Doctoral theses at NTNU, 2023:306

Karen Birgitte Dille

Professional development and the potential for collaboration between schools and universities

A mixed methods research study of school-based teacher educators' experiences

Doctoral thesis

NTNU
Norwegian University of Science and Technology
Thesis for the Degree of
Philosophiae Doctor
Faculty of Social and Educational Sciences
Department of Teacher Education

NTNU
Norwegian University of
Science and Technology

Karen Birgitte Dille

Professional development and the potential for collaboration between schools and universities

Thesis for the Degree of Philosophiae Doctor

Trondheim, October 2023

Norwegian University of Science and Technology
Faculty of Social and Educational Sciences
Department of Teacher Education

NTNU
Norwegian University of
Science and Technology

NTNU
Norwegian University of Science and Technology

Thesis for the Degree of Philosophiae Doctor

Faculty of Social and Educational Sciences
Department of Teacher Education

ISBN 978-82-326-7312-4 (printed ver.)
ISBN 978-82-326-7311-7 (electronic ver.)
ISSN 1503-8181 (printed ver.)
ISSN 2703-8084 (online ver.)

Doctoral theses at NTNU, 2023:306

Printed by NTNU Grafisk senter

Belongingness

Your own village means

that you´re not alone, that

you know there´s

something of you in the

people and the plants and

the soil, that even when

you are not there it waits

to welcome you.

C. Pavese

Acknowledgements

The poem from C. Pavese raises the importance of belongingness. The importance of belonging to communities for professional development is a consistent theme in this study, and this has also been a decisive factor in fulfilling the goals of this project.

First, I thank the school-based teacher educators who agreed to participate in this study. Their engagement and curiosity were crucial in the initial stage of the process. During the school year, they made me feel secure in the belief that this study was needed, which encouraged me to continue the project.

I am lucky to be employed at the Norwegian University of Science and Technology (NTNU) and to be a member of the Department of Teacher Education. I thank the university for giving me this opportunity to develop as a researcher. I hope this dissertation can be used to further develop field practice in teacher education.

Being able to participate in the Norwegian National Research School in Teacher Education (NAFOL) was invaluable. Lessons that were closely connected to my study inspired me throughout the process. The opportunity to discuss my research with both national and international superstars in teacher education gave me the courage to continue developing my process. NAFOL opened my eyes to the fact that a PhD is so much more than just writing a dissertation.

The doctoral process was not an easy or straightforward highway. Above all, I owe my supervisors, Professor Lise Vikan Sandvik and Associate Professor Fredrik Mørk Røkenes, a big thank you. Their guidance, continuous support, and availability were invaluable to me and the project. They provided answers to things I did not understand and asked questions when my approach lacked clarity. They also advised me to stick to the original plan every time I was tempted to do something else in the research process. I am proud to have written two articles together with them; the cowriting process was inspiring and useful for my development.

During the PhD years, the response I obtained from two groups were of vital importance to reaching the goals of my dissertation. The first group consists of those whom I call ‘experienced others’, namely Marit Ulvik, Kari Smith, Torunn Klemp, Vivi Nilssen, and Anne Berit Emstad, who are all professors. Their feedback on different texts helped me navigate the steps of the process. My explanation of *vertical activity* in this dissertation will elucidate their roles. The second group’s members are not experienced researchers (yet), but we have shared experiences related to a *horizontal*

activity (also explained in this dissertation). This group consists of both departmental colleagues and NAFOL friends whose inputs were priceless. Our discussions during lunches (which turned digital during the pandemic) were so important, and we created spaces where both laughter and tears would be welcomed. I hope we can keep up the good work and continue our development together! A special high five to the five-leaf clover 'ILU-girlsa' that have been so important for me! Our chats in different social media have both inspired and supported my ups and downs during these years. Now, we are only a four-leaf clover. Anne Lise, we miss you so deeply.

I thank my family and all my friends who expressed their interest in my project. My mum and dad – Anne Karine and Oddvar – always encouraged me to do my best and made me believe that I can pursue my dreams. (Dad, I managed to finish this dissertation before I retire!) I am grateful to my sister and brother for supporting and challenging me. Without my family and friends, I would probably have gone crazy. Although I knew that life is more than finding appropriate colours to figures, it was easy to forget – I still do not understand how you do not share the ecstatic feeling of creating swinging arrows in a flowchart! I really needed you to help me stay focused on what really matters.

Last but not least, Martha, Ola, Inga, and Stein Olav you have all been patient and supportive, giving me the breaks I needed. I guess I am the one keeping the house clean and tidy for the next years and, of course, take the dog for walks. I owe you that. But I will also start reading your school schedules and following up on your homework –be prepared! Thank you for giving me the opportunity to prioritise my doctoral study and for believing in me. The PhD process was an adventure, but now I look forward to normal everyday life. Everyday life is best.

Trondheim, May 2023, Karen Birgitte Dille

Abstract

This doctoral dissertation examines in what ways professional development of school-based teacher educators (SBTE) can promote collaboration between partner schools and universities. To answer the research question, a qualitative-dominant mixed methods case study was applied. This doctoral dissertation comprises three research articles and a synopsis. In the synopsis, the empirical, theoretical, and methodological background for the research study is presented. Each of the substudies makes independent contributions to the research field, in addition to providing knowledge and perspectives that can answer the doctoral dissertations´ research question.

Substudy 1 involved a scoping review of 52 empirical studies to determine what teachers find important during their participation in formal online teacher professional development (OTPD) programmes. Mapping and synthesising the studies revealed that a one-size-fits-all design is merely an illusion in the context of professional development. The importance of focusing on participants´ interests and practically relevant content in the OTPD programme design process was highlighted. A facilitator was deemed crucial for scaffolding OTPD activities. While scaffolding was the overarching category in the study results, internal factors constituted a core category of teachers' professional development. Gaining insights into the participants' internal factors was found to be the facilitator's most important task. The findings also revealed that the most amount of effort should be put into the startup phase of OTPD, with the participants facilitating a shared understanding of the activity.

Substudy 2 aimed to investigate how an OTPD mentoring program for new SBTEs can enhance their professional development as teacher educators and promote coherence between a university and its partner schools. The main focus was on examining the role of a boundary artefact in achieving these objectives. Partner school is understood as the schools in which preservice teachers (PST) are involved in field practice. As participants in the OTPD programme they wrote six reflective diaries about their experiences during the process. A constant comparative analysis was used to examine 21 new SBTEs experiences with an OTPD programme in mentoring. The participants found the OTPD programme useful for their professional development and reflected upon how they grew into, engaged in, and connected to their new role, indicating that the programme served as a boundary artefact. Through their participation, the new SBTE felt like they were part of a community and could identify

as teacher educators. Despite their positive experiences, the participants paid attention to the challenges involved in online collaborations with SBTE at other schools. In addition, varying technologies at the partner schools and the university were reported to disrupt the participants' experiences. Overall, this substudy highlighted the value of a university facilitator who can support participants' development in the OTPD programme.

In *Substudy 3*, the experiences of SBTEs in regard to collaboration within field practice in teacher education were examined, along with the arenas provided to them in their role as SBTEs. A total of 242 SBTEs answered a survey. In addition, 21 SBTEs maintained reflective diaries. The findings revealed a considerable discrepancy between intentions and practices, despite government directions regarding coherence and collaboration between partner schools and universities. Most SBTEs were found to work alone and lack collaboration, both within their partner school and with the university.

The findings of this dissertation highlight that professional development among SBTEs can help promote collaboration between partner schools and universities in different ways, for example by participating in an OTPD programme in mentoring. Professional development must be facilitated, and *willingness* stood out as the overarching category when summarising the substudies. The overarching category captured the importance of all actors in field practice embracing the activity, both through showing a willingness to invite to the activity, interact in the activity, and a willingness to be included in the activity.

By focusing on SBTEs' experiences and activities as teacher educators, the three substudies revealed a bias in the activities between the two arenas partner schools and universities. The SBTEs are mentoring PSTs in field practice at their partner schools and have limited contact with the associated universities. The main contribution of this dissertation is that it provides increased knowledge about the importance of universities' awareness of their role in field practice collaboration, which should be more than being deliverers of information. The findings revealed that there is still a gap between intentions and reality about collaboration between the two actors being responsible for teacher education.

Sammendrag (Norwegian)

Denne doktorgradsavhandlingen undersøker hvordan profesjonell utvikling av praksislærere kan fremme samarbeid mellom praksisskoler og universitet. Ulike metoder er brukt for å besvare problemstillingen, og den metodiske tilnærmingen kan beskrives som en kvalitativt-dominerende kasusstudie. Avhandlingen er artikkelbasert, og består av ei kappe og tre forskningsartikler. I kappa presenteres studiens empiriske, teoretiske og metodologiske bakgrunn. Hver av forskningsartiklene er selvstendige bidrag til forskningsfeltet, men bringer også ny kunnskap og nye perspektiv for å besvare avhandlingens overordnede forskningsspørsmål.

Første artikkel er en litteraturgjennomgang av 52 empiriske studier som viser hva lærere fremhever som viktig når de deltar i nettbaserte profesjonelle utviklingsprogram. Gjennom kartlegging og syntetisering av studiene viste resultatene at lærere foretrakk ulike design på nettkursene. Derfor anbefales fleksible utforminger. I tillegg var et interessant og relevant innhold viktig for å få fornøyde deltakere. Mens stillasbygging framsto som overordnet kategori i læreres profesjonelle utvikling, fikk kjernekategorien navnet interne faktorer. En fasilitator med hovedansvar for å tilrettelegge for lærernes utviklingsprosesser var av stor betydning for deres deltakelse. Den viktigste oppgaven for tilretteleggeren var å få innsikt i deltakernes interne faktorer. Oppstartsfasen ble vektlagt som spesielt viktig i læreres profesjonelle utvikling, der deltakerne i en tidlig fase fikk mulighet for å utvikle en felles forståelse for hva de sto overfor.

Det overordnede fokuset i den andre studien er hvordan nettkurs om veiledning kan fungere som en medierende artefakt for å styrke sammenhengen, eller koherensen, mellom universitet og praksisskoler. Praksisskoler er skolene der lærerstudentene gjennomfører praksisstudiet. Underveis i arbeidet med nettkurset skrev deltakerne seks refleksjonsnotat. 21 praksislærere gjennomførte nettkurset, og en konstant komparativ analyse ble benyttet for å få innsikt i opplevelsene deres mens de jobbet med nettkurset. Deltakerne opplevde nettkurset som nyttig for deres profesjonelle utvikling, og de reflekterte over hvordan de vokste inn i, at de lot seg engasjere, og hvordan de ble knyttet til den nye rollen. Gjennom å delta i nettkurset opplevde de å bli en del av et fellesskap, og de identifiserte seg som lærerutdannere. Disse tilbakemeldingene viser at nettkurset fungerte som et brobyggende artefakt mellom det å være lærer og det å bli praksislærer. De fleste av praksislærerne uttrykte en skepsis til å samarbeide med andre

praksislærere på nett. I tillegg opplevde deltakerne ulike teknologiske løsninger på praksisskole og universitetet som forstyrrende og utfordrende i utviklingsprosessen. Artikkelen framhever betydningen av en tilrettelegger fra universitetet som støtter deltakernes utvikling underveis i arbeidet med nettkurset.

Den tredje studien retter søkelys på praksislæreres opplevelser av samarbeid i praksisstudiet og hvilke samarbeidsarenaer de har for profesjonell utvikling i rollen som praksislærer. I tillegg til at 242 praksislærere besvarte et spørreskjema, skrev 21 praksislærere refleksjonsnotat gjennom skoleåret. Til tross for nasjonale bestemmelser om sammenheng og samarbeid mellom praksisskoler og universitet, viser funnene en forskjell mellom nasjonale intensjoner og lokal praksis. Det meste av praksislærerarbeidet foregår individuelt, uten samarbeid med verken praksisskole eller universitet.

Funnene i avhandlingen viser at profesjonell utvikling av praksislærere kan fremme samarbeid mellom praksisskoler og universitet på ulike måter. For eksempel kan dette gjøres gjennom deltakelse i et nettkurs om veiledning. Noen må ha ansvar for å fasilitere den profesjonelle utviklingen. Det å være villig til å delta i aktivitetene framsto som den overordnede kategorien da funnene fra de tre studiene ble sett i sammenheng. Den overordnede kategorien viser betydningen av at alle deltakere i praksisstudiet omfavner aktiviteten, både gjennom å være positive til å invitere til aktivitet, at de deltar i aktiviteten, og at de er villige til å la seg inkludere.

Gjennom å sette søkelys på praksislæres erfaringer og aktiviteter som lærerutdannere, synliggjorde de tre studiene en skjevhet i aktivitetene mellom de to arenaene praksisskoler og universitet. Praksislærere veileder studenter i praksisstudiet, og dette foregår på praksisskolene der praksislærerne jobber. I dette arbeidet har de svært liten kontakt med universitetet. Denne avhandlingen bidrar i hovedsak til økt kunnskap om betydningen av at universitetene er bevisst rollen de har i samarbeidet om praksisstudiet. Dette samarbeidet bør bestå av mer enn å gi fra seg informasjon. Avhandlingen viser at det fortsatt er en avgrunn mellom intensjoner og realitet om samarbeid mellom de to aktørene som er hovedansvarlige for lærerutdanning.

List of Abbreviations

CASP	Critical Appraisal Skills Programme
CHAT	Cultural-Historical Activity Theory
ECTS	European Credit Transfer and Accumulation System
NAFOL	Norwegian National Research School in Teacher Education
NSD	Norwegian Centre for Research Data
NTNU	Norwegian University of Science and Technology
OTPD	Online teacher professional development
PISA	Programme for International Student Assessment
PST	Preservice teachers
SBTE	School-based teacher educators
UBTE	University-based teacher educators

List of Tables and Figures

List of Tables

Table 1	An Overview of the Dissertation and Substudies……..	p.12
Table 2	Keywords that Facilitated the Search for Relevant Studies……	p.14
Table 3	Inclusion and Exclusion Criteria in Chapter 2 ……..	p.15
Table 4	An Overview of the Methodology……..	p.37
Table 5	The Participants in the OTPD Programme……..	p.51
Table 6	Inclusion and Exclusion Criteria in Substudy 1…….	p.53
Table 7	An Overview Over the Number of Reflective Diaries……	p.56
Table 8	An Overview of Items……	p.58
Table 9	An Overview of the Categories that Summarise the Findings……	p.83

List of Figures

Figure 1	An Overview of the Theoretical Paradigms in this Study……..	p.24
Figure 2	The Development of the Cultural-Historical Activity Theory……	p.27
Figure 3	The Two Interacting Activity Systems in this Study…….	p.29
Figure 4	Learning Mechanisms at the Boundary……..	p.33
Figure 5	A Flowchart for Assessing Fit of Five Qualitative Approaches with Various Research Needs…….	p.40
Figure 6	A Graphic of the Three Major Paradigms in Mixed Methods Research….	p.42
Figure 7	The OTPD Mentoring Programme for New SBTEs……..	p.45
Figure 8	The Process of Categorisation of the Qualitative Data Material in Substudy 3……..	p.61
Figure 9	Factors and Correlations in the Quantitative Analysis……	p.67
Figure 10	A Procedural Diagram of the Dissertation……..	p.78
Figure 11	Professional Development of SBTEs to Enhance Collaborations in Field Practice……	p.84

List of Publications

Article I:

Dille, K. B., & Røkenes, F. M. (2021). Teachers' professional development in formal online communities: A scoping review. *Teaching and Teacher Education*, *105*, 1-17. https://doi.org/10.1016/j.tate.2021.103431

Article II:

Dille, K.B. (2022), An online teacher professional development programme as a boundary artefact for new school-based mentors. *International Journal of Mentoring and Coaching in Education*, Vol. 11(4), 381-397. https://doi.org/10.1108/IJMCE-11-2021-0105

Article III:

Dille, K. B., Sandvik, L. V., Einum, E. (minor revisions). School-based teacher educators experiences of collaboration in teacher education. *Acta Didactica Norden*

Outline of the Dissertation

This article-based dissertation consists of two parts: Part I provides a synopsis of the study, and Part II describes the three research articles on which this study is based (Substudies 1–3). The synopsis spans seven chapters:

Chapter 1 introduces the study, with a particular emphasis on Norwegian teacher education and field practice. The gap between intentions of field practice and the reality of the situation is given main attention.
Chapter 2 contextualises the doctoral study by discussing current knowledge in the field. Relevant studies were identified based on three core concepts: field practice, professional development, and community.
Chapter 3 highlights how the paradigms and theoretical models chosen guided the project.
Chapter 4 elaborates on the methodological considerations in this study, specifically the qualitative-dominant mixed methods design, and the researcher's role, data collection and data analysis processes, trustworthiness, and ethics.
Chapter 5 presents the results of each of the substudies, which are then combined and summarised.
Chapter 6 contains a discussion of the research problem and the results presented in the articles, along with the theoretical framework and relevant research.
Chapter 7 rounds off the synopsis with concluding remarks regarding the study's implications and limitations and suggestions for future research.

