielsen, 2014; Hoffman et al., 2015; Lu, 2010; Ong'ondo & Jwan, 2009). Other studies provide little information regarding the challenges of the process (Cohen et al., 2013; Ellis, Alonzo, & Nguyen, 2020; Lawson et al., 2015). Nesje and Lejonberg (2022) discuss some specific challenges through the use of various tools of the practicum supervision, but they do not focus on the chain of activities within the practicum supervision process itself. Williams and Sembiente's review (2022) mainly revolves around the outcome of American experiential learning projects, which, while they can be a part of the practicum placement, do not specifically focus on the learning process.

None of the reviews mentioned here are explicitly limited to qualitative research, even if the qualitative studies actually make up a majority of the reviews. This review is exclusively based on qualitative studies (including mixed methods). Hammersley (2000) stresses that qualitative research has several strengths, especially in its ability to: stay open to capture the richness of people's different experiences and perspectives ('appreciative' capacity), help people articulate experience that they are only half aware of ('designatory' capacity), and see themselves and their practices in a more holistic perspective ('reflective capacity'). Qualitative studies are considered relevant for this study's purpose (cf. 1.4) because they are particularly suited to documenting the rich thematic variety of experienced challenges during the whole supervision process.

### 1.4. Research aim and research question

The purpose of the review is to provide an overview of the research on key qualitative challenges in various parts of the practicum supervision process, and to indicate research gaps in the process. The research question being investigated is as follows: *What are the challenges of the various activities in the teacher education practicum supervision process?* More specifically, the review seeks to answer what the challenges are in the following activities (cf. Fig. 1):

1) Planning and pre-supervision, 2) Observation of student teachers' teaching, 3) Preparations for supervision, 4) Supervision session, 5) Reflective activity after supervision or throughout the entirety of the supervision process.

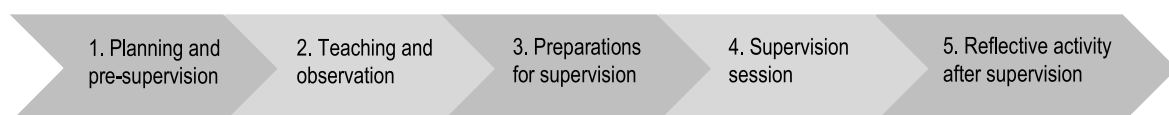


Fig. 1. Reflective supervision process activities in the teacher education practicum as discussed in professional literature.

Research on this is, of course, important in order to be able to develop the quality of the student teachers' experiential learning processes during the practicum placement, and thereby strengthen the qualification of student teachers in the teaching profession.

## 2. Review method

A number of standardised methods exist for conducting reviews of research (2009), and systematic reviews especially have a long tradition in quantitative research (Barnett-Page & Thomas, 2009). The review methods for qualitative research are far less developed and standardised, as well as being a rather controversial issue within the qualitative research tradition (Barnett-Page & Thomas, 2009; Torraco, 2016). Criticism of the early tradition of qualitative reviews, especially for selectively choosing studies that fit their argument, as well as a lack of transparency in the review process, has led to the development of a second-generation qualitative literature review, which adopts elements from the systematic review tradition (Popay & Mallinson, 2010). Several types of systematic qualitative reviews have been proposed (e.g. Barnett-Page & Thomas, 2009; Flemming, Booth, Garside, Tunçalp, & Noyes, 2019). One of them is the Framework Synthesis (Brunton, Oliver, & Thomas, 2020), with which this review has significant similarities, as such an approach is based on a specific guiding theory, model or conceptual framework, which in this context refers to the categories in the practicum supervision process (Fig. 1). Empirical studies and findings are selected, synthesised and presented based on the model's perspective. Framework Synthesis is considered to be most suitable for reviews with specific questions (Flemming et al., 2019), as is the case with this study where only one specific question is being investigated. This review also shares similarities with the Thematic Synthesis (Thomas & Harden, 2008), as the research findings within each of the different categories in the model are coded and synthesised inductively.

Qualitative systematic reviews often involve a critical assessment of the quality of the studies included (Torraco, 2016). This is not a 'critical review' in that sense, just as many qualitative reviews also cannot be characterised as such. Rather, it is limited to research that has been quality assured in peer-reviewed journals.

The aim of this review is not to provide an overview of all research available on practicum placements, but instead to identify key challenges in the practicum supervision process by reviewing a large number of relevant studies. The limitation of the number of studies is well justified in the literature on qualitative reviews (e.g. Thomas & Harden, 2008; Torraco, 2016).

### 2.1. Searching and selecting studies of the challenges in the supervision process

We used the search engine Oria, which allows researchers and students to search the library resources available at Norwegian universities. Oria indexes most of the content from a range of international databases that the universities subscribe to, including ERIC, PsycINFO, JSTORE and Web of Science. We also included a small number of relevant peer-reviewed journal articles from the researchers' archives.

We started with a broad search for articles that included 'teacher education' AND school, and for which the title included one of the following alternatives: 'Professional training' OR 'practical training' OR placement OR 'preservice teacher training' OR 'pre-service teacher training' OR 'teaching practice' OR practicum OR internship OR 'teaching experience'. The search was further delimited to English language peer-reviewed, full-text articles from the period 2000–2021. This resulted in 1,597 hits, which was further reduced to 563 after refining Oria's index to studies categorised as 'teacher education'.

An attempt was made to further narrow down the remaining 563 studies, using several search terms. However, there was a risk of excluding relevant research. The title and abstract of each of the 563 articles were therefore read manually. In cases of uncertainty, the

summary of findings and, in some cases, parts of the analysis, were also read. The majority of the articles were not relevant, usually because the article was not an empirical study, or was not qualitative (e.g. mixed qualitative and quantitative studies were included) or did not have an explicit focus on challenges in one or more parts of the practicum learning process where student teachers are supervised by a mentor teacher. Only studies that reported clear qualitative findings in answer to the research question, which is based on the model of the supervision process, and its categories as a framework, were included. Many studies documented, for example, the general qualities of the placement or supervision relationship, without specifically documenting the challenges of one or more of the various components in the supervision process. These were, therefore, excluded. Several studies were also duplicates.

This left 76 articles plus 15 from private archives that had previously been assessed as relevant. Seven of these articles duplicated findings from the online search, leaving a total of 84 relevant articles. The search also identified six literature reviews on teacher education practicums. These were also included in the review process, despite none of them having the same focus on the supervision process as this article. The research reviews in the remaining articles and the six literature reviews were then read. As a result of this, a further 18 relevant articles were included in a total of 102 studies (reduced to 76 in the second phase). A broader search may have produced a larger number of relevant articles. The included articles were nevertheless considered to form a sufficient basis for the purpose of the study.

### 2.2. Reviewing challenges in specific parts of the supervision process

In this phase, the first and second author read, several times over, print-outs of the Results sections of the 102 included articles. The first part of the work on the individual articles followed the usual deductive procedure in the Framework Synthesis (Shaw, Nunns, Briscoe, Anderson, & Thompson Coon, 2021). Text sections from the Findings sections with relevance to the research question relating to the various parts of the process (cf. Fig. 1), including citations from primary data as well as author comments on findings, were extracted. The first author initially marked text and noted which part of the supervision process it contained information about. The second author then read through the texts, supplemented the notes and highlighted disagreements, and finally the first and second authors discussed their way to a consensus. Seven of the studies were removed early on because the deductive coding process revealed that they did not meet the inclusion criteria.

The second part of the work was carried out in line with established procedures within inductive Thematic Analysis and Thematic Synthesis approaches (Braun & Clarke, 2012; Thomas & Harden, 2008), in which extracts provided the starting point for the coding and further synthesis of themes within the different parts of the supervision process (cf. Fig. 1). This was done by writing (line by line) notes in the printed texts (Charmaz, 2014). Initially, the first and second authors separately extracted texts from 10 articles, and discussed the coding until they came to a consensus. The first author then coded the other articles. Finally, all codes were marked with numbered Post-It notes that identified a) which component(s) of the supervision process were being addressed (deductive coding) and b) the specific challenge(s) which was/were being expressed (inductive coding). For example, a part of the Findings section (Olmstead, Ashton, & Wilkens, 2020, pp. 69–71) was deductively coded as "supervision session challenges" and, in addition, various parts of this text were inductively coded as: "poor quality and quantity of feedback" (C1), "insincere feedback" (C2) and "negative/harsh feedback" (C3). The last example of coding was based on several general statements by the authors as well as student quotes such as: "... 9 out of 10 of the feedback comments were incredibly harsh towards me ..." and "... he never gave me any positives ...".

All the numbered codes were then collected in a Word text document, sorted according to the model's five activities. The second author also read the articles, noted codes, compared these codes to the coding

document (and sometimes also to the extracted text), and differences in coding were discussed and a consensus reached. This was followed by further stages of thematic analysis which included searching for, reviewing and naming themes (Braun & Clarke, 2012). Finally, all four authors read the document containing the themes and associated codes, which led to some further revisions of themes. Finally, a further 19 studies were removed, by strictly limiting the selection to the K-12 practicum context, and this also resulted in some minor thematic changes.