Part II presents the results of each of the three articles, synthesised findings, a discussion, and concluding remarks. The references, the three articles (I–III) in their published formats, and appendices can be found at the end of this dissertation.

Table of Contents

Professional development and the potential for collaboration between schools and universities 1

A mixed methods research study of school-based teacher educators' experiences 1

Acknowledgements III

Abstract V

Sammendrag (Norwegian) VII

List of Abbreviations IX

List of Tables and Figures X

List of Publications XI

Outline of the Dissertation XII

Part I: Synopsis 1

1. Introduction 3

1.1 Background 4

1.2 Personal stance and motivation 9

1.3 Aim, research questions, and design 11

1.4. Structure of the synopsis 13

2. Current state of knowledge 14

2.1 Selection of studies 14

2.2 Professional development of SBTEs 17

2.3 Activities mediating professional development 20

2.4 Summary 22

3. Theoretical framework 24

3.1 Ontology and epistemology: Constructivism and social constructivist perspectives 25

3.2 Cultural-historical activity theory 27

3.3 The shared object as a third space 29

3.4 Boundary crossing 32

3.5 Summary 36

4. Methodology 37

4.1 Research design 38

4.1.1 The context: Field practice in Norwegian teacher education 38

4.1.2. A case study design 39

4.1.3. Researcher's role 47

4.1.4. Sampling 50

4.2 Data collection 52

4.2.1. The scoping review 52
4.2.2. Reflective diaries in the OTPD programme 55
4.2.3. The survey 57

4.3. Data analyses 59
4.3.1. Analysis of qualitative data: The constant comparative approach 59
4.3.2. Analysis of quantitative data 65
4.3.3. Analysing the main research question: Abductive approach 68

4.4. Trustworthiness 69
4.4.1. Credibility 69
4.4.2. Transferability 70
4.4.3. Confirmability 71
4.4.4. Dependability 72
4.4.5. Utilisation 74

4.5. Ethical considerations 74

4.6. Summary 77

5. Summarising the findings 78

5.1. Substudy 1: Teachers' professional development in formal online communities 79

5.2. Substudy 2: An OTPD programme as a boundary artefact for new school-based mentors 80

5.3. Substudy 3: School-based teacher educators' experiences of collaboration in teacher education 81

5.4. Summary of the substudies 83

6. Discussion 86

6.1. Willingness for professional development 86

6.2. Willingness to invite 87
6.2.1. Engaging participants´ interests 87
6.2.2. A welcoming atmosphere 90

6.3. Willingness to interact 92
6.3.1. To facilitate interaction 92
6.3.2. Someone to interact with 94

6.4. Willingness to (be) include(d) 96
6.4.1. The SBTEs 96
6.4.2. The university 98
6.4.3. The partner schools 100

6.5. Summary 103

7. Concluding remarks 104

7.1. Implications 104

7.2. Limitations and suggestions for further research 107

References 109

Part II: The articles 1

Part I: Synopsis

1. Introduction

Teacher education is aimed at offering preservice teachers (PSTs) professional learning opportunities that will enable them to deal with and develop the needs they will meet during their education and once they graduate as teachers (Raaen & Thorsen, 2020). PSTs 'need the modelling, coaching, scaffolding, reflection, articulation, and exploration that more naturally comes from collaboration and communication with their mentor' (Waters et al., 2021, p. 70). Two main arenas share the responsibility of teacher education: universities and their partner schools.[1] In Norway, these were juxtaposed as different but equal learning arenas in teacher education in 2010 (Ministry of Education and Research, 2010a, 2010b). This understanding of equality indicates that

> […] the campus is no longer merely to be seen as an arena for the acquisition of scientific knowledge and skills, and the practice placement institution as a place only to apply what is learned. Rather, the partners will see both fields as arenas for mutual exploration, negotiation, training and learning. (Raaen & Thorsen, 2020, p. 110)

The quote above illustrates that teacher education is perceived as a responsibility shared by universities and partner schools. Even if the arenas have complementary roles (Ulvik et al., 2017), universities are mainly responsible for facilitating the progression of PST development and for the content, quality, and assessments of field practice (Universities Norway [UHR], 2016a, 2016b). Despite this, partner schools must be aware of their role as an arena for PST development (Ministry of Education and Research, 2017).

Despite the perception of equality, several studies have revealed a lack of a shared vision among those responsible for teacher education (Cavanna et al., 2021; Hammerness, 2013). *Teacher education 2025,* the national strategy for quality and cooperation in teacher education, claims that one of the main challenges in Norwegian teacher education is the weak relationship between these arenas (Ministry of Education and Research, 2017). One example is the study conducted by Sandvik et al. (2019),

[1] While the term *partner schools* describe schools in which PSTs are involved in field practice, the term *university* describes institutions where PST education takes place on campus. In this dissertation, the term *university* also captures the administrative tasks connected to organising qualitatively good teacher education.

where experienced teachers for PSTs did not describe themselves as integrated mentors. At the international as well as national levels, there are reports of a broad variation in how actors involved in field practice experience teacher education (e.g. Canrinus et al., 2019; Munthe et al., 2020). PSTs' experiences of field practice have been described as random in the literature, which illustrates the broad variation between partner schools and universities (Ulvik et al., 2018).

This brief introduction forms the backdrop for the present dissertation, indicating that there is a need to further develop collaboration between the arenas responsible for teacher education. Even though several actors are involved in teacher education activity, the present dissertation focuses on the teachers in schools as being responsible for PSTs' field practice. This scope has given me an opportunity to go more in depth into their experiences.

Chapter 1 presents an overview of the background of the situation (1.1), followed by my personal stance and motivations (1.2) and the study's aim, research question, and design (1.3). The chapter ends with an overview of the synopsis structure (1.4).

1.1 Background

Teachers engaged in teacher education are considered teacher educators (The European Commision, 2013). Among them, school-based teacher educators (SBTE) and university-based teacher educators (UBTE) have the most central roles in field practice.[2]

> School-based teacher educators are those teachers who welcome student teachers into their classrooms and guide them in the beginning stages of a long professional development process. […] University-based teacher educators are the academic staff who teach educational courses such as didactics and pedagogy at the university, supervise the students' Practicum by visiting them […]. (Smith, 2007, p. 280)

[2] Different terms are used to describe the role of the teachers who supervise PSTs during field practice. In this synopsis, I use the terms school-based teacher educators (SBTEs) and university-based teacher educators (UBTEs) to emphasise the equality of their roles and that both roles are teacher educators. Other terms are used in the substudies to meet their respective requirements and to align with the audience of the different journals.

While universities are responsible for the overall education of PSTs, SBTEs are mainly responsible for mentoring PSTs during field practice (Helleve & Ulvik, 2019; White & Berry, 2022). In this dissertation, the role of a UBTE is primarily considered in relation to field practice.

One central goal of *Teacher education 2025,* is to mobilise the participants involved in teacher education so that they develop a shared understanding of teacher education's core elements and how they can be implemented (Ministry of Education and Research, 2017). The term *coherence* is central to such development processes. Several studies have focused on the importance of coherence in teacher education programmes over the last decades (e.g. Cavanna et al., 2021; Grossman et al., 2008). Coherence has been described as a process that reduces fragmentation or the gap between theory and practice or between the arenas and persons responsible for teacher education (Grossman et al., 2008). The enhanced focus on coherence is in line with the traditional understanding of the dichotomy between the two arenas, with universities taking care of theory and partner schools taking care of practice (Palazzolo et al., 2019). A stronger connection between the arenas is captured in this quote: 'From an institutional perspective, coherence refers to the cooperation among the university, induction school, state ministry, and other institutions involved in teacher education' (Alles et al., 2019, p. 91). Despite both research and government emphasis coherence, one in three Norwegian SBTEs described a lack of coherence between the two learning arenas in Flaget´s (2021) study.

Coherence can be strengthened if the actors involved in teacher education have a shared arena where they can meet, get to know each other, and share their visions, goals, purposes, and mutual expectations to align, design, and implement teacher education programmes (Cavanna et al., 2021; Hammerness, 2013; Smith, 2016). In this dissertation, the terms *coherence*, *third spaces*, and *partnership* are tightly connected. Based on the understanding that a third spaces provides opportunities to negotiate and find solutions to strengthen the coherence between the two arenas (Canrinus et al., 2019), third spaces in this study is understood as arenas where activities are dynamic rather than intended to overcome barriers (Akkerman and Bakker (2011a).

To enhance the understanding of third spaces, Zeichner (2010) defined this arena as 'the creation of hybrid spaces in preservice teacher education programs that bring together school and university-based teacher educators and practitioner and

academic knowledge in new ways to enhance the learning of prospective teachers' (Zeichner, 2010, p. 92). Third spaces where different actors meet can be aligned with how partnerships are understood: 'a partnership is an agreement between teacher education institutions and stakeholders of education who work together towards a shared goal, to improve education at all levels.' (Smith, 2016, p. 20). According to Smith (2016), partnership in third spaces enables different levels of theories and experiences to come together and all participants involved in teacher education to further develop as professionals. Third spaces have been broadly discussed in terms of its complexity and challenges (Emstad & Sandvik, 2020; Helleve & Ulvik, 2019; Jackson & Burch, 2019; Smith, 2016). Zeichner et al. (2015) illustrated the challenges as follows: 'even when school and universities are aware of each other's world, they do not necessarily share a vision of quality teaching and teacher preparation.' (p. 23).

During the last decades, we have witnessed what is described as a *practice turn* in teacher education, with the practicum gaining more interest (Smith, 2018; Zeichner, 2012). With the overall intention of strengthening teacher education and teacher quality, changes have been implemented in Norwegian teacher education (UHR, 2016a, 2016b). In 1999, the *Bologna Declaration* introduced what is known as the *Bologna Process,* through which European countries developed shared principles to ensure high-quality higher education (European Higher Education Area, 2021). The results of Programme for International Student Assessment (PISA) in 2000, which included negative results for Norway, and the implementation of the *Quality Reform* in 2003 are two often-used explanations for implementing new reforms in Norwegian teacher education (Dahl et al., 2016; Jenset et al., 2019).

By introducing the term *partner school* in 2005, individual agreements between universities and SBTEs were replaced in favour of school leaders holding the main responsibility for facilitating field practice at partner schools (Ministry of Education and Research, 2005). The intention behind transferring the responsibility from SBTEs to partner schools was to ensure that each school would be used in its entirety as a collective arena for PSTs' professional development (Nilssen, 2014). Today, universities, school owners, and headmasters in partner schools sign contracts clarifying their responsibilities for field practice. Principals of partner schools are responsible for field practice and are committed to participating in meetings between the arenas (UHR, 2016a, 2016b). Nevertheless, *Teacher education 2025,* points out that many partner

schools downgrade field practice activity, as they do not experience being part of teacher education (Ministry of Education and Research, 2017).

The role of partner schools in field practice is important in determining how SBTEs experience their role as teacher educators (Andreasen et al., 2019). The role of a school leader, the collaboration process for assessments of PST, and whether SBTEs enjoy being teachers are factors that significantly predict SBTEs' identities as teacher educators (Andreasen et al., 2019). Munthe and Ohnstad (2008) reported that, in certain partner schools, a few teachers were involved in field practice preparations. However, according to the fifth report from Munthe (2015), partner schools have developed a greater awareness of being teacher education institutions. School leaders are primarily responsible for this change; nevertheless, Heggen et al. (2018) revealed variations among partner schools and reported that school leaders were not sufficiently involved in the development process. In addition, Heggen et al. (2018) highlighted the challenges that principals face when they are responsible for field practice when their main activity is to establish learning arenas for students and teachers at their schools.

The role of an SBTE is important in a third space because mentoring competence is one of the core tasks and challenges of teacher education (Advisory Panel for Teacher Education, 2020). The SBTEs have dual roles: they are both teachers of their school students, in addition to being mentors for PSTs located at their partner schools (Helleve & Ulvik, 2019; White & Berry, 2022). White and Forgasz (2017) described these two roles as follows:

> Although this professional group do not change their location, they can nevertheless become 'second order practitioners' by working with pre-service teachers alongside university-based teacher educator colleagues. The additional complexity they face is that they do so while continuing in their roles as first order practitioners with responsibility for teaching school students. (White & Forgasz, 2017, p. 287).

Inspired by White and Forgasz (2017), the term *first order practitioners* will be used in this dissertation when referring to SBTEs as teachers and the term *second order practitioners* when referring to SBTEs as mentors for PSTs.

Although the SBTEs who participated in Heggen et al.´s (2018) study described the two roles as complementary, other studies have shown that the SBTEs´ mentoring

role is of less priority than their teaching role (Jackson & Burch, 2019; Jaspers et al., 2014). Exemplifying the competition between the roles, studies have revealed that the national curriculum *Kunnskapsløftet* and partner schools' local plans were emphasised instead of the national guidelines for teacher education (Moen & Standal, 2014; Thorsen, 2016).

Notably, experienced teachers involved in Thorsen´s (2016) study believed that they could use their experiences to develop their teacher educator roles. Despite their positive attitudes, various studies have shown that there is no automaticity in good teachers becoming good teacher educators; the transition from being a teacher to becoming an SBTE is not something that happens automatically (e.g. Jaspers et al., 2014; Orland-Barak, 2001). Articulating tacit knowledge is found to be one of the main differences between first- and second-order practitioners (Smith, 2005). One example of tacit knowledge is teachers who 'just know what to do' to motivate their students to work with tasks.

Parker et al. (2021) reported of SBTEs who struggled 'to make that identity shift' (p. 73). A number of factors can explain this struggle: several SBTEs reported feeling insecure in their role as teacher educators (Bullough Jr, 2005; Nilssen, 2016) and that they did not identify themselves as teacher educators (Heggen & Thorsen, 2015; Helleve & Ulvik, 2019). SBTEs have described a lack of time as a recurring challenge to do their jobs as well as they want to (Nilssen, 2014; Raaen, 2017; Sandvik et al., 2019). In addition, many SBTEs have stated that they feel like they stand alone in their jobs as teacher educators (e.g. Heggen & Thorsen, 2015; Munthe & Ohnstad, 2008; Nilssen, 2016). The tension is further elaborated upon in Chapter 2, where the current state of knowledge is presented.

NOKUT (the Norwegian Agency for Quality Assurance in Education) has identified the development of mentoring competence as one of the core challenges in teacher education to meet the new national standards (Advisory Panel for Teacher Education, 2020). As the job of a second order practitioner is quite different from that of a teacher for school students, the Norwegian government decided in 2010 that SBTEs should have at least 15 European Credit Transfer System (ETCS) in mentoring to be qualified as teacher educators in partner schools (UHR, 2016a, 2016b). SBTEs receive financial support from the Norwegian government to study mentor education (Ministry of Education and Research, 2015). The importance of ECTS credits in mentoring has

been highlighted by, for example, Helleve and Ulvik (2019) and Ulvik and Smith (2011), who stated that SBTEs with ETCs in mentoring described themselves as responsible teacher educators. In addition, they valued the theoretical approach to mentoring and aimed to contribute to creating coherence between the arenas. Although government directions were implemented more than a decade ago, the goal of educating SBTEs is far from being reached (e.g. Andreasen et al., 2019).

1.2 Personal stance and motivation

My personal stance and motivations have been essential for the research process. An SBTE I worked with once expressed *'Why answer? The university never listen[s] to me anyway!'* when I, some years ago, I asked for suggestions to develop the field practice of our department. This answer served as a wake-up call for me and, although I was not aware of it at the time, became the starting point for the present dissertation. I started to reflect upon meetings that our department organised between the university and its partner schools, which could be described as meetings in the third space; they involved the transfer of information rather than the intended dialogue. The meetings gave no room for actors to share their visions, goals, purposes, or mutual expectations to meet what Cavanna et al. (2021), Hammerness (2013), and Smith (2016) described as the intention of third spaces. Thus, my experiences were similar to the reports of previous studies (e.g. Heggen et al., 2018; Kalgraf & Lindhardt, 2018; Lillejord & Børte, 2016).

My background has also been an important factor in the research process. After 15 years as a schoolteacher, I started working in teacher education in 2013. I have experienced intense workdays as a first order practitioner and as a second order practitioner, and during these years I have gained an enhanced understanding of the importance of collaboration between the two arenas. The last few years before I started the PhD journey, I have especially raised my awareness of and interest in this area of teacher education, as I have had some responsibility for my department's field practice. In addition, as a mother, I have obtained another perspective on how important good teachers are, raising my awareness of the need for further development in teacher education.

Complexity is a recurring term in the literature when field practice and teacher education are described. Therefore, I had to sort out and prioritise my objectives for this project. Zeichner et al.´s (2015) explanation of the challenges in teacher education

raised my curiosity about the tensions between SBTEs in partner schools and those of us working at universities. Several studies have called for more research into how participants in the two learning arenas can contribute to strengthening the coherence between the arenas (Cavanna et al., 2021; Hammerness, 2013).

As discussed in the previous section, international and national studies have both revealed that universities struggle to include participants in collaborations for field practice in third spaces. To narrow the scope of this dissertation, I decided that the overall intention could be to gain more insights into in what ways professional development of SBTEs can promote collaboration between the two arenas. Andreasen et al. (2019) highlighted that SBTE 'must claim their membership status' in third spaces (p. 228); however, considering the challenges presented above, it is not easy for SBTEs to raise their voices during university activities.

Strengthening SBTEs' voices is challenging if they are unprepared when entering an unknown arena. Both international and national studies have shown that SBTEs are not well prepared for their role as second order practitioners (Bullough Jr, 2005; Feiman-Nemser, 2001; Nilssen, 2014, 2016). Not being prepared indicates that universities cannot expect them to participate as equal partners in a third space. Due to the differences between the roles of a teacher and teacher educator, or a first- and second order practitioner, several researchers have outlined the need to provide opportunities for SBTEs to develop in their roles as teacher educators (Bullough Jr, 2005; Palazzolo et al., 2019; Smith, 2017). Butler and Cuenca (2012) even described the situation for new SBTEs as a 'sink-or-swim approach' (p. 35) – that is, the teacher education institution leaves them alone to discover their role. With these previous studies in mind, I became interested in what this doctoral study could do to facilitate processes for raising SBTEs' voices in third spaces.

Professional development is crucial for voices to be heard. In this study, professional development is understood on the basis of sociocultural learning perspectives, specifically the cultural-historical activity theory (CHAT) and boundary crossing. These theories are presented in Chapter 3, but the overall idea is that learning first takes place during encounters between people and processes on an *interpsychological level* before it becomes part of everyone's independent learning processes on an *intrapsychological level* (Vygotsky, 1978). The SBTEs at my university work at partner schools in a broad area, so they find it challenging to visit the university

and participate in meetings. Considering this, the idea of developing an online teacher professional development (OTPD) programme in mentoring to strengthen new SBTEs in their role as teacher educators started to grow. I participated in the digitalisation project in teacher education, DigGiLU, before I started my PhD.[3] The OTPD programme was then supported by the DigGiLU project and by the Department of Teacher Education at the Norwegian University of Science and Technology (NTNU). I intended the OTPD programme to be an activity in the third space with other SBTEs, and a part of the larger goal of partnership in teacher education.

1.3 Aim, research questions, and design

The motives presented above gave rise to a need for more research on SBTEs' learning processes (e.g. Langdon, 2014) and perspectives on their new roles (e.g. Helleve & Ulvik, 2019) as well as the importance of mentor training (e.g. Sandvik et al., 2020). According to Czerniawski et al. (2017) there is a lack of research on SBTEs professional learning (as second order practitioners), because research has mainly focused on teachers continuing their professional development in schools (as first order practitioners). According to Sandvik et al. (2020), there is a need for more research on collaboration and how new models for partnerships in teacher education work. In addition, Andreasen et al. (2019) claimed that there is a need for more empirical research involving both qualitative and quantitative data on field practice.

This doctoral study strives to answer the main research question *In what ways can professional development of school-based teacher educators promote collaboration between partner schools and universities?* An overview of this dissertation and its substudies is presented below in Table 1.

[3] Digitalisering av grunnskolelærerutdanningen ved institutt for lærerutdanning NTNU (DigGiLU) was funded by the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (formerly Norgesuniversitet, now Diku) and the Norwegian Ministry of Education and Research. For further reading, see Arstorp & Røkenes (2022) and Røkenes et al. (2022).

Table 1

An Overview of the Dissertation and Substudies

Chapter		Description		
1	**Study purpose**	To develop knowledge about how SBTEs´ professional development can enhance collaboration between partner school and universities		
	Main research question	*In what ways can professional development of school-based teacher educators promote collaboration between partner schools and universities?*		
2	**Current state of knowledge**	Broad variations and complexity across studies presenting different interventions or activities that focus on SBTE professional development, with several reports of SBTEs who struggled in their new second order practitioner roles		
3	**Theoretical framework**	3.1. Ontology and epistemology: Constructivism and the social constructivist perspective 3.2–3.4. Cultural-historical activity theory, third space, and boundary crossing		
4	**Methodology**	4.1. Research design and methods: Qualitative-dominant mixed methods study 4.2. Data collection: Scoping review, reflective diaries, and a survey 4.3. Data analyses: Abduction, the constant comparative approach, and numerous data 4.4.-4-5. Trustworthiness and ethical considerations		
5	**Summarising the findings**	**Substudy 1**	**Substudy 2**	**Substudy 3**
	Substudies' research questions	**S1:** *What does previous research reveal about teachers' formal online professional development*?	**S2: *I:*** *How do new school-based mentors experience an OTPD in mentoring to develop in their new roles?* ***II:*** *How does an OTPD programme serve as a boundary artefact for new school-based mentors' professional development?*	**S3: I:** *How do school-based teacher educators experience collaboration in teacher education?* ***II:*** *Which arenas are teachers given for professional development in their role as school-based teacher educators?*
	Central findings	A one-size-fits-all design is an illusion in OTPD. Considering the participants' interests and providing content that's relevant to practice is crucial for OTPD. In addition, a facilitator who can scaffold OTPD processes is important.	The OTPD programme was useful and the SBTE grew into, were engaged in, and connected to their roles. Technology fostered negative tension, and the SBTEs showed resistance to online participation, which limited the intended third-space activity.	SBTEs report of broad variations with limited third space activity and a lack of coherence. Field practice activity is still a job for the individual SBTE, which indicates that their professional development relies on their autonomy.
	Summary of the results	*Willingness* stood out as an overarching category when answering the research question. SBTEs were engaged in the third-space activity, but the university's main role was to deliver information rather than invite SBTEs to collaborate. Therefore, the intended third-space activity was biased and took place near the SBTEs and their partner school's activity system.		
6	**Discussion**	In this chapter, the overarching category of *willingness* is discussed in combination with three words: *willingness to invite* (6.1)*, willingness to interact* (6.2)*,* and *willingness to (be) include(d)* (6.3). Willingness to invite is related to the university as deliverers of information (the right activity systems); willingness to interact is connected to SBTE engagement (the left activity system); and willingness to be included can be seen as a category where third space activity takes place.		
7	**Concluding remarks**	Empirical, theoretical, methodological, and political implications are first presented (7.1), followed by the limitations of the study and suggestions for further research (7.2).		

1.4. Structure of the synopsis

CHAT and boundary crossing were chosen to form the theoretical framework and provide knowledge and an understanding of SBTE professional development processes. In addition to relevant research, these theories are drawn upon in the discussion to gain a deeper understanding of the study topic. This doctoral study involved three substudies, as illustrated in Table 1. Chapters 1–4 introduce the purpose of this doctoral project, the current state of knowledge, the theoretical framework and methodology adopted in the study. In Chapter 5, the substudies are first presented, and the chapter ends with a summary of the results. While Substudy 1 was conducted to determine what teachers find important for their professional development via participation in formal OTPD programmes, the focus of Substudy 2 was on professional development for new SBTEs through the activities in an OTPD mentoring programme. In Substudy 3, attention was directed to SBTEs' experiences with collaboration in third spaces and which arenas they were given for professional development in their role as teacher educators. The dissertations research question is discussed in Chapter 6, followed by concluding remarks elaborating on the implications and limitations of the study and suggestions for further research.

2. Current state of knowledge

Guided by the overall research question, the aim of this chapter is to contextualise the doctoral study by describing the currently available knowledge in the research field about SBTE professional development and collaboration between partner schools and universities in field practice. This chapter provides a broad overview of studies focusing on how SBTEs' professional development can enhance collaboration between partner schools and universities. The database search process and inclusion of relevant studies are described in Section 2.1. The findings are then presented and organised in relation to the research question: professional development of SBTEs is discussed in Section 2.2 and activities mediating professional development in Section 2.3. The chapter is summarised in Section 2.4.

2.1 Selection of studies

To uncover relevant research, two main search processes were conducted: First, Arksey and O'Malley (2005) steps for a scoping review were followed, and then handsearching and snowballing were conducted to find studies written in Norwegian. In the first phase, relevant studies were identified by developing three core concepts that were central to the research question: *field practice*, *professional development*, and *community*. Table 2 presents the terms covered by these concepts.

Table 2

Keywords that Facilitated the Search for Relevant Studies (Major et al., 2018, p. 2000)

	Concept A **Field-based practice** **(and associated terms)**	**Concept B** **Professional development**	**Concept C** **Community** **(and associated terms)**
OR	School-based mentor School-based supporting teacher School mentor Mentor teach* Field-based mentor Field-based supervisor School-based teacher educator Supervising university tutor Cooperative teacher Associate teacher School placement Field placement School-based field experience School-based experience Practicum Classroom placement Placement tutor	Professional development	Professional learning community Professional learning network Third space Partnership
	AND		

Since different terms are used in research on field practice, I included all the terms I knew under Concept A. The terms used in concept C are chosen because they could help me find relevant studies where SBTEs professional development took place in a community. With respect to concept C, I realised in hindsight that the term 'community of practice' was not included in the search string. Although inexhaustive, the chosen terms were sufficient to capture relevant research.

With help from experienced librarians, I ensured that the first phase was done correctly. The scoping process was similar to the process followed in Substudy 1 (Dille & Røkenes, 2021), and the experience I gained was helpful during the process of reviewing studies for this chapter.

English-written peer-reviewed articles published in journals in the period 2017–2021 were included in the initial search. The Scopus, Web of Science, and Education Resources Information Center (ERIC) databases were searched, resulting in 874 studies. The inclusion and exclusion criteria are presented in Table 3.

Table 3

Inclusion and Exclusion Criteria in Chapter 2 (Based on Røkenes and Krumsvik, 2014, p. 256)

	Inclusion criteria	Exclusion criteria
Databases	ERIC, Web of Science, Scopus	Other databases
Time frame	2017–2021	Articles published before 2017
Publication type	Articles in journals	Books and book chapters, conference proceedings, grey literature, PhD dissertations
Focus	Formal interventions or activities to enhance quality in field practice in teacher education	Not peer-reviewed articles focusing on other aspects
Activities	Interventions, mentoring, assessment, collaboration, preparation, development, methods	
Language	English	Other languages
Target teaching level	Primary and secondary school, middle school, high school, lower and upper secondary school	Kindergarten, preschool, adult learning

During the eligibility phase, I focused on the methodology chapter of each identified journal article to ensure that the studies were about activities that mediate SBTEs' professional development. Similar to Substudy 1, a criterion was that professional development should take place in formal situations.

Table 2 illustrates that Concept C incorporated terms that were partly interrelated but also distinct from each other. Rather than diving into the theoretical nuances of these terms, my emphasis was on the activity that facilitated the SBTEs' professional development. These sentences aimed at elucidating my intended focus. The terms selected in Concept C are useful in identifying pertinent studies where SBTEs' professional development occurred within a community. Examples of related activities are mentoring programmes, interventions, and pilot studies. 74 studies were included when I read through the whole texts the first time. Finally, 29 studies were found to fit all criteria and were included in the analysis.

As it was not possible to use the same search strategy for studies written in Norwegian, I used snowballing and handsearching approaches in the second phase. These strategies can be used as supplementary activities (Booth et al., 2016). *'Focus'* and *'activities'* were the criteria that guided the second search. Because I wanted a broad scope of national studies, I did not include any particular time frame, publication type, or target teaching level as criteria when searching for Norwegian studies. In the handsearching process, I started with the Norwegian studies on field practice presented in Munthe et al. (2020) report. I read the full texts of these studies to determine whether they fit the criteria. Next, I read through two journals – *Nordisk tidsskrift i veiledningspedagogikk (NORDVEI)* and *Acta Didactica Norden (ADNO)* – to find relevant studies. During the snowball search, I used Google Scholar to find studies that referred to the Norwegian studies identified via handsearching. In addition, I received tips about relevant studies from experienced colleagues and supervisors. This phase led to 17 Norwegian studies being included. The scoping process is presented in Appendix VII, and the 46 studies are listed in Appendix VIII.

As mentioned above, this chapter focuses on findings related to SBTEs' experiences of professional development in third spaces as second order practitioners. The results below are from a mixture of international and national studies. The intention is to provide an overview of the literature, but the presentation may pose the challenge of simplifying the results of a wide range of studies. Overall, the reviewed studies revealed broad variations in the number of participants included. While some studies only had SBTEs as participants (Campbell et al., 2019; Denton & Heiney-Smith, 2020; Holland, 2018; Land, 2018; Nilssen, 2016), others combined the experiences of both SBTEs and PSTs (Kiviniemi et al., 2021; Lammert et al., 2020). SBTEs and UBTEs

were the participants of other studies (Aderibigbe et al., 2018; Berg & Rickels, 2018; Betlem et al., 2019; Näykki et al., 2021), and some studies included the whole triad (Jakhelln & Postholm, 2022; Lloyd et al., 2020; Molitor et al., 2018; Palazzolo et al., 2019; Wetzel et al., 2019).

2.2 Professional development of SBTEs

According to the reviewed studies, the professional development of SBTEs takes place alongside individual work in different communities, such as with UBTEs, within their partner schools, and with their PSTs. SBTEs were reported to appreciate getting the opportunity to share and exchange their experiences about their role as teacher educators, or second order practitioners, in constructive communities (Berg & Rickels, 2018; Kiviniemi et al., 2021; Margevica-Grinberga & Odiņa, 2021). Langdon (2017) described the activities involved in a development process as a 'nuanced dance' (p. 541).