A brief overview of the studies that informed the analysis of the five

**Table 1**  
Studies documenting challenges in the different parts of the supervision process.

Activity in the supervision process	Studies (first author and year)
Challenges of planning	Anderson & Stillman, 2011; Mathisen & Bjørndal, 2016; Bartolome, 2017; Goodnough et al., 2009; Guise et al., 2017; Lee & Wu, 2006; Matsko & Hammerness, 2014; Mohammed, 2019; Nawzar, 2019; Nokes et al., 2008; Norman, 2011; Olmstead et al., 2020; Wassell, 2009; Pennington et al., 2020; Pylman, 2016; Soslau et al., 2019 (16 studies)
Challenges of observation of teaching	Anderson & Stillman, 2011; Anderson et al., 2005; Mathisen & Bjørndal, 2016; Badger, 2012; Bartolome, 2017; Beck & Kosnik, 2000; Britton, 2010; Bullough et al., 2003; Ekiz, 2006; Gardiner, 2010; Genc, 2013; Goodnough et al., 2009; Guise et al., 2017; Hudson, 2014; Hudson, 2016; Koc, 2012; Lee & Wu, 2006; Lofthouse & Wright, 2012; Matsko & Hammerness, 2014; Mohammed, 2019; Mpewe, 2019; Nawzar, 2019; Nokes et al., 2008; Norman, 2011; Ó Gallchóir, C., O'Flaherty, J., & Hinchion, C. 2019; Olmstead et al., 2020; Ovens, 2004; Pennington et al., 2020; Pylman, 2016; Rodgers & Keil, 2007; Windschitl et al., 2020 (31 studies)
Challenges of preparations for supervision	Mathisen & Bjørndal, 2016; Engin, 2015; Hobson et al., 2009; Lofthouse & Wright, 2012; McCoy 2020; Timostsuk & Ugaste, 2010 (6 studies)
Challenges of supervision sessions	Agudo, 2016; Akcan & Tatar, 2010; Mathisen & Bjørndal, 2016; Bjørndal, 2020; Badger, 2012; Beck & Kosnik, 2002; Chaliés et al., 2004; Crasborn et al., 2011; Douglas, 2011; Gan, 2013; Gardiner & Robinson, 2009; Goodnough et al., 2009; Guise et al., 2017; Hobson et al., 2008; Kahan et al., 2003; Koç, 2012; Kurtts & Levin, 2000; Liaw, 2009; Macken et al., 2020; Loughland, Bostwick, Nguyen & Durksen, 2021; Mpewe, 2019; Nawzar, 2019; Olmstead et al., 2020; Otienoh, 2010; Ovens, 2004; Pennington et al., 2020; Rosaen et al., 2008; Rots et al., 2012; Sorensen, 2014; Soslau et al., 2019; Timostsuk & Ugaste, 2010; Valencia et al., 2009; Youens et al., 2014; Öztürk, 2021 (33 studies)
Challenges regarding reflective activities post-supervision or throughout the entire supervision process	Mathisen & Bjørndal, 2016; Bener & Yildiz, 2019; Boulton & Hramiak, 2012; Boulton, 2014; Endacott, 2016; Gardiner & Robinson, 2009; Harland & Wondra, 2011; Hramiak et al., 2009; Jones & Ryan, 2014; Kleinknecht & Gröschner, 2016; Krutka et al., 2014; Lee & Wu, 2006; Lin, 2008; Luik et al., 2011; McCoy 2020; Nagro et al., 2017; Parker et al., 2012; Rosaen et al., 2008; Spiker, 2014; Sumru, 2010; Tadesse Degago, 2007; Toom et al., 2015; Youens et al., 2014 (23 Studies)

different activities within the supervision process has been outlined in Table 1, while Table 2 provides a more detailed overview of the thematic analysis in each activity and the studies on which this is based.

### 2.3. Characteristics of the included studies

The review includes 76 articles with findings from five continents (cf. Table 3), with North America having the greatest representation with 32 studies, most of which are from the United States (29). Studies from a total of eight countries in Europe (21) and Asia (15) were the next predominant. Within these continents, many of the studies are from the UK (8) and Turkey (10) respectively. The remaining studies relate to research from Africa (3) and Oceania (5 studies, including 4 from Australia).

The research methods and design of the 76 studies vary. The vast majority of the studies (63) only use qualitative methods. The most common among these are various kinds of mixed qualitative methods (50). Thirteen of the purely qualitative studies only use one qualitative method for data collection. The remaining of the 76 studies are mixed qualitative and quantitative studies (13). The most common qualitative method in the studies was that of individual interviews. In addition to this, many different approaches are used, such as group interviews, log writing and other types of text produced by the participants, open-ended response alternatives in surveys, informal conversations and observations through participatory observation. Some of the studies involved audio or video recordings of teaching or supervision.

The sample sizes in the studies vary considerably. The majority of the studies (31) include between 2 and 15 participants, and most of these use a mix of several qualitative methods. This is also the case for a somewhat smaller group (17 studies) which included between 16 and 30 participants. A group of a similar size (16 studies) includes 31–60 participants, and a quarter of these are mixed qualitative and quantitative studies. The last group of 12 studies mainly consists of mixed quantitative-qualitative studies which range from 61 to several hundred participants, and where the sample for participants in the qualitative part of the study is, in almost every case, small. The participants in the majority of the studies includes student teachers (65) and 45 of these only include student teachers (not their mentors or others). 32 of the studies include mentors as participants, while there are only mentor-participants in 12 of these studies. Five studies also include other participants (e.g. a visiting university teachers).

## 3. Findings: identifying challenges of the practicum supervision process in teacher education

Research on practicum training in teacher education has, to varying degrees, focused on the different components of the supervision process. One objection to the research is that it does not focus sufficiently on the totality of a complex supervision process (Ong'ondo & Jwan, 2009). That is precisely what this article aims to examine; an endeavour that requires a detailed review of research on what the challenges of the various activities in the supervision process are (cf. Table 2).

### 3.1. Planning and pre-supervision

Literature about practicum supervision has long emphasised the significance of lesson planning and supervision for plans (Handal & Lauvås, 1987; Richardson, 2005), and the importance of student teachers developing competence in lesson planning is firmly entrenched in teacher education programmes (Pang, 2016). Despite this, lesson planning is claimed to be one of the least understood activities in student teacher placements (Windschitl, Lohwasser, & Tasker, 2020).

#### 3.1.1. Challenges of planning and pre-supervision

Lesson planning is often one of the most time-demanding activities of the student teachers' professional training (Goodnough et al., 2009; Lee

**Table 2**  
Themes of the challenges, in the various parts of the supervision process, which have been identified through the research review.

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
Challenges of planning	Time-related challenges for planning	Lesson planning is often one of the most time-demanding activities during the practicum. STs sometimes put limited time and effort into planning. In paired or multiple placements, limited time is a significant challenge for co-planning. Goodnough et al., 2009; Lee & Wu, 2006; Nokes et al., 2008 Pennington et al. (2020) Goodnough et al., 2009; Nokes et al., 2008
	Challenges of mentor teacher support in planning	Challenging activity, requiring considerable MT-support. The involvement of MTs in lesson planning varies. MTs make limited contributions to deeper and independent ST-reflection. Greater focus on co-planning between ST and MT can provide important support – Co-planning can also negatively effect the independence of STs. Koc, 2012; Norman, 2011; Bartolome, 2017 Guise et al. (2017) Matsko & Hammerness, 2014; Pylman, 2016 Mohammed, 2019; Norman, 2011 Anderson & Stillman, 2011; Goodnough et al., 2009; Soslau et al., 2019; Windschitl et al., 2020 Mathisen & Bjørndal, 2016; Nawzar, 2019; Norman, 2011; Olmstead et al., 2020 Guise et al. (2017) Pylman (2016)
Challenges of fellow student teacher support in planning	Independent ST-planning of value, but STs may not receive sufficient support, feedback and opportunity to discuss plans.	Independent ST-planning of value, but STs may not receive sufficient support, feedback and opportunity to discuss plans. Bjørndal, 2016; Nawzar, 2019; Norman, 2011; Olmstead et al., 2020
	'Co-planning' differed considerably, from traditional solo-planning to genuine collaboration. Need for more structure, reflectivity and interaction between ST and MT during planning.	'Co-planning' differed considerably, from traditional solo-planning to genuine collaboration. Need for more structure, reflectivity and interaction between ST and MT during planning. Guise et al. (2017)
Challenges of fellow student teacher support in planning	Fellow co-planning may promote ST learning through more feedback, multiple perspectives and reflection. Challenges to achieve genuine fellow co-planning:	Fellow co-planning may promote ST learning through more feedback, multiple perspectives and reflection. Challenges to achieve genuine fellow co-planning: Wassel, 2015; Nokes et al., 2008
	•Limited time.	•Limited time. Goodnough et al., 2009; Nokes et al., 2008
	•Personal mismatch and differing perceptions of teaching.	•Personal mismatch and differing perceptions of teaching. Nokes et al., 2008; Nokes et al., 2008;

**Table 2 (continued)**

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
Challenges of observation of teaching	Challenges of varying observer involvement	•The MT's negative attitude towards fellow co-planning. Many STs often observed to a limited extent. Pennington et al., (2020) Nokes et al. (2008)
		Both the involvement of MTs and fellow STs as observers gradually diminished during the practicum period. Fellow STs could be physically absent, inattentive or work on their own teaching preparations instead of observing. Most STs regard MT absence as observers as negative, but some regard it as positive, because of the high level of MT control. (Ekiz, 2006; Kinne et al., 2016; Nawzar, 2019; Valencia et al., 2009) Pennington et al. (2020)
Challenges of observation of teaching	Challenges of varying degrees of observation structure	Unsistematic and random observation can limit STs' learning. More structured approaches may improve the observation. Higher degree of structure does not solve all observation challenges. Overly rigid forms of observation can threaten the quality of observations. Use of linear observation pro forma led to lower levels of reflection, compared to when this was combined with an inquiry based approach, where the teaching STs' questions also provided the starting point for the observer's attention. Nokes et al., 2008
		Challenging for MTs to document the observations that substantiate the feedback in a convincing manner. MTs may assess observed performance in different and contradictory ways. The observation of teaching by MTs and STs may be different, related to different views on teaching. Beck & Kosnik, 2000; Olmstead et al., 2020; Pennington et al., 2020 Rodgers & Keil, 2007; Valencia et al., 2009 Genc & Buyukkarci, 2013; Mpewe, 2019 Lofthouse and Wright (2012)
	Challenges related to observational validity	Challenging for MTs to document the observations that substantiate the feedback in a convincing manner. MTs may assess observed performance in different and contradictory ways. The observation of teaching by MTs and STs may be different, related to different views on teaching. Mathisen & Bjørndal, 2016; Badger, 2012 Hudson, 2014; Hudson, 2016 Olmstead et al., 2020; Ó Gallchóir et al., 2019

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Table 2 (continued)