Their engagement in third spaces led to changes in many SBTEs' understanding of their roles and of themselves as professional educators; they began describing themselves as teacher educators and second order practitioners (e.g. Grimmett et al., 2018). Grimmett et al. (2018) illustrated an SBTE's professional development as follows:

> […] at that conference at the beginning of the year where we had the time to sit and talk about some of those issues. There were pivotal points in that conference where I went, 'Hang on a minute, there's a bigger thing at play here. It's not the universities, it's not just us, there's middle ground'. And that's where it started to change my thinking about, 'What can we do?' (Grimmett et al., 2018, p. 346)

Langdon (2017) used the term 'shifting identities' to explain the development the SBTEs described. Several studies have also reported an increased understanding and development of mentoring strategies (e.g. Berg & Rickels, 2018; Palazzolo et al., 2019; Walters et al., 2021).

SBTEs' attitudes and willingness to open up about what they needed for their professional development were highlighted by Trevethan and Sandretto (2017) and Sewell et al. (2018). Further, Richmond et al. (2017) and Sewell et al. (2018) claimed that participants who showed a willingness to engage in the activity of redefining and sharing goals, values, purposes, and practices constituted a prerequisite for coherence.

This willingness led to conditions for developing a commitment to the partnership in third spaces. Not all studies reported of participants showing a willingness to participate. While, for example, Aderibigbe et al. (2018) and Land (2018) described noncollaborative activities, Margevica-Grinberga and Odiņa (2021) reported that some SBTEs either did not submit any assignments or gave one-word responses that were given in the interventions.

Both SBTEs and UBTEs claimed that their 'time together was very inspiring and brought many ideas to the table' when they shared and extended ideas (Palazzolo et al., 2019, p. 331). Another example of collaboration between these two roles was given by Klemp and Nedberg (2016): the PSTs received assignments from the university to collect and reflect upon data during field practice, whereas the SBTEs valued assignments that connected theory and practice. However, Amdal and Mastad (2022) highlighted the need for SBTEs to show more interest in collaborating with UBTEs.

Researchers claimed that open communication between the actors was crucial for development to take place, but challenges were reflected upon in several studies: Marsh (2021) revealed an asymmetry in power between the two actors, which resulted in SBTEs' reduced ownership in their professional development. This imbalance in power was also an important finding in other studies: Olsen (2020) showed that the UBTE talked for more than 70% of a mentoring session. In another study, an SBTE withdrew from online activity because they would not be a part of what they experienced as a competitive situation and described the participants from university dominating the activity (Klemp & Nilssen, 2017). The asymmetry was also exemplified by Palazzolo et al. (2019), who reported that SBTEs wanted more information about what happened at the universities. The following quote exemplifies the imbalance between SBTEs and universities: 'Rather than being empowered they were, to an extent, controlled' (Marsh, 2021, p. 251).

However, Langdon (2017) emphasised the presence of supportive communities in schools that valued SBTEs' work. In Jackson and Burch (2019) study, an SBTE claimed that meetings with colleagues to discuss field practice were 'the most powerful meetings I have in school' (p. 146), and disagreements between the participants were valued and considered a strength for professional development. Fauskanger et al. (2019) reported that SBTEs who participated in a mentoring education programme performed an assessment to create plans for field practice at their schools. This shared activity

resulted in engaged headmasters and colleagues, and the partner schools developed a shared language about field practice.

While some participants reported pedagogical development at their schools (Näykki et al., 2021), other SBTEs did not experience a feeling of community within their schools. Those who were alone appreciated meeting likeminded people outside their partner schools 'who respected their passion for mentoring' (Holland, 2018, p. 117). Activities in this common space transcended geographical boundaries (Holland, 2018; Näykki et al., 2021). When participating in an intervention, one of the SBTEs in Lammert et al.´s (2020) study realised that the culture at her school could be described as involving authoritative discourse. Being part of an intervention outside the partner school gave this SBTE the courage to challenge the culture at her school.

Trevethan and Sandretto (2017) and Parker et al. (2021) claimed that matching PSTs and SBTEs is the single most important factor for successful activities. Several studies have reflected on how interventions support SBTEs in their relationships with PSTs (Grimmett et al., 2018; Morud & Engvik, 2019; Sewell et al., 2017). For example, the SBTEs in Hvalby and Thortveit (2022) were organised into mentoring teams and appreciated structured mentoring sessions with PSTs. Before the mentoring sessions, the PSTs sent questions to the SBTEs, who prepared answers and decided on perspectives to be used as starting points in the mentoring sessions.

Although SBTEs reported an imbalance when collaborating with UBTEs, they described themselves and PSTs as partners (Olsen, 2020). However, not all SBTEs experienced good development processes with PSTs. The SBTEs and PSTs in the studies of Näykki et al. (2021) and Kiviniemi et al. (2021) reported different experiences when working together in professional development groups: homogenous groups consisting of either SBTEs, or PSTs worked out better than mixed groups. The SBTEs explained that challenges arose because of differing experience levels.

Trevethan and Sandretto (2017) claimed that 'the relationship between mentoring and opportunities for professional learning cannot be taken for granted' (p. 131). Lack of time was a recurring challenge reported in several studies (e.g. Betlem et al., 2019; Näykki et al., 2021). The SBTEs in the studies of Langdon (2017) and Waters et al. (2021) illustrated that they needed time to understand that they, too, were learners and could learn from each other. Time was also a factor when, among others, Berg and Rickels (2018) reflected upon the challenges faced by SBTEs with dual roles and

several tasks to fulfil. An SBTE in White´s (2019) study described a tension between his teaching and SBTE roles, stating that he lost important time that he should have spent with his students. Lack of time may explain why some of the SBTEs described themselves as first order practitioners.

2.3 Activities mediating professional development

While some of the programmes covered in the reviewed studies paid attention to the SBTE role (Aderibigbe et al., 2018; Denton & Heiney-Smith, 2020), peer group mentoring, mentoring approaches, mentoring strategies, and coaching models were focused on in other studies (e.g. Amdal & Mastad, 2022; Kiviniemi et al., 2021; Lloyd et al., 2020). For instance, Hvalby and Thortveit (2022) studied SBTEs working in teams to mentor PSTs. Two methods appeared frequently in the literature: lesson study (Gruber, 2019; Helgevold & Munthe, 2016; Morud & Engvik, 2019) and action research (Betlem et al., 2019; Holland, 2018; Langdon, 2017; Steele & Danielsen, 2014; Steele, 2017). In Langdon´s (2017) study, the SBTEs had opportunities to view themselves as learners in a professional development process via action research. In addition to knowledge building and collecting and analysing data, the participants shared their observations and experiences in a community that was open to questions and reflection.

Developmental activities took place at universities, partner schools, or both. In several studies, participants discussed topics on university campus, tried them out at their respective schools, and returned to campus to discuss their experiences (e.g. Holland, 2018; Näykki et al., 2021). In the studies of Helgevold and Munthe (2016) and Jakhelln and Postholm (2022), the interventions started with physical seminars. In the startup phase of their professional development, the participants developed a shared understanding about the content and processes involved (Jakhelln & Postholm, 2022). The SBTEs in Jakhelln and Postholm´s (2022) study appreciated being involved in the third space from the very beginning of the project. Dialogue around what each participant could bring to the third space, which included both knowledge and experiences, and their qualities were built on further in the development processes (Kiviniemi et al., 2021; Sewell et al., 2018). Heggen et al. (2018) reflected upon how SBTEs' personal factors affected developmental activities.

Central to both third spaces and the partnerships between the actors was the intention to build equality, mutual trust, and symmetric participation. Richmond et al. (2017) illustrated the importance of including SBTEs in the processes: In an initial workshop, someone from outside of the organisation designed and implemented the interventions. Because of a distance between the content and the participants needs, the conclusion was that the workshop failed. Based on this experience, SBTEs were invited to contribute to the content and activities when planning the second workshop. Due to the feedback obtained from the participants, the latter workshop was much more successful than the first.

In conjunction with involving SBTEs in such processes, Holland (2018) highlighted the importance of SBTEs feeling a sense of ownership over the development processes. By paying attention to their own interests and what they wanted to develop (e.g. Parker et al., 2021), the participants determined common values, goals, and beliefs that led to opportunities for professional development in third spaces (Betlem et al., 2019; Richmond et al., 2017; Sewell et al., 2017). In addition, paying attention to the information and materials involved in the developmental activities helped clarify what the role of an SBTE consists of and what happens at a university, as highlighted by Margevica-Grinberga and Odiņa (2021) and Molitor et al. (2018). The SBTEs in Klemp and Nilssen´s (2016) study appreciated having opportunities to draw from their experiences during online mentoring.

Wetzel et al. (2019) focused on the importance of establishing supportive spaces and reported good experiences with collaborative mentoring processes, as SBTEs supported each other in addition to mentoring PSTs. Furthermore, Sewell et al. (2018) highlighted the importance of paying attention to what the participants had in common, rather than focusing on the differences. Although most studies reported positive developmental outcomes for SBTEs, the SBTEs in, for example, Parker et al.´s (2021) study struggled with their professional development. Although they were invited to participate as equal partners in a third space, they found it hard to change from first- to second order practitioners.

Several SBTs highlighted the importance of a facilitator for interventions. An SBTE in Jackson and Burch´s (2019) study described the intervention facilitator as a boundary broker who would ‘kind of fuelling our energy and fuelling our enthusiasm’ (p. 148). Further, the participants in the study found value in the facilitator being

someone who did not belong to their school, as it gave them opportunities to maintain what they described as a needed distance. According to Betlem et al. (2019), scaffolding should be reduced over time as participants gain ownership of the development processes.

Technology was a central aspect of several studies, and a broad variety of tools and processes were presented. The programme in Parker et al. (2021) consisted of five modules closely connected to the national requirements and the gap between the arenas presented in the literature: the importance of partnerships, planning and teaching together, mentoring, and handling difficult conversations. In the studies of Chilton and McCracken (2017) and Klemp and Nilssen (2016), new technologies supported the SBTE mentoring processes, and in the study of Campbell et al. (2019), the focus was on a web-based learning environment. While Land (2018) and Lammert et al. (2020) video-recorded the mentoring cycles, Mathisen and Bjørndal (2016) examined how tablets worked during mentoring sessions.

By using video tools in the mentoring processes, the participants got opportunities to analyse and decompose the activities involved, and the SBTEs reported that it helped them gain a meta-perspective of the activities (Høynes et al., 2018; Land, 2018). According to Mathisen and Bjørndal (2016), the use of digital tablets enhanced the quality of mentoring processes, and both SBTEs and PSTs experienced a better structure, more honest feedback, and deeper reflection. However, not all technological activities facilitated professional development. One of the explanations for minor online activity was connected to SBTEs' low technological skills. The participants in Mathisen and Bjørndal´s (2016) study reported a need for customised technological tools and that they had doubts about their technical skills before the intervention began.

2.4 Summary

For the purpose of this chapter, 46 studies were reviewed, each focusing on SBTEs' experiences with professional development in teacher education. An overall finding was that the activities conducted varied broadly. Although most SBTEs appreciated the opportunity to participate in field practice with others, this was not automatically successful. SBTEs' willingness to develop as second order practitioners was put forward as a crucial factor to succeed. Several studies reported that SBTEs struggled in

their new role as second order practitioners even when professional development interventions were facilitated based on SBTEs' interests, needs, and experiences.

Different technological artefacts mediated the activities. Professional development involved broad variations in terms of the UBTEs, the PSTs, and their partner schools. Those SBTEs who were not supported in their schools highly appreciated meeting others who shared their interest in field practice.

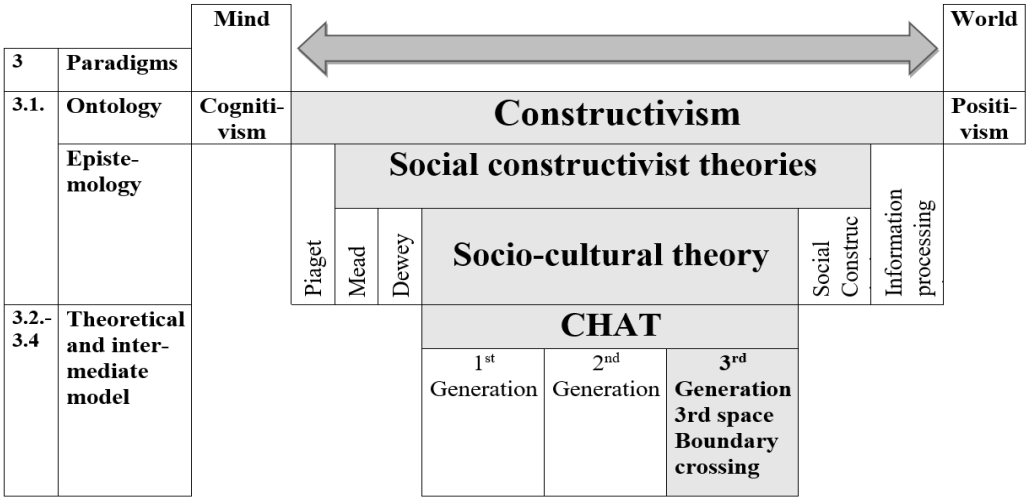
3. Theoretical framework

This chapter presents how the chosen paradigms and theoretical models as well as my own beliefs guided the project. First, presenting the study's paradigms will reveal my perception of reality (Postholm, 2019). Paradigms can be defined as 'a basic set of beliefs that guides action' (Guba, 1990, p. 17). The substudies were highly conceptual and related to practice, so there was little room for theoretical presentation and discussions. Therefore, the aim of this chapter is to make the assumptions of the study explicit and to clarify how the chosen theories have inspired and influenced the research process.

An overview of the study's theoretical paradigm is presented in Figure 1, and an overview of each subchapter is presented in the left column.

Figure 1

An Overview of the Theoretical Paradigms in this Study (Inspired by Prawat, 1996, and Postholm, 2019)



The chapter starts with a discussion of the overarching paradigms. I clarify the relevance of positioning the study under constructivism and social constructivist theories using the ontological and epistemological stances (3.1). Next, the *cultural-historical activity theory* is discussed as a theoretical model (3.2.), first with a brief presentation of the development of the sociocultural theory and then an in-depth presentation of the third-generation model. Following this, my understanding of the

shared object as a third space is clarified (3.3), and then the theories of boundary crossing are presented (3.4). The chapter ends with a summary (3.5).

Figure 1 illustrates how an overall worldview of theoretical paradigms was narrowed down to substantive theories. The study's positioning can be compared to a funnel: the ontological and epistemological perspectives capture the width, and several theories are included in the paradigm. As Figure 1 shows, the grey areas are the chosen theories in this study. Postholm (2019) stated that there is no clear line between ontology and epistemology; therefore, I have chosen to present these phenomena together in the first section.

3.1 Ontology and epistemology: Constructivism and social constructivist perspectives

My perception of reality is inspired by Leontév's claim that a situation can be described in different ways (Wertsch, 1981). This complexity is also reflected in the following quote: 'Experience, learning, knowledge, and the social are dynamic, intertwined and very difficult to untangle' (Ertsås & Irgens, 2021, p. 5). This indicates that development processes are dynamic, rather than static or uniform, which forms the backdrop for this dissertation's ontological and epistemological positioning. While *ontology* can be described as a researcher's view of reality, *epistemology* describes how a researcher knows or understands reality (Creswell & Poth, 2018). This study's ontological and epistemological viewpoints are grounded in my perception of reality, my beliefs, the activities I conducted during the research process, and how I present the results at the end of the process (Charmaz, 2014).

Grounded in a worldview that is neither objective nor predictable (Engeström & Sannino, 2010), it was natural for me to position this study under the ontological perspective of constructivism, with a social constructivist perspective as the epistemological paradigm (Postholm, 2019). Constructivism is expressed in various ways; I have chosen to adopt the same understanding as Prawat (1996) and Postholm (2019), as illustrated in Figure 1. The horizontal arrow on top illustrates that reality can be described as a continuum between the *mind* (cognitivism) and the *world* (positivism) (Wertsch, 1981).

The study's positioning under the social constructivist paradigm justifies its overall aim: the interpretations are based on how I perceive and understand the research

question this study strives to answer – that is, in what ways can the professional development of SBTEs promote collaboration between partner school and universities? – rather than striving to find 'the truth'. My objective was to gain insights into SBTEs' experiences, and the constructivist paradigm provided the opportunity to develop a broad and open-ended research question for this doctoral study (Creswell & Poth, 2018).

Similar to Postholm (2019), I believed that the participants would be active and responsible for their professional development and that they, along with the researcher, are capable of constructing meaning. The I-positioning in this section illustrates that my decisions affected the various phases of the research process. Creswell and Poth (2018) stated that researchers always bring their knowledge and experiences to a research study. During interactions with participants, being someone who has knowledge about the situation, *and* is part of the research activity, it is important to be aware of the researcher role (Denzin & Lincoln, 2011). The active researcher role is discussed in Chapter 4.1.3.

In addition to the researcher's role, the epistemological perspectives are also influenced by the context and history where the research is located. In this dissertation the context is understood as the arenas where activity takes place, both in concrete situations (such as the SBTEs' partner schools) and abstract activity (such as online participation). According to Wertsch (1981), knowledge and culture are tightly connected and continually evolving. Further, Engeström highlighted the importance of history by claiming that 'problems and potentials can only be understood against their own history' (Engeström, 2001, p. 136). Langdon (2017) reflected upon epistemological beliefs and what he described as an epistemological shift in teacher education. One example of this shift is when partner schools became equal learning arenas, as described in the Introduction. SBTEs no longer stand alone as being responsible for field practice. The conflict around what and whose knowledge counts, as Zeichner (2017) has reflected upon, also illustrates epistemological tensions. Is it what PSTs learn at partner schools or at universities that is most important?

The epistemological discussion revealed that complexity is a central aspect of the situation. To embrace this complexity cultural-historical activity theory (CHAT) was found as appropriate theoretical perspective for the study. The theory can capture the interaction between people's mental processes (mind) and circumstances (world). In

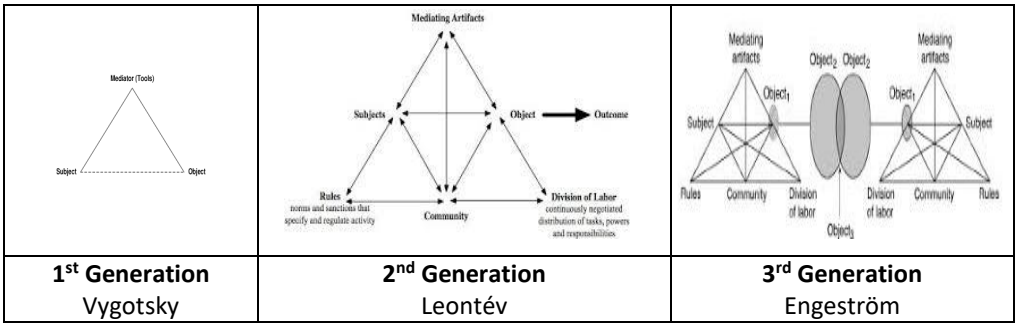
addition, the theory is suitable when trying to understand how coherence between universities and partner schools can be promoted, as presented in the introduction.

3.2 Cultural-Historical Activity Theory

CHAT provides the opportunity to study different forms of professional development processes and, according to Nardi (1996), can be used to capture the participants' views. In addition, Kuutti (1996) found CHAT to provide a useful theoretical background when studying social levels. As illustrated in Figure 2, CHAT has developed through three generations of research (Akkerman & Bakker, 2011a).

Figure 2

The Development of the Cultural-Historical Activity Theory



1st Generation Vygotsky	**2nd Generation** Leontév	**3rd Generation** Engeström

Vygotsky (1978) was the founder of the theory, representing the first generation. He emphasised that the mind develops through activity. The core of the theory was that a subject (which can also be a group of persons) works towards an object. Engeström (1995) described the object as 'a horizon of possible actions' (p.397). An activity's object provides the direction for the activity (Engeström & Sannino, 2010), and Leont'ev (1974) described the object as the true motive of an activity. The activity between the subject and the object is mediated by a tool or artefact, and the concept of mediation has been described as revolutionary in how it connects participants' activities to their surroundings (Engeström, 2001). Both Prawat (1996) and Vygotsky (1978) have described artefacts as dialectic with one's surroundings and stated that they should not be considered causal. In the studies discussed in Chapter 2, the interventions used are examples of different artefacts that mediated SBTEs' activities towards an object.

The first stage of professional development takes place in the space between people on an *interpsychological level.* Afterwards, it becomes part of individual and independent learning processes on an *intrapsychological level* (Vygotsky, 1978). As presented in the introduction, many SBTEs tend to be insecure in their roles. According to Vygotsky's theory, this insecurity might be a result of limited opportunities for SBTE to be active at the interpsychological level.

Leontév was a student of Vygotsky, and he transferred the ideas into what is featured as the second-generation sociocultural theory or CHAT. As illustrated in Figure 2, Vygotsky's triangular model was expanded to include context. Context in second-generation CHAT includes *rules*, *community,* and *division of labor* (Engeström, 2001). In this doctoral study, SBTEs were the subjects. Accordingly, the context involved government directions (rules) and PSTs (community). UBTEs could be associated with both the community and the division of labor, depending on their roles during field practice. Based on Chapter 2, the SBTEs who experienced close collaboration with their colleagues for field practice could be placed in the division of labor node, whereas SBTEs who felt alone and insecure around their colleagues played a more peripheral role, indicating that they were part of the community.

The third generation of CHAT builds upon the idea that learning occurs in a range of contexts and situations and is embedded in two or more activity systems (Engeström, 2001; Engeström & Sannino, 2010). Since the national guidelines for teacher education are clear about the responsibility shared between the two arenas, I decided to adopt the third-generation CHAT. The arenas represent two activity systems, as illustrated in Figure 2. Considering the focus on SBTEs' experiences, the second-generation model could also have been appropriate, but it would have reduced the symmetry and equality of the arenas. In the second-generation model, UBTEs would be part of the division of labor node, and the university context would be reduced to rules or community.

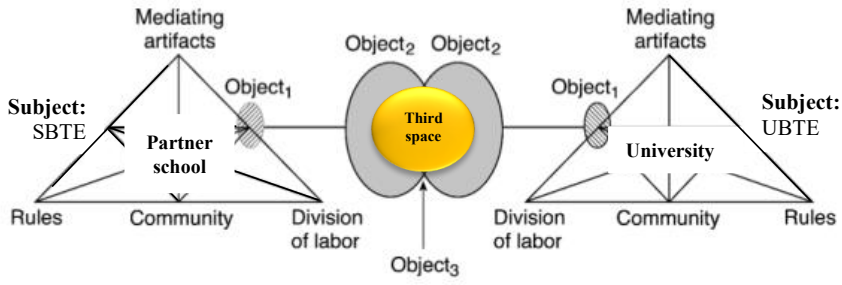
In this doctoral study, the context encompasses the second-generation CHAT, as described earlier, as well as the third space activity which will be elaborated upon next. All three generations of the sociocultural theory emphasise the object that subjects work towards. A crucial aspect of the third-generation CHAT is that part of the object is shared between the different activity systems; this is discussed in-depth in the following section.

3.3 The shared object as a third space

Partner schools and universities share the responsibility of teacher education. The two arenas can be illustrated as two activity systems. As described in the first-generation model of the sociocultural theory, the subjects within each of the activity systems act towards an object, (Engeström, 2001). A novel aspect of the third-generation model is that subjects, despite belonging to different activity systems, work towards a shared object. Figure 3 illustrates the activity systems involved in this doctoral study.

Figure 3

The Two Interacting Activity Systems in this Study (Inspired by Engeström, 2001, p. 136)



As the figure shows, different subjects work towards different objects. Object 1 is what Engeström (2001, p. 136) calls ‘raw material’. Object 2 represents a collective object, and Object 3 depicts the shared understanding that arises when subjects from different activity systems have a shared understanding of the activity. While Object 1 has a short-term perspective, the other two objects have longer perspectives. A collective object (Object 2) does not necessarily result in a shared understanding (Object 3) between the activity systems, as seen in the figure. A relevant example is the activity of mentoring PSTs. The ‘raw material’ in this study is what the SBTE does in short-term perspective, as for example a mentoring session reflecting upon the previous lesson. Object 2 can be ‘good mentoring’ in both activity systems, but the subjects from the different activity systems (e.g., SBTE and UBTE) may not necessarily have the same understanding of what ‘good mentoring’ is. Their shared understanding is Object 3. Throughout this thesis, the terms ‘shared understanding" and ‘shared object" are used

interchangeably to convey the same meaning. A shared understanding, illustrated by the yellow circle in Figure 3, is important to reduce the gap between the subjects involved in the activity systems and to develop a better quality of teacher education. The challenges presented in the introduction were exemplified by studies that presented limited shared objects between participants in field practice. For instance, Palazzolo et al. (2019) described field practice activities as involving someone who takes care of theory and someone who takes care of practice.

Objectives 2 and 3, which constitute goal-directed activities, emphasise the significance of mutual engagement and a shared vision in the context of development. As depicted in Table 2, Concept C underscores the importance of community membership and encapsulates the various terms mentioned earlier, thereby encompassing the diverse facets of a collective activity. To simplify the terminology, the term 'third space' will be further utilised to refer to communities.

In Figure 3, the third space is illustrated by the yellow circle between the two activity systems; the first space represents partner schools and SBTEs, forming the left triangle, while the second space to the right of the figure depicts university activities and UBTEs (Helleve & Ulvik, 2019). A third space consists of a hybrid activity wherein 'people's ideas and practices of different communities meet, collide and merge' (Engeström, 2005, p. 46). According to Zeichner (2010), successful third spaces involve actors with different competencies who are willing to merge their cultures. Third spaces raise the 'potential for dialogue, reflection and transformation, all of which are seen as key competencies for teacher professionalism.' (Emstad & Sandvik, 2020, p. 3). Through this hybrid activity, new knowledge might be developed (Helleve & Ulvik, 2019). 'Collaboration in third spaces means to create new roles for teacher educators focusing on student teachers' learning and deals with more than organization and reorganization of teacher education' (Helleve & Ulvik, 2019, p. 92). Therefore, it is important to go beyond merely facilitating information delivery, as some of the studies in Chapter 2 described. Tightly connected to third spaces is coherence, as presented in the Introduction chapter.

Equality and mutual confidence among the participants are important in third spaces (Helleve & Ulvik, 2019; Zeichner, 2010). Participants might have different contributions during the activity towards a shared object in a third space. It is important for teachers to be considered experienced and important contributors to such activities.

According to Engeström and Sannino (2010), teachers must not be seen as incompetent and having to develop competence. Although several of the SBTEs in this study were new teacher educators, they did not enter this role without any experience. They are employed as teachers, they have been PSTs, and most of them have experience with field practice at their partner schools. Their experiences indicate the importance of emphasising both history and culture in this study and of not isolating SBTEs without specific backgrounds.

Engeström and Sannino (2010) categorised the division of labor, or who the subjects participate with, into two groups: *horizontal* and *vertical*. While a horizontal activity involves tasks where participants are of equal status, a vertical activity reflects asymmetry in their positions. Although both vertical and horizontal activities are important across and within activity systems (Akkerman & Bruining, 2016), vertical approaches place less emphasis on participants as learners in a community. Instead, participants are described as peripheral or inexperienced (Akkerman & Van Eijck, 2013). Akkerman and Van Eijck (2013) claimed that vertical activity reduces participants' ability to be active in more than one activity system. An example in the context of this doctoral study is if SBTEs are not met in a third space as teacher educators, universities either treat them as strangers who do not belong there or the SBTEs do not understand that they are teacher educators and have colleagues who they can meet at universities.

Engeström (2001) emphasised that the intention of horizontal professional development is not to 'lift' participants to new vertical dimensions but to expand their knowledge. By using horizontal approaches, participants get opportunities to shift between different activity systems, with previous experiences and knowledge being central to their development (Akkerman & Van Eijck, 2013). As discussed in Section 3.1, horizontal learning processes involving active and engaged learners are positioned in a social constructivist perspective on learning.

Even if the space between the activity systems provides opportunities for growth (Akkerman & Bakker, 2011a), the participants face 'different, possibly conflicting, contexts and perspectives' (Akkerman & Van Eijck, 2013, p. 60). As shown by the bidirectional arrows in the CHAT triangle in Figure 3, all nodes interact with each other (Engeström, 1987) and are potentially imbalanced. Positive or negative loaded discontinuities, or imbalances, are described as *tensions* or *contradictions* that appear

when participants are involved in activity system(s) (Akkerman & Bakker, 2011a; Engeström, 2001; Engeström & Sannino, 2010). The two activity systems in this study represent different traditions that result in activities involving constant negotiations about what kind of expertise is most relevant (Daza et al., 2021). It is important to identify the contradictions because these indicate the points for development and the support that is needed (Akkerman & Bakker, 2011a; Engeström & Sannino, 2010). In Chapters 1 and 2, the tensions and contradictions revealed by previous studies on collaboration in field practice were discussed.

Imbalance is a prerequisite for professional development, and according to Engeström (2001) conflicts may lead to positive changes in the participants activity. Engeström and Sannino (2010) presented four forms of contradictions that promote development. The first consists of primary contradictions that take place within the subject, such as when SBTEs do not identify themselves as teacher educators (e.g. Helleve & Ulvik, 2019). The second involves contradictions between factors such as a subject and different artefacts; for example, this arises with technological challenges (e.g. Mathisen & Bjørndal, 2016). The third type of contradiction takes place between activity systems, such as when SBTEs perform dual roles (e.g. White & Berry, 2022). The last factor consists of contradictions between old and new practices, such as when the SBTE in Lammert et al. (2020) study deemed that the culture at her school was not as intended.

3.4 Boundary crossing

The overall aim of this study was to gain an in-depth understanding and further knowledge of how SBTEs' professional development can promote collaboration in field practice. The focus on professional development can be described using theories on boundary crossing (Akkerman & Bakker, 2011a). Boundaries are 'sociocultural differences between practices leading to discontinuities in action or interaction' (Akkerman & Bruining, 2016, p. 133). The definition is tightly connected to the contradictions and tensions discussed in the previous section. In sum, professional development is a result of boundaries that have been crossed (Tsui & Law, 2007).

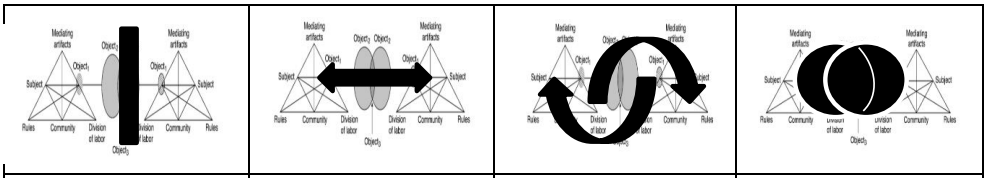
Boundaries constitute a complex and porous theoretical phenomenon (Akkerman & Van Eijck, 2013). Several terms, such as *boundary spaces* (Sewell et al., 2018) or *boundary zones* (Tsui & Law, 2007), are used to describe *where* an activity

takes place. Jakhelln and Postholm (2022) described the activity itself as *boundary work*. The results of the substudies shed light on boundary crossing in different ways. For instance, the SBTEs in Substudy 3 described their experiences of collaboration in the third space. The focus in Substudy 3 was the third space or Object 3 depicted by the yellow circle in Figure 3. In Substudy 3, boundary crossing was part of the SBTE role as teacher educators. Although the focus of Substudy 2 was also on the third space (yellow circle in Figure 3), the professional development process emphasised *becoming* an SBTE via an activity involving a mediating artefact (the OTPD programme in mentoring). Substudy 1 involved teachers' professional development (as first order practitioners) and, like Substudy 2, focused on boundary crossing through online professional development.