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
Challenges of peer student observation	Fellow ST observation can help challenges of observation to support ST-learning.	Anderson et al., 2005; Mathisen & Bjørndal, 2016; Britton & Anderson, 2010; Bullough et al., 2003; Gardiner, 2010; Genc & Buyukkarci, 2013;
	ST observations can be overly simple, superficial or insufficiently critical. STs' need observation training	Ovens (2004)
Challenges of preparations for supervision	Limited preparations STs and MTs may make insufficient or no preparations for post-teaching supervision sessions, often restricted by time. STs had no opportunity to prepare for the MT's observation notes (the starting point for the supervision session). This weakened opportunities for discussion.	Mathisen & Bjørndal, 2016; Hobson et al., 2009  Engin (2015)
	Limited reflective preparations contrasted with the use of intervening tools The learning of STs is perceived as limited in contrast to using intervening tools to facilitate reflective preparations: •ST watching a video recording of the teaching, and selecting video clips as the subject for a supervision session. •ST reading the mentors observation notes before supervision session. •ST receiving questions from the observers before the supervision session. •Journal writing  •ST/fellow STs/MT reading/watching/prioritising MT/fellow ST-observers digital multimodal feedback (text, pictures and video clips), before the supervision session.	Youens, 2014; McCoy 2020  Bunton, 2002  Lofthouse and Wright (2012)  Tadesse Degago, 2007 Mathisen and Bjørndal (2016)
Challenges of supervision sessions	Challenges of feedback quality and quantity Both the quantity and quality of MT feedback varies significantly, and STs often want more and better feedback. STs often regard the feedback they receive in post-teaching supervision to be insufficient	Agudo, 2016; Badger, 2012; Olmstead et al., 2020  Agudo, 2016; Gan, 2013; Gardiner & Robinson, 2009; Mpewe, 2019;

Table 2 (continued)

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
Challenges of critical feedback	STs may perceive the feedback to be: • Brief and superficial, unclear or incomprehensible, and it can be challenging to remember the specific events referred to in the feedback. • Negative and debilitating.	Nawzar, 2019; Öztürk, 2021  Agudo, 2016; Badger, 2012; Mpewe, 2019; Nawzar, 2019  Hobson et al., 2008; Olmstead et al., 2020; Rots et al., 2012; Timostsuk & Ugaste, 2010; Valencia et al., 2009 Nawzar (2019)
	Challenges of critical feedback The feedback tends to be more technical and confirmatory than reflective or investigative. MTs perceive that they have problems providing effective and constructivist feedback. Challenging for the MT to document observations in a manner that enables the ST to understand the feedback and find it convincing. The most challenging part of providing feedback in the practicum is when it is critical or negative. <i>Critical feedback can lead to:</i> • Negative emotional reactions • STs may become verbally passive. • To prevent negative assessments, ST may avoid sharing relevant issues or information with the MT. • STs devote much of their attention to defending their own self-image.	Olmstead et al., 2020 Akcan & Tatar, 2010; Badger, 2012; Douglas, 2011; Loughland 2021  Chalies et al., 2004; Kahan et al., 2003  Koç (2012)  Mathisen & Bjørndal, 2016; Rosaen et al., 2008; Youens et al., 2014  Bjørndal, 2020;  Otienoh (2010)  Bjørndal (2020)  Rots et al. (2012)  Bjørndal (2020)

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Table 2 (continued)

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
	<ul style="list-style-type: none"> <li>•STs may be inclined to avoid expressing disagreement with the mentor.</li> </ul>	Beck and Kosnik (2002)
Challenges of limited active student teacher participation in dialogue and reflection	<p>Dominant interaction pattern: MTs holds most of the speaking time, they control the content and summarise the teaching situations. STs often passively receive the knowledge and assessments, and contribute little to independent thinking and reflection.</p> <p>Little focus on discussing goals in sessions limits dialogue and student reflection (compared to more monologic perceptions of the reality and the alternatives).</p> <p>STs are less involved, active, reflective and collaborative during supervision sessions, when not using video as a tool.</p>	<p>Crasborn et al., 2011; Douglas, 2011; Loughland 2021; Soslau et al., 2019</p> <p>Loughland 2021</p>
Challenges of peer collaboration in sessions	<p>Paired or multiple practicum placements can help regarding the challenges of stimulating ST activity and dialogue</p> <p>Paired or multiple practicum placements can also involve such challenges as:</p> <ul style="list-style-type: none"> <li>•Loss of individuality and competition between the STs</li> <li>•Less peer-feedback than one might hope for.</li> <li>•Dissemination of open peer feedback because of relational problems.</li> <li>•STs' limited professional knowledge can make it difficult to analyse teaching and provide good feedback.</li> <li>•It can take time for STs to learn to collaborate.</li> <li>•Training of supporting fellow STs is required.</li> </ul>	<p>Mathisen &amp; Bjørndal, 2016; Rosaen et al., 2008; Youens et al., 2014</p> <p>Gardiner &amp; Robinson, 2009; Liaw, 2009; Sorensen, 2014</p> <p>Goodnough et al. (2009)</p> <p>Macken et al., 2020; Mathisen &amp; Bjørndal, 2016; Pennington et al., 2020 Macken et al., 2020; Ovens, 2004</p> <p>Kurtts &amp; Levin, 2000; Ovens, 2004</p> <p>Gardiner and Robinson (2009)</p> <p>Ovens (2004)</p>

Table 2 (continued)

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
Challenges regarding reflective activities post-supervision or throughout the entire supervision process	<p>Challenges finding time for informal dialogue</p> <p>Challenges related to the use of reflective journals</p>	<p>Gardiner and Robinson (2009)</p> <p>(Icy, 2004; Tadesse Degago, 2007)</p> <p>Kleinknecht and Gröschner (2016)</p> <p>Tadesse Degago, 2007</p> <p>(Icy, 2004; Kolar &amp; Dickson, 2002; Spiker, 2014; Tadesse Degago, 2007)</p> <p>Spiker (2014)</p>
	<p>Difficult to find time for informal dialogue with both fellow STs and MTs.</p> <p>Reflective journals may help solve the challenges of:</p> <ul style="list-style-type: none"> <li>•Helping STs to remember and reflect on their practicum experiences in a deeper and more complex way</li> <li>•Making STs better able to substantiate assessments of the practicum.</li> <li>•Stimulating more fellow STs' feedback and improving the continuity between practicum periods. Challenges of using reflective journals:</li> <li>•Can be time-consuming, and challenging to maintain the same level of interest in writing over time.</li> <li>•Unstructured journals can reduce the amount of writing, while journals that are structured with questions or themes can encourage STs to write more.</li> </ul> <p>Portfolios may help solve the challenges of:</p> <ul style="list-style-type: none"> <li>•STs' reflecting on long term development.</li> <li>•Stimulating STs for deeper or more multifaceted reflection.</li> <li>•Helping MTs and fellow STs to collaborate in analyses and discussions of practice.</li> </ul> <p>Challenges using portfolios:</p> <ul style="list-style-type: none"> <li>•Time-consuming in busy daily life.</li> </ul> <p>Requires resources to follow-up by MTs, supervisors or technical support staff.</p>	<p>(Icy, 2004; Kolar &amp; Dickson, 2002; Spiker, 2014; Tadesse Degago, 2007)</p> <p>Spiker (2014)</p> <p>Parker et al., 2012</p> <p>Parker et al., 2012; Toom et al., 2015</p> <p>Youens et al., 2014; Boulton, 2014;</p> <p>Lin, 2008; Parker et al., 2012</p>

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Table 2 (continued)

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
Challenges related to the use of video	<p>Challenges related to the use of video</p> <ul style="list-style-type: none"> <li>• <b>Focus on the STs' problems/challenges of learning over time.</b></li> <li>• <b>Contributing to clearer and more convincing feedback.</b></li> <li>• <b>Deeper reflection on performance</b></li> <li>• <b>Improving the ability of STs to notice and remember teaching</b></li> <li>• <b>Make the ST more committed and actively reflective during the supervision process</b></li> <li>• <b>Stimulating MT and fellow ST collaboration in analyses and discussions of practice.</b></li> </ul> <p><i>Challenges of using video:</i></p> <ul style="list-style-type: none"> <li>• <b>Can involve vulnerability and contribute to an overly negative self-assessment.</b></li> <li>• <b>Very time-consuming, especially in the busy everyday school or study routine.</b></li> </ul>	<p>McCoy 2020</p> <p>Rosaen et al., 2008; Sumru, 2010</p> <p>McCoy 2020; Nagro et al., 2017</p> <p>(Rosaen et al., 2008; Santagata &amp; Guarino, 2011)</p> <p>McCoy 2020</p> <p>Youens et al. (2014)</p> <p>Kleinknecht and Gröschner (2016)</p> <p>Endacott, 2016; Kleinknecht &amp; Gröschner, 2016; Lee &amp; Wu, 2006</p>
	Challenges related to the use of microblogs	<p>Use of microblogs may help solve the challenges of:</p> <ul style="list-style-type: none"> <li>• <b>Stimulating deeper and more continuous reflection and learning.</b></li> <li>• <b>Supporting deeper reflection, to a greater extent than traditional written assignments.</b></li> <li>• <b>Facilitating immediate feedback from the MT.</b></li> <li>• <b>Stimulating more fellow ST-feedback.</b></li> <li>• <b>Developing collaboration between STs and the MT.</b></li> <li>• <b>Challenges of using microblogs:</b></li> <li>• <b>Level of reflection in blogs varies</b></li> </ul>

Table 2 (continued)

Parts of the supervision process	Specific challenges in each part of the supervision process	Author(s), year published
	<p>considerably. Usually of a descriptive nature and entails a limited level of reflection.</p> <ul style="list-style-type: none"> <li>• <b>Challenging to generate the degree of writing activity and interaction in the blogs that is intended.</b></li> <li>• <b>Maintaining the privacy of their reflections can be important for STs.</b></li> <li>• <b>Software not adapted for the purpose.</b></li> </ul>	<p>2014; Luik et al., 2011</p> <p>Bener and Yildiz (2019)</p> <p>Boulton &amp; Hramiak, 2012; Evans &amp; Powell, 2007</p> <p>Mathisen and Bjørndal (2016)</p>

& Wu, 2006; Nokes, Bullough, Egan, Birrell, & Merrell Hansen, 2008). In some cases, however, student teachers put limited time and effort into planning (Anderson & Stillman, 2011; Nokes et al., 2008; Pennington, Wilkinson, Prusak, Hanson, & Haslem, 2020) and student teachers may even leave the practical placement with the impression that teachers do not plan their teaching to any particular degree (Anderson & Stillman, 2011). Limited time during a hectic school day in particular represents a significant challenge for collaborative lesson planning, regardless of whether only the student teachers or the mentors as well are involved (Goodnough et al., 2009; Nokes et al., 2008).

Lesson planning is a challenging cognitive activity that requires considerable support of a mentor teacher (Norman, 2011), especially for new student teachers who may need to revise plans several times (Bartolome, 2017). The mentor's involvement in lesson planning varies depending on the context and the individual mentor's view of the practicum and their mentor role (Guise et al., 2017). However, other studies show that the mentor only contributes to a limited extent to the student teachers' ability to reflect more deeply and independently on the plans (Matsko & Hammerness, 2014), and that the mentor may have a tendency to focus on 'what' and 'when' rather than the more demanding questions of the 'how' and 'why' of lesson design (Pylman, 2016).

In some cases, there is a greater focus on co-planning between the student teacher and mentor, and this can provide student teachers with effective support in learning to plan lessons (Mohammed, 2019; Norman, 2011; Soslau, Gallo-Fox, & Scantlebury, 2019), while at the same time having a negative impact on the independence of the student teachers (Anderson & Stillman, 2011; Goodnough et al., 2009; Soslau et al., 2019). Some student teachers are only allowed to make small adjustments to the mentor's plan, while others do not gain regular experience in either planning or modifying the mentor's plan themselves until well into their studies (Windschitl et al., 2020). It has been pointed out that it can be valuable for the student teachers to work more independently on lesson planning, but also that in doing so, the student teacher may be at risk of being left to fend for themselves without receiving sufficient support, feedback or the opportunity to discuss the plans (Mathisen & Bjørndal, 2016; Nawzar, 2019; Norman, 2011; Olmstead et al., 2020). Guise et al. (2017) found that 'co-planning' practices differed considerably. About half of the 'co-teaching pairs' were very traditional, with an emphasis on individual planning and little real collaborative planning, while the other half had stronger elements of collaborative planning. A need for more structure, reflectivity and to create more interaction between the student teacher and mentor teacher during the planning phase has also been identified (Pylman, 2016).

Paired or multiple placements may improve the planning phase by enabling student teachers to plan together, reflect on or provide



Table 3

The studies included in the review and their characteristics.

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
1. Agudo, J. d. D. M.	2016	Spain	Mixed qualitative-quantitative	Individual interviews, survey	58 Student teachers	Undergraduate TEFL university programme	Primary school	14 weeks	English	Age: 21–22 Level: fourth year students	Experienced teachers	Supervision session
2. Akcan, S.	2010	Turkey	Mixed qualitative	audio and video observations, interviews, documents	52 Student teachers, 30 Mentor teachers, 4 University supervisors	Undergraduate ELT university programme	Primary and secondary school	Observation of 45 MT lessons, and teaching 6 lessons	English	Age: 20–22 Level: fourth year students	Teaching experience: 1–21 years.	Supervision session
3. Anderson, L.	2011	USA	Mixed qualitative	Interviews, documents	11 Student teachers	Teacher education, master's university programme	Primary and upper elementary school	Not specified	Multiple subjects	Level: second year master's (experiences from 1st year), pre-service (and 2nd year in-service).	Not specified	Planning, observation of teaching
4. Anderson, N. A.	2005	USA	Mixed qualitative	Logs, observation forms and observations	34 Student teachers	Elementary teacher education university programme	Elementary school	12 weeks, 4 days a week	Multiple subjects	Level: second year	Not specified	Observation of teaching
5. Badger, J.	2012	USA	Mixed qualitative-quantitative	Qualitative and quantitative surveys, interviews, documents	15 Student teachers, 8 Mentor teachers, 6 Field supervisors (Interviews), 217 Student teachers, 36 Mentor teachers, 24 Supervisors (survey)	Teacher education, college of education, internship programme	Elementary (mainly), middle and high school	15 weeks	Not specified (multiple)	Age: 18–24	Teaching experience: $\frac{3}{4}$ min. 6 years Mentoring experience: $\frac{1}{2}$ min 6 years of	Observation of teaching, supervision session
6. Bartolome, S. J.	2017	USA	Mixed qualitative	Individual interview, documents and observations	18 Student teachers (also as NQT, longitudinal)	Music education university programme	Preschool, elementary, middle and high school	15 weeks	Music	Not specified	Not specified	Planning, observation of teaching
7. Beck, C.	2002	Canada	Mixed qualitative	Interviews (primary), participatory observations	11 Student teachers	Post-baccalaureate teacher education programme	Elementary school	5 days in 4–5 weeks, and 1 day remaining weeks, each semester	Not specified (multiple)	Age: average 28	Not specified	Supervision session
8. Beck, C.	2000	Canada	Mixed qualitative	Individual interviews, participant observation, documents, questionnaire etc.	20 Mentor teachers	Post-baccalaureate teacher education programme	Elementary school	5 days in 4–5 weeks, and 1 day remaining weeks, each semester	Not specified (multiple)	Not specified	Teaching experience: wide range (5 less than 6 years and 5 more than 20) Mentor	Observation of teaching

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
9. Bener, E.	2019	Turkey	Mixed qualitative	Focus group, blog documents, survey	18 Student teachers	English as a foreign language (EFL) teacher education programme	K–12 school	16 weeks	English	Age: 21–24 Level: senior students	experience: 6–5 years and 5 more than 15 Not specified	Post-supervision
10. Bjørndal, C	2020	Norway	Single qualitative	Video observations	12 Student teachers, 12 Mentor teachers	Teacher education university programme	Primary and secondary school	7–8 weeks	Multiple subjects	Level: Completed bachelor's or master's degree	Mentor experience: most had several years, Attended a postgraduate course in mentoring	Supervision session
Boulton, H.	2014	UK	Mixed qualitative-quantitative	Individual interviews, e-portfolios, survey	8 Student teachers, also as NQTs (interviews), 103 Head teachers (survey)	Post-Graduate Certificate in Education or Graduate university teacher programme	Primary and secondary school	Not specified	Not specified (multiple)	Age: 22–45	Not specified	Post-supervision
11. Boulton, H.	2012	UK	Mixed qualitative	Group interviews, blogs	32 Student teachers	Postgraduate teacher training	Secondary school	2/3 of year	Not specified	Not specified	Not specified	Post-supervision
12. Britton, L. R.	2010	USA	Mixed qualitative	Individual interviews, e-mail interviews, documents from observation	4 Student teachers	Initial teaching certification, university programme	High school	1 semester	Social Studies, English, and Science	Age: 21–25	Not specified	Observation of teaching
13. Bullough, R. V.	2003	USA	Mixed qualitative	Audio recorded observations, individual interviews, group-interviews, time logs	10 Student teachers, 3 Mentor teachers	Teacher education university programme	Elementary school	8 weeks	Not specified	Not specified (multiple)	Teaching experience: experienced teachers Mentor experience: 3–15 Student teachers	Observation of teaching
14. Chalties, S.	2004	France	Mixed qualitative	Video observation of teaching, recording of supervision session	3 Student teachers, 3 Mentor teachers	Teacher training university programme	High school	Not specified	Physical education	Age: 23–25 Level: second year students	Age: 39–45 (men), Teaching experience: Min 14 years Mentor experience: min. 8 years	Supervision session
15. Crasborn, F.	2011	Netherlands	Single qualitative	Audio recorded mentoring sessions	20 Student teachers, 20 Mentor teachers	Primary teacher education university programme	Primary school	Not specified	Not specified (multiple)	Not specified	Age: 26–55 years, Teaching experience: 16 years average Mentor	Supervision session

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
16. Douglas, A. S.	2011	UK	Mixed qualitative	Participant observations, interviews	15 Student teachers (and an unspecified number of mentors, teachers, university tutors and school managers)	Postgraduate certificate of education course university programme	Secondary school	Not specified	Geography, History, Foreign Languages and Science	Not specified	experience: 8 years average Mentor training: Attending a training programme for mentor teachers Not specified	Supervision session
17. Ekiz, D.	2006	Turkey	Mixed qualitative	Qualitative survey, individual interviews	55 Student teachers, 5 Mentor teachers	Initial teacher education university programme	Primary school	One day a week (not specified, possibly whole year)	Not specified (multiple)	Level: fourth year	Not specified	Observation of teaching
18. Endacott, J. L.	2016	USA	Mixed qualitative	Audio-recorded debriefing sessions, video-recorded lessons	15 Student teachers	Internship Programme	School (level not specified)	26 weeks, 4 days a week	Social Studies	Level: second semester	Extensive teaching experience	Post-supervision
19. Engin, M.	2015	Turkey	Single qualitative:	Running observation commentaries and audio-recorded feedback sessions	28 Student teachers	English Literature degree, with teacher education component, University programme	Secondary or high school	Not specified (during one year)	English	Level: Final year	Not specified	Preparations for supervision
20. Gan, Z.	2013	Hong Kong	Mixed qualitative	Individual interviews, reflective journals	16 Student teachers	Bachelor of Education university programme	Primary or secondary school	8 weeks	English	Level: Third year	Not specified	Supervision session
21. Gardiner, W.	2010	USA	Mixed qualitative	Individual interview, focus group, observation, documents	7 Mentor teachers	Graduate programme leading to elementary certification and a Master of Arts degree in teaching, University programme	PreK–8 school	(one year placement, $\frac{3}{4}$ in schools)	Multiple (e.g. Science and Math, not further specified)	Not specified	Age: 28–53 years Teaching experience: 8–28 years Mentor experience: 1–3 years	Observation of teaching