In Akkerman and Bakker´s (2011a) review, four learning mechanisms were identified as a result of boundary crossing: identification, coordination, reflection, and transformation (Figure 4).

Figure 4

Learning Mechanisms at the Boundary (Inspired by Akkerman and Bruining, 2016, p. 246)



Identification	Coordination	Reflection	Transformation

Identification leads to new knowledge related to the other activity system. Participants either legitimise the other activity system through coexistence, by justifying the differences, or by othering, which appears when activities of one system are defined in comparison to those of the other system (e.g., 'this versus that' or 'us versus them'). As a learning mechanism, identification indicates that practices are (re)defined in light of one another (Akkerman & Bruining, 2016). The SBTE in Palazzolo et al.´s (2019) study who wanted more information about what PSTs learned at university serves as an example of this learning mechanism.

Coordination is revealed through dialogue and cooperation between the activity systems with the intention of organising an activity with minimal friction (Akkerman &

Bakker, 2011a). Akkerman and Bruining (2016) claimed that coordination as a learning mechanism often appears in the first phase of a development process because connections are organised between the involved parts. An example of coordination arises from the dual role of SBTEs. As presented in the first two chapters, a recurring challenge is to coordinate the teaching and SBTE roles (e.g. Berg & Rickels, 2018).

The *reflection* learning mechanism involves participants forming perspectives of their own practices while considering others' viewpoints. Akkerman and Bruining (2016, p. 245) used the terms 'perspective making and perspective taking' to describe this learning mechanism. Several studies reviewed in Chapter 2 contain examples of development processes involving reflection, such as when SBTEs and UBTEs work together to respond to PSTs' learning processes.

Transformation 'leads to changes in practices or even the creation of a new in-between practice' (Akkerman & Bakker, 2011b, p. 3). Learning at the transformation level is desired because it is considered the most sustainable of all mechanisms (Akkerman & Bakker, 2011a). Akkerman and Bruining (2016) claimed that participants 'own' the process when using the transformation learning mechanism.

The situation, time, and perspective affect which learning mechanism takes place; therefore, the four learning mechanisms are not sequential or hierarchical, (Akkerman & Bruining, 2016). However, according to Hartmann and Decristan (2018), identification and coordination can stand alone, while reflection and transformation are mediated by the first two. Akkerman and Bruining (2016) claimed that the latter two mechanisms are direct results of the identification process. This indicates that identification is a prerequisite for the other learning mechanisms, apart from coordination, and more sustainable for professional development (Vesterinen et al., 2017). The four learning mechanisms presented above are not necessarily evenly represented across these levels (Akkerman & Bruining, 2016).

While Emstad and Sandvik (2020) used the term *boundary-spanning champions* to describe those who scaffold the activity between participants and, for example, the content in a programme, Akkerman and Bruining (2016) described the persons that manage to cross boundaries as *boundary brokers*. The literature in this area suggests that crossing boundaries is often challenging because it requires people to 'entering onto territory in which we are unfamiliar and, to some significant extent therefore, unqualified' (Suchman, 1993, p. 25) or 'face the challenge of negotiating and

combining ingredients from different contexts to achieve hybrid situations' (Engeström et al., 1995, p. 319). In addition, participants belonging to two or more activity systems might become strangers in both worlds (Akkerman & Van Eijck, 2013). This is a possible explanation for why SBTEs may struggle to become second order practitioners, as discussed in the Introduction.

A multilevel approach can provide 'a more nuanced description of how activity unfolds and how changes may or may not come about' (Akkerman & Bruining, 2016, p. 247). Boundary crossing can take place on the three different levels intra-personal, inter-personal, and institutional levels (Akkerman & Bruining, 2016). When boundary brokers 'embody' the boundaries, boundary crossing takes place on an *intrapersonal* level (Vesterinen et al., 2017). The ways in which SBTEs understand and implement knowledge are crucial for their professional development (Akkerman & Bruining, 2016). For example, the interventions described in Chapter 2 revealed SBTEs' experiences of developmental activities. Further, Substudies 1 and 2 both focused on teachers' professional development, making boundary crossing on an intrapersonal level central to these studies.

Boundary crossing on an *interpersonal* level occurs when people from different activity systems meet and establish a shared understanding of the activity with the intention of merging or changing their existing practices (Akkerman & Bruining, 2016). Boundary crossing on an interpersonal level was central to Substudy 3 because it examined SBTEs' experiences with collaboration in the third space. In Substudies 1 and 2, the participants' collaboration and their being part of a community were central factors.

Boundary crossing on an *institutional level* takes place when institutions develop and align their practices in third spaces (Vesterinen et al., 2017). As highlighted in the introduction, it is not enough for stakeholders to implement rules, such as the national decision of partner schools being mainly responsible for field practice. More than a decade has passed since school leaders became main responsible for field practice at the partner school, but as presented in the introduction many SBTEs still report that they stand alone for field practice at their partner school. Akkerman and Bruining (2016) claimed that boundary crossing on an institutional level requires boundary crossing on the other two levels. In addition, Akkerman and Bruining (2016) also stated that 'boundary crossing at an interpersonal level does not necessarily reflect boundary

crossing at an institutional level' (p. 248). Boundary crossing on an institutional level applies to all three substudies in this dissertation. In Substudy 1, the institutional level is, for example, represented by the designers and facilitators of the programmes. When describing their experiences in a third space, the SBTEs in Substudy 3 reflected upon how their partner schools and university organised field practice. In Substudy 2, the university was responsible for implementing and facilitating the boundary artefact. The new SBTE experiences became indicators of whether boundary crossing on an institutional level was successful.

3.5 Summary

This chapter presented the study's theoretical perspectives. The importance of context and history and the fact that a phenomenon can be described in multiple ways were highlighted to position the study under the constructivism and social constructivist paradigms. Further, CHAT was deemed appropriate to interpret the findings of the study and explain the complexity of SBTE professional development in promoting collaboration between partner schools and universities. The third-generation sociocultural theory, which emphasises the shared object in third spaces, is a suitable theoretical lens for explaining and illustrating the study topic in this doctoral project. CHAT also makes it possible to explain coherence in teacher education.

Horizontal and vertical divisions of labor exemplify how professional development can be facilitated; of these, a horizontal approach is preferred to meet SBTEs' experiences, needs, and interests. In an activity towards an object, when striving for professional development, tensions and contradictions may arise. It is important to gain insights into what these tensions are to support the need for development. Professional development processes happen through boundary crossing. Four learning mechanisms can take place during boundary crossing: identification, coordination, reflection, and transformation. Boundary crossing takes place on three different levels: intrapersonal, interpersonal, and institutional. These different levels and mechanisms can be used to understand how and where development occurs and where to direct further attention if participants should be scaffolded in their development processes.

4. Methodology

This chapter discusses the study's methodological considerations and procedures. Table 4 outlines the methodology of the study.

Table 4 *An Overview of the Methodology*

	Research question(s)	*In what ways can professional development of school-based teacher educators promote collaboration between partner schools and universities?*		
		S1: *What does previous research reveal about teachers' formal online professional development*?	**S2:** ***I:*** *How do new school-based mentors experience an OTPD in mentoring to develop in their new roles?* ***II:*** *How does an OTPD programme serve as a boundary artefact for new school-based mentors' professional development?*	**S3:** *I: How do school-based teacher educators experience collaboration in teacher education?* ***II:*** *Which arenas are teachers given for professional development in their role as school-based teacher educators?*
4.1.	**Research design**	Qualitative-dominant mixed methods case study		
		Scoping review	Case study	Case study
4.1.1.	**Cases**	Experiences of professional development		
		Teachers' experiences of participating in formal OTPD programmes[4]	New SBTEs' experiences of participating in an OTPD mentoring programme	SBTEs experiences of collaboration in teacher education
4.1.2.	**The context**	SBTEs at one university		
		Studies presenting international formal OTPD programs	New SBTEs activity when participating in an OTPD programme in mentoring.	Field practice activity
4.1.3	**Researcher´s role**	Researcher on the sideline	Interactive researcher	A mix of being on the sideline and an interactive researcher
4.1.4	**Sampling**	52 peer-reviewed empirical articles written in English, published between 2015 and 2019	New SBTEs participating fulfilling an OTPD programme (n = 21)	SBTEs from two programmes at one university (n = 242). New SBTEs in an OTPD programme (n = 21)
4.2.	**Data collection**	Scoping review. Database searches: August 2019; additional search May 2020. Inclusion and exclusion criteria	Reflective diaries: August 2019–July 2020	Survey: April–May 2020 Reflective diaries: August 2019–July 2020
4.3.	**Data analysis**	Analysing the overall research question: abductive approach		
		Constant comparative approach, abductive analysis	Constant comparative approach	Descriptive statistics analysis Constant comparative approach
4.4.	**Trust-worthiness**	Inclusion and exclusion processes. Constructing knowledge based on published studies with coresearcher	Constructing knowledge with the participants	Constructing knowledge using qualitative and quantitative data with coresearchers.
4.5.	**Ethics**	The reviewed studies and the researcher's ethics	Participants' ethics	Participants' ethics

[4] Substudy 1 is not defined as a case study, but in the column, the study´s scope is written to illustrate that all three substudies are focusing on participants experiences.

Positioning the study in a social constructivist paradigm and using CHAT and boundary crossing as the main theoretical frameworks influenced all phases of the methodological framework: the design, data collection, and data analyses. It has also been central when discussing the study´s trustworthiness and ethical considerations. First, the research design and methods chosen are justified (4.1), before the data collection approach is presented (4.2). Third, the data material is compared and contrasted for the analysis (4.3), and then the study´s trustworthiness (4.4), and ethical considerations (4.5) are discussed. The chapter ends with a summary (4.6).

4.1 Research design

The study's research question provides the direction for determining an appropriate research design (Creswell & Plano Clark, 2011; Krumsvik, 2014). A research design can be described as involving 'procedures for collecting, analyzing, interpreting, and reporting data in research studies' (Creswell & Plano Clark, 2011, p. 53). This study followed a qualitative-dominant mixed methods case study design positioned under a constructivist paradigm. In the current section, the context about field practice in Norwegian teacher education is presented (4.1.1), before the mixed methods case design is justified (4.4.2). Because I was central in developing and facilitating the OTPD programme, I chose to discuss the researcher role (4.1.3) before the sampling procedure is presented (4.1.4). As presented in Chapter 3, the study context is important to the social constructivist paradigm as well as CHAT. Therefore, the following section contextualises field practice in Norwegian teacher education and presents an overview of the current guidelines.

5.1.1. The context: Field practice in Norwegian teacher education

Looking at the national context, the Norwegian government decided in 2010 that teachers should have at least 15 ECTS credits in mentoring to qualify as SBTEs (Ministry of Education and Research, 2010a, 2010b). This requirement was introduced because of the argument that being an SBTE for a PST differs from being a teacher. The formal mentoring education system is 'unique in the European and international context' (Smith & Ulvik, 2014, p. 265). SBTEs receive financial support from the Norwegian government to undergo mentor education (Ministry of Education and

Research, 2015). As running a partner school takes time and effort, school principals get money from their affiliated university.

In 2017, master's education programmes were implemented for teachers at the primary (Years 1–7) and lower secondary (Years 5–10) schooling levels (UHR, 2016a, 2016b). This reform mandated a minimum of 115 days of field practice over the course of five years. Learning outcome descriptions provided direction for the assessment of PSTs, with fail or pass results assigned after each year.

National guidelines provide direction for both the content and organisation of Norwegian teacher education. *Regulations relating to the framework plan for primary and lower secondary teacher education 1–7* (UHR, 2016a), *Regulations relating to the framework plan for primary and lower secondary teacher education 5–10* (UHR, 2016b), and *Teacher education 2025* (Ministry of Education and Research, 2017) were the three most relevant documents for this dissertation. The first two documents provide guidelines for teacher education programmes for PSTs at the primary and lower secondary schooling levels.

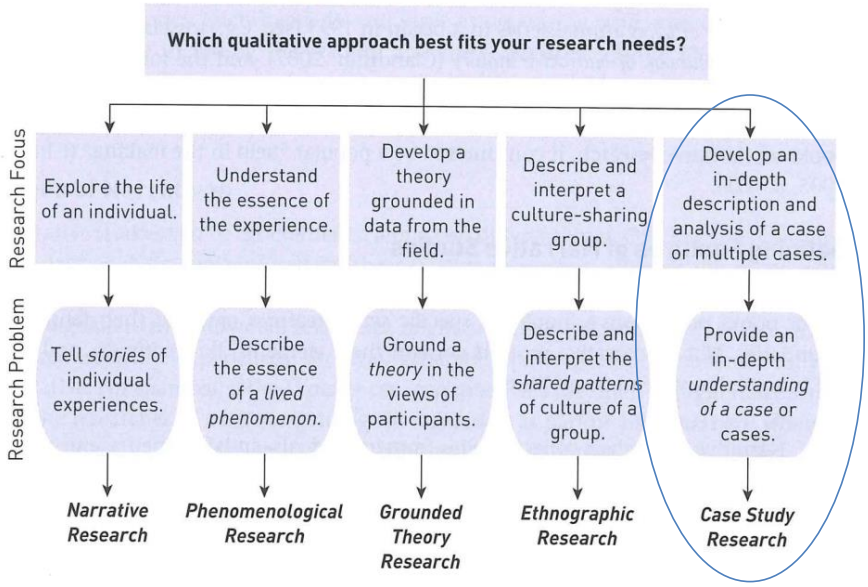
In brief, the guidelines provide information about the overarching organisation of the programmes and subject-related content for universities to adopt. The guidelines highlight that field practice should be integrated into all university subjects (UHR, 2016a, 2016b). Dahl et al. (2016) and the Ministry of Education and Research (2017) claimed that the the national guidelines limit the autonomy of universities. Therefore, they have suggested that the guidelines should be reduced, allowing universities and partner schools to take up the responsibility of organising developent programmes for PSTs.

5.1.2. A case study design

A research study can take various forms depending on the choice of design, as presented in Figure 5, in which five different qualitative approaches are illustrated based on the research focus and research problem (Creswell & Poth, 2018).

Figure 5

*A Flowchart for Assessing Fit of Five Qualitative Approaches with Various Research Needs (Creswell & Poth, 2018, p.67)**



*I have added the circle

The present study has aimed to explore SBTEs' experiences and answer the following research question: *In what ways can the professional development of SBTEs promote collaboration between partner schools and universities?* With this research question, a case study was found to be the most appropriate. According to Hyett et al. (2014), clarifying the study's ontology, epistemology, theoretical and methodological positioning are important when conducting a case study. A case study can be explained as 'a study that investigates a contemporary phenomenon in depth and in its real-world context' (Yin, 2014, p. 237). Miles and Huberman (1994) describe that defining the case is the 'heart' of the study, and by defining the case, the researcher is 'bounding the territory' (p. 25).