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
22. Gardiner, W.	2009	USA	Mixed qualitative	Observations, journals, student work, surveys, individual interviews	10 Student teachers	Undergraduate Early Childhood Education programme, College	K-6 school	12 weeks, 100 h	Multiple, especially Science	Age: 21–26 Level: Junior year	Not specified	Supervision session, post-supervision
23. Genc, B.	2013	Turkey	Mixed qualitative	Planning document analysis (plans), observation forms	38 Student teachers	Language teacher programme, university	Primary school, grade 7–8	10 weeks, 4 h a week,	English	Age: 21–25 Level: senior year	Not specified	Observation of teaching
24. Goodnough, K.	2009	Canada	Mixed qualitative	Individual interviews, journals, observations	8 Student teachers, 4 Mentor teachers	Integrated primary/elementary (K–6) teacher preparation university programme	Grade 2, 3 and 6	12 weeks	Not specified (multi)	5th semester	Teaching experience: 6, 15 and 20 years (one not specified)	Planning, observation of teaching, supervision session
25. Guise, M.	2017	USA	Mixed qualitative and quantitative	Written student teacher-reflections, observations, individual interviews	8 Student teachers, 8 Mentor teachers	Teacher education university programme	Grade 7–12	20 weeks	Multiple (e.g. Biology, Science, English, Physics)	Age: 20–24 Level: bachelor's or master's degree	Age: 30–58 years Teaching experience: 5–32 years Mentor experience: 1–31 years	Planning, observation of teaching, supervision session
26. Harland, D. J.	2011	Turkey	Single qualitative	Reflective papers, blogs	67 Student teachers	Education major university programme	Middle or secondary school	Not specified	Not specified (multiple)	Not specified	Not specified	Post-supervision
27. Hobson, A. J.	2008	UK	Mixed qualitative and quantitative	Individual interviews, survey	85 Student teachers (interviews), 3,162 Student teachers (survey)	Several Initial Teacher Preparation university programmes	Primary and secondary school	Not specified	Multiple	(Wide range)	Not specified	Preparations for supervision, supervision session
28. Hramiak, A.	2009	UK	Mixed qualitative	Focus groups, blog texts	38 Student teachers	Post-graduate teacher training university programme	secondary school or further education college	21–24 weeks	Multiple	Not specified	Not specified	Post-supervision
29. Hudson, P.	2016	Australia	Mixed qualitative	Video-recording of lessons, written observation records	25 Mentor teachers	Teacher training university programme	Grade 8	4 weeks	Science	Not specified	Teaching experience: min. 5 years Mentoring experience: min. mentored one TS	Observation of teaching
30. Hudson, P.	2014	Australia	Mixed qualitative	Video-recording of lessons, audio-recorded feedback	8 Mentor teachers	Teacher training university programme	Grade 8	4 weeks	Science	Level: Final year	Teaching experience: experienced teachers	Observation of teaching
31. Jones, M.	2014	Australia	Single qualitative	Texts from discussion forums	8 Student teachers	Teacher training university programme	Middle and secondary school	5 weeks	Multiple	Not specified	Not specified	Post-supervision

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
32. Kahan, D.	2003	USA	Mixed qualitative	Audio-recorded feedback, interviews	6 Mentor teachers	Teacher education university programme	Elementary and middle school	16 weeks	Physical education	Age: 22–25	Age: 37–52 Teaching experience: 13–27 years Mentoring experience: 0–19 years	Supervision session
33. Kleinknecht, M.	2016	Germany	Mixed qualitative and quantitative	Pre and post-test survey, video and written reflections	61 Student teachers	Master's teacher education university programme	High school	One semester, one day a week,	Multiple	Not specified	Not specified	Post-supervision
34. Koc, I.	2012	Turkey	Mixed qualitative	Individual interviews, written reflections, group seminar field notes	16 Student teachers	Undergraduate teacher education university programme	Elementary school	12 weeks, 6 lessons a week	Science	Age: 20–23 Level: fourth year	Not specified	Observation of teaching
35. Koç, E. M.	2012	Turkey	Mixed qualitative and quantitative	Individual interviews, survey	10 Student teachers and 10 Mentor teachers (qualitative), 358 Mentor teachers (quantitative)	Undergraduate English Language teacher university programme	Elementary and high school	One year	English	Level: fourth year	Teaching experience: 0–20 years	Supervision session
36. Krutka, D. G.	2014	USA	Mixed qualitative and quantitative	Survey, posted texts	77 Student teachers	Teacher preparation university programme	Middle and secondary school	1 semester, 3 h a week	Multiple	Year: 1st year Level: second semester	Not specified	Post-supervision
37. Kurtts, S. A.	2000	USA	Mixed qualitative	Forms after observation, written summaries, questionnaires, audio-recorded sessions.	27 Student teachers	Elementary education university programme	Elementary school	10 h a week, each semester	Multiple	Age: 20–30 Level: first semester	Not specified	Supervision session
38. Lee, G. C.	2006	Taiwan	Mixed qualitative and quantitative	Text from discussions forum, qualitative, quantitative survey	37 Student teachers	Teacher education university programme	School, not further specified	Not specified	Not specified	Not specified	Not specified	Planning, post-supervision
39. Liaw, E. C.	2009	Taiwan	Mixed qualitative and quantitative	Individual interviews, survey	26 Student teachers	Teacher preparation university programme	Elementary school, 2nd and 4th grade	One year, one lesson a week	English	Age: 22–26	Not specified	Supervision session
40. Lin, Q.	2008	USA	Mixed qualitative and quantitative	Interviews, surveys	38 Student teachers	Elementary teacher education college programme	Elementary school	Not specified	Not specified (Multiple)	Age: average 24 Level: 22 seniors and 16 juniors	Not specified	Post-supervision

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
41. Lofthouse, R.	2012	UK	Mixed qualitative	Individual interviews, focus groups, ST self-reviews	40 Student teachers, 12 Mentor teachers	Secondary Post Graduate Certificate of Education university programme	Secondary school	Not specified	Multiple	Not specified	Teaching experience: Normally several years	Observation of teaching, preparations for supervision
42. Loughland, T.	2021	Australia	Single qualitative	Video-recorded supervision sessions	54 Student teachers 54 Mentor teachers	Range of different teacher education university programmes	Primary and secondary school	Not specified (several weeks)	Multiple	Semester 1–4	Not specified	Supervision session
43. Luik, P.	2011	Estonia	Single qualitative	Blogs	26 Student teachers	Teacher education, university	Elementary school	10 weeks	Multiple	Age: average 25	Not specified	Post-supervision
44. Macken, S.	2020	Ireland	Mixed qualitative	Participant observation, reflective journals, individual interviews	5 Student teachers	Professional Master of Education in primary education college programme	Primary school, 4–12 years old	3 weeks a semester	Physical education	Not specified	Not specified	Supervision session
45. Mathisen, P.	2016	Norway	Mixed qualitative	Individual interviews, focus groups and qualitative survey	43 Student teachers, 17 Mentor teachers	Teacher education university programme	Primary and secondary school	3–4 weeks	Not specified (multiple)	Level: first and second year	Teaching experience: 3–27 years	Planning, observation of teaching, preparations for supervision, supervision session, post-supervision
46. Matsko, K-K.	2014	USA	Mixed qualitative	Individual interviews, focus group interviews, programme documents, observation of teaching	30 Student teachers	Context-specific teacher preparation university programmes (urban)	Elementary and secondary school	Not specified (Extensive)	Multiple	Year: first or second year	Not specified (carefully selected)	Planning, observation of teaching
47. McCoy,	2020	Ireland	Single qualitative	Individual interviews	35 Student teachers	Initial teacher education college programme	Primary school	5 weeks	Multiple	Not specified	Not specified	Preparations for supervision, post-supervision
48. Mohammed, F.	2019	Palestine	Single qualitative	Reflective journals	12 Student teachers	Master's programme in Applied Linguistics and Methods of Teaching English, university programme	Elementary school	Not specified	English	Age: 23–35	Not specified	Planning, observation of teaching

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
49. Mpewe, C.	2019	Malawi	Mixed qualitative	Observation forms, observations, individual interviews	Not specified (50 observation forms and 35 lesson observations).	Bachelor of Education university programme	Secondary school	Not specified	Multiple	Not specified	Not specified	Observation of teaching, supervision session
50. Nagro, S. A.	2017	USA	Qualitative and quantitative	Written reflections, survey	36 Student teachers	University	Elementary school	Not specified	Not specified (Multiple)	Not specified	Not specified	Post-supervision
51. Nawzar, M. H.	2019	Iraqi Kurdistan	Mixed qualitative	Individual interviews, documents	20 In-service teachers (pre-service practicum experiences)	Teacher preparation university programmes	Basic and high school	Not specified	English	Not specified	Not specified	Planning, observation of teaching, supervision session
52. Nokes, J. D.	2008	USA	Mixed qualitative	Individual interviews, focus groups	23 Student teachers, 7 Mentor teachers	Undergraduate teacher education university programme	Middle school, junior highs and high school	15 weeks	Social Science	Level: fourth year, last semester	Teaching experience: experienced	Planning, observation of teaching
53. Norman, P. J.	2011	USA	Mixed qualitative	Audio-recorded sessions, individual interviews	6 Mentor teachers	Teacher preparation university programme	Elementary school	One year	Multi	Year: fifth year	Teaching experience: experienced	Planning, observation of teaching
54. Ó Gallchóir, C.	2019	Ireland	Mixed qualitative	Video observation, individual interviews	7 Student teachers	Initial teacher education university programme	Second level school, grade 8–12	10 weeks	Multiple (Mathematics, Physical Education, Physical Sciences, Technology, Biology exemplified)	Age: average 21.5 years Level: fourth year, first semester	Teaching experience: (Experienced teacher) Mentor training: no formal mentoring requirements	Observation of teaching
55. Olmstead, K.	2020	USA	Mixed qualitative and quantitative	Individual interviews, survey	107 Student teachers	Inclusive teacher preparation college programmes	Elementary and secondary school, grade 1–12	15 weeks	Multiple (Mathematics, Science, Social Studies, English, Spanish, and French etc.)	Age: average 24 (range 20–52)	Not specified	Observation of teaching, supervision session
56. Otienoh, R.	2010	Tanzania	Single qualitative	Individual interviews	12 Student teachers	Certificate in Education university programme	Primary school	6 months, large part school based	Not specified (Multiple)	Not specified	Not specified	Supervision session
57. Ovens, A.	2004	New Zealand	Mixed qualitative	Interviews, qualitative survey, observation of teaching	12 Student teachers	Teacher education college programme	Secondary school	4 weeks	Physical education	Level: fourth year, first semester	Not specified	Observation of teaching, supervision session
58. Parker, M.	2012	USA	Single qualitative	Qualitative survey	244 Student teachers	Teacher education university programmes: Elementary	K-12	15 weeks	Not specified (multiple)	Age: mean 27 (range 21–54), Level: Final semester	Not specified	Post-supervision

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
59. Pennington, T. R.	2020	USA	Mixed qualitative	Individual and group interviews, observations	12 Mentor teachers 22 Student teachers	(mainly), middle grades, special education and early childhood Physical Education teacher university programme	Elementary, junior high schools and high school	14 weeks	Physical Education	Not specified	Teaching experience: experienced min. 3 years teaching experience. Mentor experience: min. 1 year mentor experience (except 2). Teaching experience: 14 years	Planning, observation of teaching, supervision session
60. Pylman, S.	2016	USA	Mixed qualitative	Video recorded co-planning sessions	1 Mentor teacher, 1 Student teacher	Teacher education college programme	Grade 1	4 months	Not specified (Multiple)	Not specified	Teaching experience: 14 years	Planning, observation of teaching
Rodgers, A.	2007	USA	Mixed qualitative	Minutes of sessions/ meetings, participant observations field notes, audiotaped discussions	12 Mentor teachers	Teacher education university programme	High school, grade 9–12	4 months	English and Foreign Languages	Not specified	Age/teaching experience: mostly mid-career teachers, min 10–20 years teaching experience Mentor training: Self studies and seminars in mentoring	Observation of teaching
61. Rosaen, C.	2008	USA	Mixed qualitative	Written reflections, video observations, individual interviews	3 Student teachers	Teacher preparation university programme	Elementary school, grade 1 and 3	8 weeks	Multiple (English, Literacy and Science)	Age: Approx. 22 Level: fifth year, second semester	Not specified	Supervision session, post-supervision
62. Rots, I.	2012	Belgium	Single qualitative	Individual interviews	12 Student teachers	Bachelor's teacher education programmes in institutions of higher education	Secondary school	Not specified	Multiple	Not specified	Not specified	Supervision session
63. Sorensen, P.	2014	UK	Mixed qualitative	Individual interviews, audio recordings of discussions, portfolios, observation of	18 Mentor teachers, 40 Student teachers	Post-Graduate Certificate of Education university courses	Secondary school	Not specified (extensive)	Multiple	Not specified	Not specified	Supervision session

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
64. Soslau, E.	2019	USA	Mixed qualitative	teaching and sessions Audio/video recorded planning and supervision sessions	12 Mentor teachers	3 Teacher education university programmes	Early childhood-high school	Min. 5 h co-teaching	Not specified	Not specified	Mentor Experience: Novice – more than 10 years mentor experience in co-teaching.	Planning, supervision session
65. Spiker, A.	2014	USA	Mixed qualitative	Qualitative survey, focus group	15 Student teachers (focus on 5)	Teacher preparation university programme	Elementary school	16 weeks	Not specified (multiple)	Age: 23–26	Teaching experience: min. 3 years	Post-supervision
66. Sumru, A.	2010	Turkey	Mixed qualitative	Video observation of lessons and sessions, individual interviews, plans and journals	27 Student teachers, 1 Mentor teacher	Language teacher university programme	Primary and secondary school	2 semesters	English	Age: 21–24, Level: fourth year	Not specified	Post-supervision
67. Tadesse Degago, A.	2007	Ethiopia	Single qualitative	Reflective journals	10 Student teachers	Teaching education university programme	Secondary school, grade 9–12	4 weeks	English	Level: fourth year	Not specified	Post-supervision
68. Timostsuk, I.	2010	Estonia	Mixed qualitative	Individual interview, focus groups	45 Student teachers	Different teacher education university programmes (Mathematics, Physics, Arts and Primary Teacher).	Not specified (primary and secondary school)	Not specified	Multiple	Age 22–27, Level: Initial stages	Not specified	Preparations for supervision, supervision session
69. Toom, A.	2015	Finland	Mixed qualitative	Interviews and portfolios	8 Mentor teachers	Primary teacher education university programme	Primary school	5 weeks (app. 20 h a week)	Not specified (multiple)	Age: mean 25, Level: final teaching practice period	Not specified	Post-supervision
70. Valencia, S-W.	2009	USA	Mixed qualitative	Individual interviews, group interviews, observation of lesson and sessions, artefacts from lessons	9 Student teachers, 9 Mentor teachers, 9 University supervisors	Master's teacher education university programme	Grade 2–10	12 weeks	Language arts	Level: fourth year pre-service and in service (longitudinal)	Teaching experience: 3–28 years Mentor experience 1–20 years	Supervision session
71. Wassel, B.	2009	USA	Mixed qualitative	Video-recorded classroom activity, dialogues and other teaching activities, field notes and classroom observations; artefacts,	2 beginning teachers (pre-service practicum experiences)	Teacher education university programme	High school	10 months	Science and Mathematics	Age: 23 and 26	Not specified	Planning

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Table 3 (continued)

First author	Year	Country	Overall research approach	Data collection method(s)	Sample	Teacher education	School level	Practicum duration current year	Subject(s)	Students: age and level/year of study	Mentors: age, experience, training	Challenges in parts of the supervision process
72. Windschitl, M.	2020	USA	Mixed qualitative and quantitative	semi-structured interviews, personal communication; written narratives survey, individual interviews	65 Student teachers	3 Teacher preparation university programmes	Middle, secondary and high school	One year	Science	Not specified	Not specified	Observation of teaching
73. Youens, B.	2014	UK	Mixed qualitative	Written reflections, video recordings, interview	2 Student teachers	Certificate in Education university programme	Secondary school	24 weeks	Mathematics	Not specified	Not specified	Supervision session, post-supervision
Öztiürk, E.	2021	Turkey	Mixed qualitative	reflection reports and individual interviews	24 Student teachers, 11 Mentor teachers, 6 Supervisors 4 Administrators	English Language Teacher Education university Programme	Not specified (primary and secondary school)	Not specified (Extensive)	English	Fourth year	Teaching experience: At least 10 years Mentoring experience: At least 5 years	Supervision session

feedback on each other's plans (Nokes et al., 2008; Wassell & LaVan, 2008). At the same time, challenges in achieving genuine co-planning specifically relate to: limited time (Goodnough et al., 2009; Nokes et al., 2008), personal mismatch, differing perceptions of teaching (Pennington et al., 2020) and the mentor teacher's negative attitude towards fellow co-planning (Nokes et al., 2008).

### 3.2. Observation of teaching

How the student teacher carries out the teaching and how this is observed both vary. The most widespread model has been solo teaching, for which the inexperienced student teachers have gradually taken over the responsibility for teaching with the mentor teacher as an observer. In other teacher education programmes, the student teachers collaborate more with the mentor teacher in regard to the teaching (Kinne, Ryan, & Faulkner, 2016), while the mentor teacher is less involved in other contexts (Ekiz, 2006; Valencia, Martin, Place, & Grossman, 2009). In any case, the observation of the teaching is fundamental to student teacher learning. A core challenge in the teaching practicum is that the student teachers cannot observe themselves directly, which is why the observations of others is considered particularly valuable for the student teacher's learning (Loughran, 2002).

#### 3.2.1. Challenges in the observation of student teachers' teaching

Many student teachers may experience being left to fend for themselves in the classroom, with limited mentoring observations as a result (Ekiz, 2006; Nawzar, 2019; Valencia et al., 2009). Even when one or more observers are present, this does not guarantee intensive observation: One study shows that both the mentors' and fellow student teachers' involvement as observers gradually diminished and that they received less and less information during the practicum period (Pennington et al., 2020). Another study even identified that fellow student teachers could be physically absent, inattentive or work on their own teaching preparations instead of observing the teaching (Nokes et al., 2008). Although most student teachers do regard a mentor's absence in the classroom as being negative, other student teachers may view their absence in a more positive light, especially if they are dissatisfied with the mentor controlling them, giving them limited freedom and sometimes interfering in their teaching (Beck & Kosnik, 2000; Olmstead et al., 2020; Pennington et al., 2020).

Two studies documented that the observation of student teachers' performance consisted of a varying degree of structure, and that un-systematic and more random observation can be problematic for the student teachers' learning process, and thus that a more structured approach may improve the observation (Rodgers & Keil, 2007; Valencia et al., 2009). However, other studies point out that a higher degree of structure in itself does not solve all challenges related to the observation and that overly rigid and detailed forms of observation can even represent a threat to the quality of the observations (e.g. Genc & Buyukkarcı, 2013; Mpewe, 2019). An overly rigid structuring of observations can lead to significant aspects of teaching being overlooked, for example the student teacher's skills when it comes to improvisation (Mpewe, 2019). Another study indicated that use of linear observation pro forma led to lower levels of reflection, compared to when this was combined with an inquiry based approach, in which the teaching student's questions to the observer before teaching also provided a starting point for the observer's attention (Lofthouse & Wright, 2012).

A related challenge for mentors is to document the observations that substantiate the mentor's feedback in a convincing manner (Badger, 2012; Mathisen & Bjørndal, 2016). Accordingly, the validity of the mentor's observations is problematised and different mentors may assess the performance they have observed in different and sometimes contradictory ways (Hudson, 2014, 2016). Other studies also show that student teachers' and mentors' observations of the teaching may be different and that this may, for example, be related to different views on teaching (Ó Gallchóir, O'Flaherty, & Hinchion, 2019; Olmstead et al.,

2020).

Several studies indicate that peer student teacher observations can serve as an important resource to handle challenges in their learning process (Britton & Anderson, 2010; Gardiner, 2010; Mathisen & Bjørndal, 2016; Ovens, 2004), and that it can lead to students being more observed in the teaching (Bullough et al., 2003). One study confirms that the student teachers appreciate that both the mentor and fellow student teachers observe their teaching efforts (Anderson, Barksdale, & Hite, 2005). However, several challenges are mentioned in relation to using student teachers as an observation resource, such as the fact that: student teacher observations can be overly simple or superficial, the observations can be insufficiently critical (Genc & Buyukkarci, 2013), and the student teachers need observation training (Ovens, 2004).

### 3.3. Preparations for supervision

The little explored period of time between teaching and post-supervision naturally involves activities that are an important part of the learning process, in line with the fact that it is common in the mentoring literature to emphasise the value of continuous reflection throughout the entire supervision process (Handal & Lauvås, 1987; Zhu, 2011), as well as research findings from other educational contexts. For example, this research shows that supervision sessions are characterised by deeper reflection when the recipient of the supervision has prepared properly (Bang & Park, 2009).