In case studies it can be challenging to bounding territory, or to decide the frames like time, place, and activity (Creswell, 2013). In the present doctoral study, the context has been limited to experiences situated within a school year and SBTEs located at their workplace. Choosing SBTEs at one university provided an opportunity to gain

in-depth insights into their situations. Although including SBTEs from other teacher education programmes or universities could have provided valuable perspectives, focusing on a real-world context that the researcher was familiar with was deemed the most interesting. Despite being limited to a single university, the fact that the two teacher education programmes had SBTEs located in about 100 partner schools during the study presented an opportunity to gain insights into the contextual complexities suitable for case studies, as Yin (2014) suggests.

Table 4 presents an overview of the different cases, methods and samples chosen to answer the overall research question. To address the critique against case studies regarding the challenge of measuring quality (Yin, 2009), the researcher followed the recommended criteria for case study research. This included identifying the case and developing theory simultaneously because theory development gives direction for the design and research question. The theory development, which has been presented in the first three chapters of the present thesis, was informed by previous studies, national guidelines, and the researcher's own experiences, and formed the backdrop for the study. The case in this doctoral study is classified as an abstract case, specifically 'experiences of professional development', as noted by Yin (2014). Simultaneously with identifying the case, I started to develop theory, which Yin (2009) highlight as important because it gives directions for the design and research question. Theory development became more important because of the abstract case.

In line with Schoonenboom and Johnson (2017), different cases can address different parts or perspectives of a doctoral dissertation. Qualitative and quantitative data can be mixed in a case study if doing so is the best approach to answering the research question (Schoonenboom & Johnson, 2017; Walton et al., 2020). 'The primary reason for mixing the methods, of course, is to improve the quality of the evidence.' (Stake 2010, p.125). Considering the purpose of this study, a mixed methods design was deemed the most appropriate approach (Schoonenboom & Johnson, 2017; Tashakkori & Teddlie, 2009).

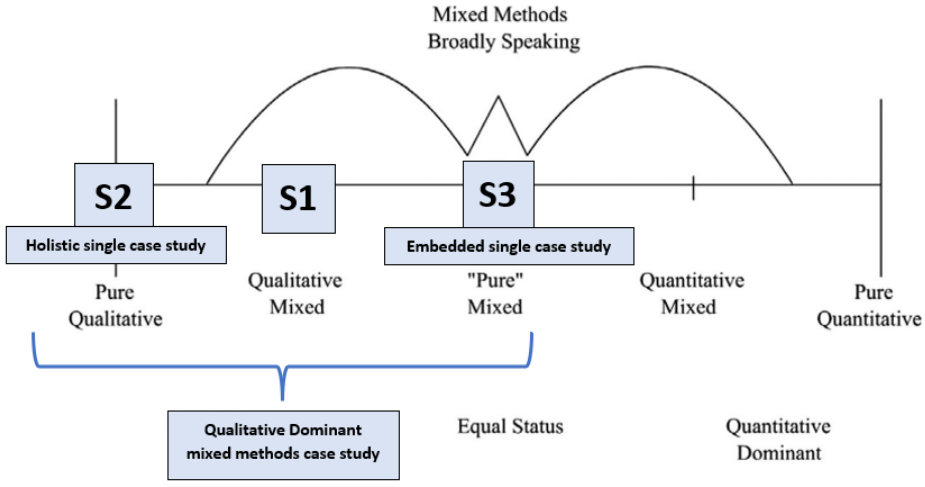
> Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. (Johnson et al., 2007, p. 123)

Combining quantitative and qualitative data provided the opportunity to explore the depth and breadth of the research area (Tashakkori & Teddlie, 2009; Walton et al., 2020). While a quantitative design reveals that *something happens* in a large sample, a qualitative design strives to explain *how* it happens in smaller samples (Krumsvik, 2014).

Walton et al. (2020) explained the importance of determining the aspects that can be explored qualitatively and measured quantitatively when designing a study. A mixed methods design was chosen for this doctoral study with the intention of 'comparing different perspectives drawn from quantitative and qualitative data' (Creswell & Creswell, 2018, p. 216). Johnson et al. (2007) stated that a mixed methods research design can be explained as a continuum instead of a neither–nor or dichotomous distance between the two approaches, as illustrated in Figure 6.

Figure 6

A Graphic of the Doctoral Study Positioned in the Mixed Methods Continuum (Based on Johnson et al., 2007, p. 124)



As Figure 6 illustrates, the components of the substudies come together to answer the main research question and provide a holistic picture of the research topic (Tashakkori & Teddlie, 2009). The figure also shows why this study can be described as a qualitative-dominant mixed methods case study (Creswell & Plano Clark, 2011; Tashakkori & Teddlie, 2009; Walton et al., 2020). As seen in Figure 6, although the

study followed a mixed methods research design, the substudies did not give 'equal status' to both qualitative and quantitative methods, which Johnson et al. (2007, p. 123) discussed as unproblematic. However, despite the dominance of qualitative methods, both approaches interacted throughout the research process.

The textboxes illustrate the cases and how the different substudies are positioned in the mixed methods continuum. Substudy 1 focuses on teachers experiences of participating in formal online professional development programmes, and 52 studies were included to answer the research question. The design of Substudy 1 is a scoping review, and I have chosen not to define it as a case study. Further, the study can be described as qualitative-dominant mixed methods because the scoping process, where studies were included or excluded involved a combination of qualitative and quantitative approaches. In addition, both quantitative and qualitative strategies were used during the analysis in Substudy 1.

In the following section, I describe the two other substudies by presenting their cases and contexts. The participants in Substudies 2 and 3 were SBTEs representing two teacher education programmes at the same Norwegian university. Substudy 2 included only the new SBTEs, while Substudy 3 included all the SBTEs involved in the two programmes.

The case in Substudy 2 concerns SBTEs' experiences when participating in an OTPD mentoring programme. The research case in the present study was a *qualitative holistic single-case study* because the sample was a small, specific group of SBTEs who volunteered to participate in an OTPD programme (Yin, 2009). The OTPD programme was considered the central boundary object, while the activity surrounding it was the context of the study. Initially, during the entire school year when the SBTEs were enrolled in the OTPD programme, the research design for Substudy 2 was unclear. At the beginning, when there were 59 SBTEs enrolled, a holistic multiple-case design was the goal (Yin, 2009). As the programme progressed, however, it became apparent that a multiple-case design was not feasible for three reasons: the high rate of dropouts, the unanticipated failure of online collaboration, and some participants completing the programme as a process only at the end of the year. As a result, a holistic single-case study design was the most suitable. By focusing on those participants who completed the programme and treating them as a unit, ethical criteria, such as anonymity, were also met.

While the case in Substudy 2 were the SBTEs experiences, the context was an OTPD programme designed as a continuing education course without credits. The overall purpose was to facilitate SBTEs' professional development within a community and address the challenges detailed in Chapter 1. Because the intention of the OTPD programme was to facilitate professional development for the participants, it can be described as an intervention (Krumsvik, 2014). Studies have identified theory as a strong predictor of an SBTE's identity (e.g. Sandvik et al., 2019); accordingly, the OTPD programme consisted of theories and recent research, with Klemp and Nilssen´s (2018) book as the main resource.[5]

Relevance, flexibility, and an opportunity for the participants to establish connections have been highlighted as important for teachers' OTPD, so these served as the main goals when designing the OTPD mentoring programme. The need for a facilitator who could scaffold the processes was also considered. As the facilitator, I was personally responsible for the physical start-up seminar. In the autumn of 2019, I was concurrently involved in two processes: reading the included studies in Substudy 1 and facilitating the OTPD programme. The significance of the facilitator's role became apparent as I read the included studies. One example of how the processes affected the online programme was that I decided to become more actively involved in the SBTEs' OTPD processes. When I started the OTPD programme in August 2019, my intention was to facilitate the start-up seminar and ensure that the SBTEs' further professional development would take place without me. The studies in the scoping review emphasised the crucial role of the facilitator, which I also soon realised was important in the OTPD programme that I facilitated. Therefore, I contacted the participants during the school year, both to obtain insights into potential challenges in their OTPD and encourage them for further activity with the programme. In addition, I opened up for answering questions. This is discussed in depth when reflecting on the researcher's role in section 4.1.3.

Inspired by Reinhardt (2017), dynamic processes were favoured over static models during the programme. This could be seen in the tasks given at the end of each module; the participating SBTEs could choose what they wanted to reflect upon.

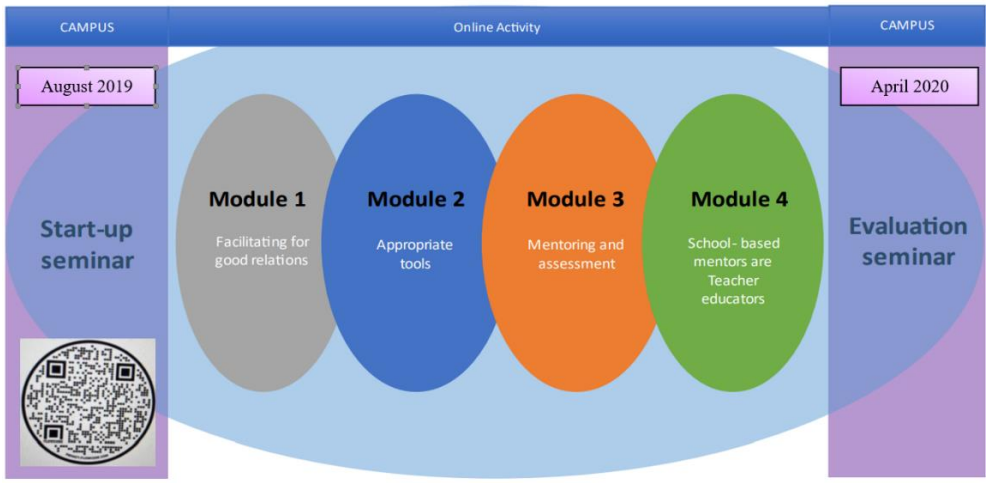
[5] English translation: *Field practice in teacher education* (own translation)

Throughout the study, I made decisions related to content development and design based on the reflections and inputs of experienced colleagues.

As Figure 7 illustrates, the OTPD programme followed a blended mode of instruction. Two physical seminars on the university campus were supposed to be held at the start and end of the school year. Over the course of the year, the new SBTEs worked on four online modules. Participation in the physical seminars was mandatory, whereas the modules were voluntary.

Figure 7

The OTPD Mentoring Programme for New SBTEs



As shown in the figure, the modules were designed according to different contents. At the startup seminar, the participants were introduced to the overall aims of field practice. As Baran and Cagiltay (2010) emphasised, being part of a community is crucial for professional development. Therefore, the startup seminar was important for establishing relationships between the participants. The participants were divided into groups within which they had to work online during the school year.

According to White and Forgasz (2017), participants must be given opportunities to reflect on and discuss authentic examples tightly connected to their practice. Therefore, the modules combined Klemp and Nilssen´s (2018) theory with relevant research. Module 1 focused on the importance of facilitating good relations,

and Module 2 presented the most important tools for the same, such as observation and writing reflective diaries. Module 3 focused on mentoring and assessment, and Module 4 highlighted that SBTEs are teacher educators and that their schools are partnered with the university.

Each module began with individual work, following which the participants met online in small groups to discuss the assignments. After the completion of each module, the participants wrote their individual reflective diaries, connecting theory from the module with experiences from their new role. These diaries were used as data materials and are further discussed in Section 4.2.2. The estimated time for each module was four hours. The department where this study is located wanted to use the feedback from the participants for further development of the OTPD programme; therefore, the department leaders decided to pay those SBTEs who fulfilled the OTPD programme requirements. The evaluation seminar was cancelled because of COVID-19.

Substudy 3 comprises two samples, but it can be considered a single case because of the participants working in different partner schools while still being associated with teacher education programmes at one university. Initially, only the survey was planned as the data source for Substudy 3, but during the parallel work with Substudy 2, it was found that including the reflective diaries could also assist in addressing the research questions of Substudy 3. Integrating the reflective diaries provided a broader understanding of SBTEs' experiences. Thus, the design of Substudy 3 could be described as an embedded single-case design (Yin, 2009), with equal emphasis on the qualitative and quantitative data by conducting a mixed methods study (Schoonenboom & Johnson, 2017) to prevent bias towards one of the subunits.

Case studies are appropriate when 'the boundaries between phenomenon and context are not clearly evident' (Yin, 2009, p. 18). Furthermore, Yin (2014) notes that a case study design is preferable when the researcher has limited control over an event, or the research focus has a real-life context. The constructivist paradigm allowed for choosing a *partly planned* and *partly emergent* design (Creswell & Plano Clark, 2011; Schoonenboom & Johnson, 2017). The advice 'to be prepared for the unexpected' (Schoonenboom & Johnson, 2017, p. 122) was important for the study's design: in addition, when making adjustments to the design of Substudies 2 and 3, the flexibility became especially important with the occurrence of COVID-19. As described above, I

also needed to change the design because of the withdrawal from the OTPD programme and because the participants' online activity did not take place as intended.

The single cases in Substudies 2 and 3 were important components in this doctoral study. I do not think using a single-case design, which represents something specific without breadth, has been a challenge when answering the overall research question. 'Case studies can cover multiple cases and then draw a single set of 'cross-case' conclusions' (Yin, 2009, p. 20). I believe that cross-case conclusions and the abductive processes used when analysing the overall research question (4.3.3) can be broadly understood as the same concepts. Additionally, single-case studies 'can represent a significant contribution to knowledge and theory building' (Yin, 2009, p. 47). The scoping processes in both Substudy 1 and Chapter 2 show that the single cases in Substudies 2 and 3 were important contributors to knowledge development because it added valuable insight, which for example could be compared with previous studies. Choosing a longitudinal design in Substudy 2 also strengthened the study's quality (Yin, 2009).

5.1.3. Researcher's role

Historically, 'good' research has been connected to a neutral researcher who treated the data with objectivity. However, because the researcher's background and interests formed a central part of the process—as presented in Section 3.1—and the social constructivist paradigm was adopted, there was no intention to strive for neutrality and distance. An 'social constructivist approach to qualitative case study research supports a transactional method of inquiry, where the researcher has a personal interaction with the case' (Hyett et al. 2014, p. 2). Positioning under a social constructivist paradigm and using CHAT as the theoretical framework gave me the opportunity to take an active role in the research process. Inspired by the constructivist tradition, the results of the current study present the researcher's perceptions of reality, not reality in and of itself (Postholm & Jacobsen, 2018). '[Q]ualitative research is interpretative research; the inquirer is typically involved in a sustained and intensive experience with participants' (Creswell & Creswell, 2018, p. 183). Denzin and Lincoln (2011) described the active researcher as one who has knowledge about the situation *and* is part of the research activity, which is an advantage.

Similar to the SBTEs, I also had a dual role: I conducted research on the same programmes that I work on. Therefore, my perspective was that of a *university-insider*. In addition, I also have experience in being a *university-outsider* because I worked as a teacher in primary and secondary school for 15 years. Throughout the research process, the outsider perspective – that is, knowledge about the everyday situation of teachers – was important. However, the role of a university-insider made it possible for me to gain insights into the experiences of SBTEs participating in the third space as teacher educators (Jackson & Burch, 2019).

A strength of the present doctoral study is that the design of the substudies gave me opportunities to take on different researcher roles. A scoping review does not involve active participants. Therefore, my role in Substudy 1 can be described as that of *a researcher on the sideline* (Postholm & Skrøvset, 2013). Being positioned in the research field might challenge awareness of the unexpected during the research process (Postholm, 2019). Therefore, I have tried to be aware of my own position and preconsumption during all of the research processes. In Substudy 2, I undertook the role of an *interacting researcher* (Postholm & Skrøvset, 2013). This role was appropriate because I strove to be open to the participants' feedback and prepared for unexpected events, as Postholm and Skrøvset (2013) suggest. Substudy 3 involved a combination of these roles. When collecting data from the survey, I held a sideline position, but when obtaining the qualitative material in the reflective diaries, I was in an interacting position.