#### 3.3.1. Challenges of preparations for supervision

The studies included in this review only provide limited information on the challenges regarding preparation for supervision sessions. One finding is that the student teachers prepare to a limited extent, and that the practicum period generally is hectic, and the time between teaching and supervision often short, thus leaving limited time for preparation (Hobson, Ashby, Malderez, & Tomlinson, 2009; Timostsuk & Ugaste, 2010). One study even indicates that mentors, and especially peer student teachers participating in multiple placements, normally make insufficient or no preparations for the post-teaching supervision sessions (Mathisen & Bjørndal, 2016). One study showed that student teachers were not given the time and opportunity to prepare for the mentor's written 'running comments' from the observations, even though these guided the supervision session, and that this weakened their opportunities for discussion in the subsequent supervision session (Engin, 2015).

Intervening studies involving the use of tools for reflection show the potential value of reflective activities during this part of the supervision process and, at the same time, they also report contrasting experiences of limited reflective preparations for supervision when specific tools for the reflective preparations are not used. This applies to intervention studies, in which the student teachers either watch video recordings of their own teaching, selecting video clips as a subject for discussion in the supervision session (McCoy & Lynam, 2020; Youens, Smethem, & Sullivan, 2014), receiving and reflecting on questions from the observers prior to the supervision session (Lofthouse & Wright, 2012), and writing reflective journals (Tadesse Degago, 2007), or the student teachers and mentor teachers read, watch and prioritise mentor and fellow student teacher observers' multi-modal feedback (text, pictures and videoclips) before the supervision session (Mathisen & Bjørndal, 2016).

### 3.4. Supervision sessions

The supervision session has proven to be the most researched component of the supervision process, which is also reflected in this review (cf. Table 1). Over fifteen years ago, Vasquez (2004) commented that the majority of research has focused on the participants' opinions of the supervision, while there are correspondingly few interaction studies of the sessions. This review shows that this overall impression prevails, in that the majority of the studies emphasise the interview data rather

than observations of the interaction.

#### 3.4.1. Challenges of the supervision sessions

A major challenge regarding the supervision sessions is the varying feedback quality and quantity. Several studies document that both the quantity and quality of the mentor feedback varies significantly, and that student teachers often want more and better feedback (Agudo, 2016; Badger, 2012; Olmstead et al., 2020). Several studies show that the extent to which the mentor follows up on the student teachers in the supervision sessions varies significantly, and that student teachers often regard the feedback they receive in post-teaching supervision to be insufficient (Agudo, 2016; Gan, 2013; Gardiner & Robinson, 2009; Loughland, Bostwick, Nguyen, & Durksen, 2021; Mpewe, 2019; Nawzar, 2019; Öztürk, 2021). Furthermore, a large number of studies document major challenges when it comes to the quality of the feedback. Student teachers may perceive the feedback as brief and superficial, unclear or incomprehensible, and that it can be challenging to remember the specific events that are referred to in the feedback (Agudo, 2016; Badger, 2012; Mpewe, 2019; Nawzar, 2019). The feedback may also be perceived as negative and debilitating (Hobson et al., 2008; Olmstead et al., 2020; Rots, Kelchtermans, & Aelterman, 2012; Timostsuk & Ugaste, 2010; Valencia et al., 2009), inflexible and of little help (Nawzar, 2019), or even insincere (Olmstead et al., 2020). In line with this, many have argued that student teachers may receive feedback that does not sufficiently support their independent learning process (Akcan & Tatar, 2010; Badger, 2012; Douglas, 2011), that the feedback tends to be more technical and confirmatory than reflective or investigative (Chalies, Ria, Bertone, Trohel, & Durand, 2004; Kahan, Sinclair, Saucier, & NguyenCaiozzi, 2003), and that mentor teachers perceive that they have problems in providing effective and constructivist feedback (Koç, 2012). As stated above (cf. 3.3), it may also normally be a considerable challenge for the mentor to document observations in a manner that enables the student teacher to understand the feedback and find it convincing, while the use of technology (especially video) can help student teachers understand the feedback to a greater extent (Mathisen & Bjørndal, 2016; Rosaen, Lundeberg, Cooper, Fritzen, & Terpstra, 2008; Youens et al., 2014).

A study indicates that the most challenging part of feedback regarding the practicum is when it is critical or negative (Bjørndal, 2020). Critical feedback can lead to negative emotional reactions (Otienoh, 2010), and the way students respond to critical feedback can also affect the quality of the supervision. For example, students may become verbally passive (Bjørndal, 2020), and to prevent negative assessments, they may avoid sharing relevant issues or information with the mentor (Rots et al., 2012), or alternatively devote much of their attention to defending their own self-image (Bjørndal, 2020). Studies also show that students may be inclined to avoid expressing disagreement with the mentor (Beck & Kosnik, 2002).

Another major challenge is revealed in studies that show that active student teacher participation in the session can be limited and that the supervision sessions often do not involve mutual dialogue and deeper reflection. Various studies document a rather unilateral and dominant interaction pattern in which the mentor often holds most of the speaking time in the conversation and controls the content (Crasborn, Hennissen, Brouwer, Korthagen, & Bergen, 2011; Douglas, 2011; Loughland et al., 2021; Mathisen & Bjørndal, 2016; Soslau et al., 2019). These studies in particular found that the student teachers often just listen to the mentor's summary of what happened in the lesson and receive knowledge and assessments from the mentor, while the student teacher's independent thinking and reflection are forced into the background. In line with this, one large observational study (Loughland et al., 2021) indicates that the conversations are, to a limited extent, aimed at discussing the student teachers' own objectives, and are characterised by a rather monologic pattern, where the mentor expresses their perception of what the reality of the observed lesson was, and then suggests alternatives.

In contrast, the least monologic conversations, in which the students contribute more actively, are characterised by a stronger focus on a discussion of goals (Loughland et al., 2021). A study by Guise et al. (2017) on 'co-teaching' practices found that only half of the 'co-teaching pairs' were, in reality, characterised by a more collaborative relationship involving collaborative reflection on lessons and mutual learning. On the other hand, the other half of the relationships were characterised by an apprentice relationship, in which the student teachers somewhat passively received expert feedback from the supervisor in the supervision session, with little room for independent reflection.

Intervention studies have shown that the use of video or similar technology in supervision sessions can result in student teachers being more involved, active, reflective and collaborative than they would normally be (Mathisen & Bjørndal, 2016; Rosaen et al., 2008; Youens et al., 2014). However, the research also shows critical nuances with the use of video observation (cf. 1.4.5).

Paired or multiple practicum placements can contribute to greater student teacher activity and dialogue in the sessions, as with greater levels of feedback (Gardiner & Robinson, 2009; Liaw, 2009; Sorensen, 2014), even if similar and other challenges arise when supervision takes place in groups (Liaw, 2009; Sorensen, 2014), for example loss of individuality and competition between the pre-service teachers (Goodnough et al., 2009). Studies further indicate that many fellow student teachers give each other less feedback than one might hope for (Macken, MacPhail, & Calderon, 2020; Mathisen & Bjørndal, 2016; Pennington et al., 2020), relational problems between student teachers can prevent open dissemination of peer feedback (Macken et al., 2020; Ovens, 2004), student teachers' limited professional knowledge can make it difficult to analyse the teaching so that they are able to provide good feedback (Kurtts & Levin, 2000; Ovens, 2004), it can take time for student teachers to learn to collaborate (Gardiner & Robinson, 2009), and training in regard to peer support is required (Ovens, 2004).

### 3.5. Activities post-supervision or throughout the entire supervision process

There is limited evidence-based knowledge regarding how student teachers usually process their practicum experiences in the form of individual reflection and informal dialogue after the supervision session, although this is obviously an important part of the learning process. Post-supervision reflection and dialogue are, however, covered in a number of studies that show the impact of using various forms of written reflection and digital tools in order to overcome traditional challenges in facilitating student teachers' learning – both after supervision or throughout the supervision process. Findings from such studies, that also point to challenges of using such tools, are discussed below.

#### 3.5.1. Challenges regarding activities post-supervision or throughout the entire supervision process

One study showed that reflective (digital) journals, used during the practicum period or on campus after this period, can help students overcome challenges related to remembering experiences and feedback, and that these journals can help student teachers to reflect on practicum experiences in a deeper and more complex way (Tadesse Degago, 2007). Furthermore, a number of the studies indicate that reflective journals can make students better able to substantiate assessments of the practicum (Kleinknecht & Gröschner, 2016), stimulate more peer student feedback and improve the continuity between practicum periods (Tadesse Degago, 2007). However, writing journals can be time-consuming in a busy school or study day, and maintaining the same level of interest in writing over time can be particularly challenging (Spiker, 2014; Tadesse Degago, 2007). Research also indicates that unstructured journals can reduce the amount of writing, while journals that are structured with questions or themes can encourage students to write more (Spiker, 2014).

Portfolios have additionally been found to be useful in helping

student teachers being challenged to reflect on their own long-term development (Parker, Ndoye, & Ritzhaupt, 2012), and research indicates that portfolios can stimulate deeper or more multi-faceted reflection among the student teachers (Parker et al., 2012; Toom, Husu, & Patrikainen, 2015). Portfolios can further help mentor teachers and fellow student teachers in their challenges to collaborate in analyses and discussions of practice (Boulton, 2014; Youens et al., 2014). A key challenge in the development of such portfolios is that writing can be time-consuming in one's busy daily life, and that resources are required for close follow-ups by mentors or supervisors or technical support staff (Lin, 2008; Parker et al., 2012).

There is evidence that video can enhance various elements of the practicum supervision, such as by contributing to clearer and more convincing feedback (Rosaen et al., 2008; Sumru, 2010), as well as deeper reflection on performance (McCoy & Lynam, 2020; Nagro, Debettencourt, Rosenberg, Carran, & Weiss, 2017) and improving student teachers' ability to notice and remember things (Rosaen et al., 2008). Video can also help make student teachers more committed and actively reflective during the supervision process and can aid in creating qualities that are associated with communities of practice, in which the mentor and peer student teachers collaborate in analyses and discussions of practice (Youens et al., 2014). There have been claims that newer digital tools for video editing and video annotation are especially suitable for strengthening the practicum supervision, and video-based portfolios in particular can be a useful way of focusing on the student teacher's learning progression over time (McCoy & Lynam, 2020). The research also shows critical aspects of video observation, such as how the use of video can involve vulnerability and that video can, in particular, contribute to an overly negative self-assessment (Kleinknecht & Gröschner, 2016). Several studies also highlight the fact that using video is very time-consuming, and that this poses a challenge in the busy everyday school or study routine (Endacott, 2016; Kleinknecht & Gröschner, 2016; Lee & Wu, 2006).

Online blogs or microblogs have also been used to stimulate reflection throughout the practicum period or afterwards. While these may resemble more traditional reflective journals, they do enable members of a social community to read and comment on the logs. In addition to this, blogs can have multimodal content, with text, images and video recordings. Studies indicate that blogs can stimulate deeper and more continuous reflection and learning (Bener & Yildiz, 2019; Boulton & Hramiak, 2012; Hramiak, Boulton, & Irwin, 2009; Krutka, Bergman, Flores, Mason, & Jack, 2014), and one study shows that blogs can support deeper reflection to a greater extent than traditional written assignments on practicum experiences (Harland & Wondra, 2011). Blogs also facilitate immediate feedback from the mentor teacher or university-based teacher educator (Harland & Wondra, 2011), and can stimulate more peer feedback too (Bener & Yildiz, 2019). Studies indicate that blogs are a suitable tool for developing collaboration or qualities associated with communities of practice (Bener & Yildiz, 2019; Harland & Wondra, 2011; Krutka et al., 2014). However, studies also reveals that the level of reflection in the blogs varies considerably and that they are usually of a descriptive nature and entail a limited level of reflection (Harland & Wondra, 2011; Jones & Ryan, 2014; Luik, Voltri, Taimalu, & Kalk, 2011). In some contexts, it can also be challenging to generate the degree of writing activity and interaction in the blogs than is intended (Bener & Yildiz, 2019). Furthermore, maintaining some privacy over their reflections can be important to some students, which may support the argument of the sharing the blogs in small groups, rather than large groups or in the public domain (Boulton & Hramiak, 2012). In one study, microblogs (consisting of texts and images) were created jointly by a private group of fellow students and the mentor while they observed each lesson. The blogs were used both as preparation for the supervision so as to guide the supervision conversation and for reflection afterwards. Participants found that this improved the supervision process, however the fact that the software used was not adapted for the purpose was considered to be a challenge (Mathisen &

Bjørndal, 2016).

#### 4. Summary and discussion

The purpose of this qualitative literature review has been to identify research findings on key challenges in the various components of the practicum supervision process in teacher education (K-12), and to highlight gaps in the research. A comprehensive review process led to a review of the findings from 76 qualitative empirical articles, based on a model for the practicum supervision process (cf. Fig. 1).

Overall, the review shows that all components of the supervision process are characterised by several challenges and dilemmas in relation to promoting student teachers' experiential learning (Kolb & Kolb, 2008). Despite planning already being a challenge for student teachers, they often also dedicate insufficient time and effort to this work. Collaborating on plans together with mentors and peers can be fruitful but may be limited by time constraints and other factors. Furthermore, mentors do not always sufficiently encourage a deeper independent reflection on the student teachers' planning, and this represents a dilemma as to whether the mentor should prioritise close assistance and follow-up or autonomy. There is a need for more research on this part of the supervision process.

A limited observation of the students' teaching further inhibits learning, with many student teachers often left to fend for themselves, and the involvement of both mentor and fellow student as observers varies. The degree of structure during these observations is also a dilemma, as both a lack of structure and overly rigid structures can be problematic. Furthermore, the validity of observation can be problematised, and the mentors' and student teachers' observations and assessments of the teaching may differ. It can also be difficult to document what has been observed in a convincing way to the student teachers. Peer student teachers can be a valuable resource, but these student teacher observations can be simple, superficial and uncritical.

The preparations for supervision represent a distinct research gap, but the few studies that do exist indicate that preparatory activities before supervision can be important for student teachers' learning and not least have an impact on the quality of the subsequent supervision. Many student teachers also make insufficient or no preparations before the supervision, which may result from various time constraints.

The supervision session is the most researched component of the supervision process. The research has revealed two clear main challenges, both of which are closely linked to difficulties when it comes to recollection. Firstly, many studies document that the quantity and quality of the feedback that the student teachers receive from their mentors varies and that multiple factors can impair the quality of their feedback. Secondly, many studies show that student teachers can be rather passive during their supervision sessions and that mentor teachers tend to dominate in rather monologic conversations. Paired or multiple student practicum placements may contribute to more activity and feedback, although student teachers' contributions may, for example, be hindered by relational problems and competition between other student teachers, as well as by inadequate skills and competence.

Research on student teachers' post-supervision processing of their practicum experiences is limited. However, a number of studies do demonstrate that various forms of written reflection and digital tools can strengthen student teachers' learning in relation to their practicum experiences both during the supervision process and after it. Reflective journals, portfolios, video and blogs are just a few of the tools that can help with memory-related problems and also stimulate more and deeper individual reflection and dialogue with others. Nevertheless, these tools also come with their own challenges, primarily because they are time-consuming to use during a busy school day. Furthermore, resources are required for close follow-up, and the level of reflection on this varies. In addition, using technology such as recorded video sessions and blogs can be a daunting and intimidating experience for some student teachers.

One explanation for the gap in the research may be that there is a difference in how visible the various activities in the supervision process are as phenomena. Some of the activities are apparently easier to be aware of or study because they are formalised social activities, which are usually planned and clearly delineated in both time and space. The clearest examples of this are the supervision session and the observation of the teaching, on which most of the research is based. Other activities are far less visible, especially in regard to the student teachers' internal thinking and individual activities, and also to some extent to informal conversations between peers etc. The clearest example of these less visible activities is the preparation for supervision, for which there is also the least research. Another example is to some extent the reflection carried out after the supervision session. However, the research on tools for reflection in practicum (e.g. blogs), makes such activities far more visible, especially since the student teachers' thinking is materialized and often shared as permanent text. Although such activities normally are less visible, this does not make them less important to the experiential learning process. The individual's inner reflection is, of course, central to the learning process (Oleś, Brinhaupt, Dier, & Polak, 2020; Schön, 1983; Vygotskij & Kozulin, 1986), as well as spontaneous and informal social communication (Kolb & Kolb, 2008; Lave & Wenger, 1991). More research is needed on these less visible activities in the supervision process, including the challenges of such activities, and how the use of different tools might affect learning through these activities during the supervision process.

Research on practicum supervision in teacher education has so far been oriented towards single or limited components of the supervision process (Ong'ondo & Jwan, 2009). Some of the studies in this review indicate that the quality of one activity affects the quality of another activity, for example the impact of observation quality or preparation on the supervision session. However, there is a lack of research from a systematic and holistic perspective regarding the inter-relationship between the various components of the supervision process, specifically in terms of quality. This seems somewhat strange, especially considering the strong influence experiential learning theory has on the literature relating to practicum placements in teacher education.

The purpose of this review has not been to provide an exhaustive research overview of challenges in the supervision process. A further comprehensive research review could, therefore, provide valuable information. In the same way, a critical review that includes a quality assessment of various studies could also make a relevant contribution. The findings in this study are nevertheless based on a large number of peer-reviewed studies and therefore constitute a significant contribution in identifying key challenges within practicum supervision in teacher education, as well as indicating where further research is required.

One of the strengths of Framework Synthesis is that the use of simplified frameworks can make it easier to communicate findings from researchers to policy makers and practitioners (Carroll, Booth, Leaviss, & Rick, 2013). Our hope is that the use of the current model in this review can facilitate communication between researchers, teacher educators, mentor teachers, student teachers and other stakeholders, in order to further develop and improve the quality of the experiential learning process.

This review has implications for teaching practicums, at different levels. Overall, the review indicates a need for a more systematic and holistic focus on the practicum supervision process, and especially on how the quality of the various components of the process are inter-related. This will, in turn, be in line with the logic of experiential learning theory (Kolb & Kolb, 2008), which is claimed to be the most important theoretical foundation when it comes to student teacher practicums (Fowler, 2011). The significance of this is also supported by a research review indicating that an explicit experiential learning design can strengthen student teachers' learning outcomes during practicum (e.g. Williams & Sembiente, 2022).

This review also has implications for mentor practices. It documents a number of specific challenges regarding the quality of practicum

supervision processes that mentors should be aware of in order to be better able to deal with them. It is, not least, important that mentors are aware of strengthening the less visible, reflective activities that can easily be lost in the hectic, everyday practice. This is important in order to ensure a strong experiential learning process (or, figuratively speaking, a learning chain) with every part needing to be strong, regardless of how visible it is. This review thus indicates that mentors can use reflective tools to make particularly weak links visible, strengthen them and thereby create a stronger coherence throughout the process. There is also every reason to believe that student teachers can benefit greatly from becoming more aware of these same challenges in order to then be able to collaborate better with their mentor, as well as with their fellow student teachers.

This review includes information that could form the basis for the systematic design and development of practicum placements in teacher education programmes. Our findings may, for example, suggest that it is just as important to maximise the quality of the practice supervision process by addressing key challenges as it would be to maximise the experience in the number of lessons taught during practicum (as supported by Ronfeldt & Reininger, 2012; Sharon & James, 2005), especially as this review points out that a lack of time for reflection has proven to be a major daily challenge.

A fundamental question that remains, then, is whether mentors, across the various teacher education programmes, have the sufficient competence to deal with challenges regarding the quality of the process within supervised practice, and what training measures are needed. Most of the studies in this review lack information regarding the qualifications of the mentors, beyond their teacher education and teaching experience (cf. Table 3). This may indicate that formal qualifications, in many contexts, could be limited, which is at least indicated in Hoffman's (2015) review. Appropriate training is therefore required, and this training should strengthen the mentor's competence and ability to strive for these qualities in all components of the supervision process, as well as for the use of suitable technology and other tools for reflection (Nesje & Lejonberg, 2022), within the framework of experiential learning theory.

It could also be possible to design the university part of teacher education so that it better prepares the student teachers for the experiential learning process in their practicum, for example by systematically training and acquiring knowledge about the specific activities during the practicum supervision process (e.g. planning, micro-teaching, peer supervision and other reflective activities and using technology and other tools for reflection). Student teachers should also acquire a basic understanding of experiential learning perspectives and their relevance in creating a strong holistic supervision process.

## Declaration of competing interest

We hereby confirm that we have no conflict of interest to report.

## Data availability

The qualitative data in this review has been processed manually, and is not digitally available, apart from the available digital articles that are included in the study.

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