As the creator and facilitator of the OTPD programme, I intended to reduce or bridge the gap between SBTE as first and second order practitioners, as well as the gap between the two arenas sharing responsibility for teacher education. Thus, the intention was to facilitate a shared understanding in the third space. Since I was responsible for the OTPD programme, the relationship between me and the participants was vertical in nature. However, I tried to use a horizontal approach when listening to their interests and needs (as explained in Section 3.2). From the CHAT perspective, my researcher position can be described as a boundary broker (Jackson & Burch, 2019) or boundary spanner (Emstad & Sandvik, 2020).

Due to my position as an interactive researcher, it was neither possible nor of interest to eliminate the researcher's influence in this study (Postholm & Jacobsen, 2018; Postholm & Skrøvset, 2013). An awareness of the researcher's role is important

for study quality, and therefore I needed to be aware of my philosophical assumptions and how they could affect the study design. As someone working with field practice at the university, I had prior knowledge of the context, and as I explained in section 1.2, my motivation for conducting the present study was clear. This familiarity with the context made it easier for me to scope the study and envision how it could contribute to improving field practice. However, the research period also broadened my understanding of the topic and research quality. One of the strengths of a doctoral study is that it spans several years, allowing for reflection and distance from the research.

Being a novice researcher in this field has also influenced the research process. At times, I have felt unsure about the quality of different processes and may have found myself repeating certain steps. However, these insecurities have also prompted me to be more careful and avoid relying on preconceptions or biases when analysing the data. Therefore, I believe that my experiences with these processes have ultimately strengthened my studies. For example, to get the needed distance, as highlighted in different places in this thesis, I took notes throughout the study. These memos helped me throughout the process. Ortlipp (2008) states, '[k]eeping and using reflective journals enabled me to make my experiences, opinions, thoughts and feelings visible and an acknowledged part of the research design, data generation, analysis and interpretation process' (p. 703). I discovered that notetaking was particularly crucial because it allowed me to move back and forth in my comprehension, not only as a researcher, but also as someone accountable for field practice at the university.

Postholm and Skrøvset (2013) emphasise the importance of honesty in research processes. One way I strived for honesty was through transparent descriptions of the research design and developing thick descriptions. I found these processes to be straightforward. However, I faced challenges regarding the potential impact of my role as a researcher on participants in Substudies 2 and 3. The interactive role I played in Substudy 2, where I spent a whole day with participants at the beginning of the school year, may have influenced subsequent processes. Despite this potential impact, the participants in the OTPD programme highlighted the importance of the facilitator role in their professional development. They gave both positive and negative feedback, indicating that they felt comfortable sharing their thoughts with me. I believe they viewed me more as a facilitator who could assist them in their development than as a researcher evaluating them. Although many SBTEs withdrew from the programme, it

seems like their reasons were not related to my role. Similarly, with the survey, the participants provided constructive feedback on their experiences, and I believe they saw me as 'someone responsible for field practice'. However, I cannot be certain if their feedback was entirely honest.

4.1.4. Sampling

The mixed methods case study approach enabled me to explore the depth and breadth of SBTEs' professional development, which is in line with Schoonenboom and Johnson (2017) and Tashakkori and Teddlie (2009) explanations of this apporach. A sample can be understood as a set of subjects or informants from a larger population, and '[a]ll sampling is done with some purpose in mind' (Lincoln & Guba, 1985, p. 199). A sample of participants is typically determined to enhance understanding of the study's research problem (Creswell, 2013; Postholm, 2019). Different sampling strategies were found to be appropriate for answering the research question in the present doctoral study.

The study sample consisted of SBTEs with the dual role of being SBTEs for PSTs and teachers for students in primary and lower secondary schools. The substudy samples were selected using three sampling strategies. First, to obtain an overview of relevant research on teachers' OTPD via formal programmes, the sampling strategy in Substudy 1 involved a *scoping process* guided by a set of inclusion and exclusion criteria; 52 relevant studies were found eligible (Arksey & O'Malley, 2005). In a scoping review, the sampling process and data collection are tightly connected; the process is further described in 4.2.1.

Second, the participants in Substudies 2 and 3 were limited by time and place; the SBTEs were employed in the same department. Because all SBTEs in the two programmes were asked to participate, a *homogenous sampling* process was adopted in these studies (Tashakkori & Teddlie, 2009). In Substudy 3, the SBTEs involved in the two programmes at a single university (N = 372) received an email with an invitation to participate in the survey. In total, 248 (66.7%) SBTEs answered the survey for evaluating the school year. Of them, 242 (65.1%) agreed that their responses could be used. In Substudy 2, the sample was narrowed down to all new SBTEs in the same programmes. Specifically, 97 new SBTEs participated in the physical start-up seminar

(N = 97), and 59 of them participated in the programme; among them, 21 fulfilled the programme requirements (n = 21).

Third, my intention was to focus on those who completed the programme, not all 59 who participated in it. Because of the selection, *purposeful sampling* was used in Substudy 2 and the second sample in Substudy 3 (Creswell & Poth, 2018; Tashakkori & Teddlie, 2009). Table 5 gives an overview of the participants (numbers 1–59) in the top line and the six reflection logs in the left column.

Table 5

Participants in the OTPD Programme

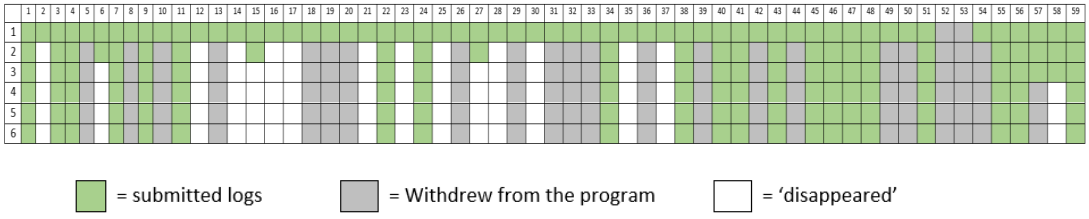


Table 5 shows the submission of the reflective diaries (coloured green). The grey colour reveals when the SBTE withdrew from the programme, the white colour shows when and which of the participants became silent.

All except two SBTEs wrote reflection diaries after the start-up seminar (reflection diary 1). Those who did not send in their diaries obtained information from the university the day after the start-up seminar that they would not get any PSTs that school year. Hence, they lost their motivation and chose to withdraw from the OTPD programme. Other SBTEs who received the same information some weeks later also withdrew before they started with the first module (reflection diary 2). Other reasons for withdrawing were personal situations or factors at their partner school taking too much time. These participants felt they could not prioritise the online activity 'coming on top' of already busy and chaotic days.

Even if most of those who withdrew sent me an email where they explained their situation, as many as 16 participants did not respond to my emails. If fewer individuals had signed up to participate, this high number of participants withdrawing or becoming silent could have caused problems. I decided to focus on those who went through the

study; therefore, the dropouts did not become a problem. However, I must admit that I had hoped for a larger number of participants. It is interesting that the dropout was this high, even if I, in the role as facilitator, strived for building relations with the participants at the start-up seminar and sent several reminders during the school year while also trying to scaffold their development processes. This finding indicates that the participants' context or personal situation is crucial for professional development, regardless of the presence of an active facilitator.

4.2 Data collection

In line with the mixed methods case study design, I collected data from multiple sources to achieve an in-depth understanding of the activity/phenomenon being studied (Creswell, 2013). According to Creswell (2015), the use of different data collection methods and the integration of different types of data and their results constitute strengths compared with the use of a single method. The data were collected using what can be described as *between strategies*, which 'involves the gathering of both QUAL and QUAN data using more than one data collection strategy […].' (Teddlie & Tashakkori, 2009, p. 2018). The between strategies formed the backdrop for why I chose to collect different data, and in this section, the data selected to answer the research question are presented. This section is organised according to the timeline of the data collection process to discuss the scoping review (4.2.1), reflective diaries (4.2.2) and survey (4.2.3). After each of the sections, the limitations of the chosen data collections are discussed.

5.1.4. The scoping review

A scoping review is a retrospective process of mapping existing studies and is appropriate when examining studies within educational research (Arksey & O'Malley, 2005; Krumsvik & Røkenes, 2019; Major et al., 2018). Systematic reviews 'follow a structured and predefined process that requires rigorous methods to ensure that the results are both reliable and meaningful' (Munn et al., 2018, p. 2). For example, the predefined process involves developing a search protocol before the search starts, and during the search process this protocol is the starting point for the entire review process. Scoping reviews are useful for mapping the breadth and depth of a field of literature, and they follow systematic, transparent and replicable procedures (Levac et al., 2010).

Even if the procedures are similar processes when conducting systematic reviews, a scoping review does not have the same requirements for assessing bias (Munn et al., 2018). Scoping processes have been criticised for their focus on the breadth of studies rather than evaluating their quality, which is in contrast to methods such as systematic reviews. Inspired by systematic reviews, I used Critical Appraisal Skills Programme (CASP) (2018) to assess the quality of the study (Attachment IX). Even if CASP was developed to assess qualitative research, it also worked out for the other included studies. The 209-page CASP document helped us sort out and obtain an overview of the studies and the upcoming analysis.

For the reviews in Substudy 1 and Chapter 2, the five steps given by Arksey and O'Malley (2005) were followed. First, the research question and relevant studies were identified. This process was done through inclusion and exclusion criteria, as presented in Table 6.

Table 6

Inclusion and Exclusion Criteria in Substudy 1 (Based on Røkenes and Krumsvik, 2014, p. 256)

	Inclusion criteria	Exclusion criteria
Databases	ERIC, Web of Science, Scopus, Ebscohost	Other databases
Time frame	2015–2019	Articles published before 2015 and after 2019
Publication type	Peer-reviewed articles	Not peer-reviewed articles
Methodology	Empirical studies with primary focus on in-service teachers online working	Not peer-reviewed articles focusing on other aspects, e.g., conceptual papers, reviews
Activities	Blended/ digital learning	Not digital
Language	English	Other languages
Target teaching level	In-service teachers	Students, pupils, other groups of workers, teachers in higher education
Spaces	Formal learning situations	Informal learning situation
Purpose of the study	Personal professional growth	Other benefits/results

Two former reviews gave inspiration during the process: Lantz-Andersson et al.'s review from 2018 focused on formally organised and informally developed professional learning groups, Macia and García's review from 2016 analysed informal online communities as a source of teacher professional development. The time frame in Lantz-Anderssons' review was 1996–2016. Because they had reviewed the literature until 2016, we chose to limit the time frame to five years (2015–2019). A limited time frame was important because we were only two researchers, where one was new to the methods and the time was limited; it was important to be able to manage the number of

included studies. Another important factor for choosing the time frame was that the development of online tools and systems is rapidly changing, so we decided that the newest studies would yield the most important results. A critique of limiting the searches to studies published from 2015 onwards is that relevant studies published before 2015 were not included and important results might have been lost. However, Lantz-Andersson's study summarised previous studies.

The purpose of the first phase of the study was to get an overview of SBTEs' professional development via formal OTPD programmes. However, initial database searches revealed that there was a lack of relevant studies in this focus area. To gain more knowledge on the research topic, a scoping review of formal OTPD programmes for teachers' professional development was conducted. Attention was paid to teachers in schools rather than to teachers at universities, considering that SBTEs are located at their partner schools. The scoping process was conducted in collaboration with the coauthor and university librarians. Then, the studies were selected, and the data were collected. The results were then collated, summarised, and reported.

Boote and Beile (2005) and Maxwell (2006) have suggested that scoping processes should be performed collaboratively because doctoral students need training in understanding and searching for published studies. The coauthor and I worked together throughout this process, and the librarians suggested relevant databases, provided feedback on the search terms, and conducted the database searches. With the librarians' help, we felt confident that the initial searches were conducted correctly, strengthening the study's trustworthiness.

Maxwell (2006) described two types of reviews: reviews *for* research and reviews *of* research. The review in Chapter 2 was required to obtain an overview of the research field as well as to facilitate the discussion of the dissertation's results in Chapter 5. Therefore, this can be described as a review *for* research. Substudy 1, too, consisted of a review *for* research because the results were important for understanding the results in Substudy 2. However, this was also a review *of* research because it involved synthesising previous research into an article that would be published in a journal.

All criteria in Table 6 were developed before we started the scoping process, which might contradict the following quote in Substudy 1: 'Inclusion and exclusion criteria were developed during the whole scoping process, narrowing and maintaining

the intention of answering the research question' (Dille & Røkenes, 2021, p. 4). The intention behind this sentence in Substudy 1 was that, even if the criteria were simple and clear, we realised that it was not easy to define *what* a formal OTPD programme was. One example is online discussion forums, such as Twitter. Because the online component varied in the different programmes, it took time to decide whether the programme could be described as OTPD. Just reading these studies' titles or abstracts did not clearly identify if the studies should be included, but what should be included became clearer through the scoping process. During the eligibility phase, we realised that the 78 studies that were still included could be divided into three main groups. Studies with a main focus on informal learning (e.g., Twitter) and the implementation of different tools were excluded because they did not fit the scope.

One limitation of the present study is that we did not incorporate the consultation stage, which is an optional stage described by Arksey and O'Malley (2005) that includes discussing the findings with relevant stakeholders, such as teachers. The inclusion of this stage would have added significant value to the review. Additionally, we could have broadened our identification process by including other databases and conducting a more extensive hand search by reading other relevant journals. However, because of time constraints, we were unable to undertake these additional steps.

5.1.5. Reflective diaries in the OTPD programme

In this synopsis, I use the term *reflective diaries,* which can be described as 'containers for writing that provides students with a framework to structure their thoughts and reflections' (Wallin & Adawi, 2018, p. 511).[6] Reflective diaries can promote participants' engagement in developmental processes (Tang, 2002), which is suitable for new SBTEs participating in an OTPD mentoring programme. According to Wallin and Adawi (2018), 'the reflective diary can provide valuable insight into conceptions of knowledge, conceptions of learning, and strategies for monitoring and regulating learning' (p. 517). Klemp and Nilssen (2018), who wrote the main textbook in the OTPD programme in Substudy 2, highlight the importance of giving PSTs experiences

[6] Several terms were used to describe this phenomenon, such as learning diaries and learning logbooks. Although the term *log* was chosen for Substudy 2, *reflective journal* was chosen for Substudy 3. Other terms were used in the substudies to meet their respective requirements and to align with the audience of the different journals.

of reflections through written texts. Therefore, I found it appropriate to give the participants opportunities to reflect on their own professional development using reflective diaries.

Tang (2002) emphasises the need to reflect upon experiences in light of theory and that using written texts and theories might improve practice. Accordingly, the questions the participants were asked to answer were connected to the content in each module, and the questions were related to how they had performed or planned to perform their roles. The reflective diaries also provided the opportunity for the participants to reflect on their beliefs and values and connect their experiences with goals to work towards. The tasks are presented in Appendix VIII.

Each SBTE maintained six reflective diaries during the school year: after the physical start-up seminar, after each of the four modules and when evaluating their participation in the OTPD programme. The extent of the reflective diaries is presented in Table 7. Table 7 summarises and presents the average words written by each participant (horizontal rows). The columns reveal the words and averages of each of the reflection diaries. The average was calculated based on the total number of reflection diaries. The participants wrote the longest texts in the fourth reflection diary, which focused on mentoring and assessment (507 on average). The shortest logs were written after the start-up seminar (308 words on average).

Table 7

Overview of the Number of Reflective Diaries

	1	2	3	4	5	6	SUM	Average
1	362	892	718	415	686	?	3073	615
3	605	686	665	590	551	591	3688	615
4	188	166	162	689	423	163	1791	299
7	148	336	544	223	294	269	1814	302
9	445	371	899	1060	676	439	3890	648
11	383	203	147	317	229	269	1548	258
22	301	269	419	975	249	696	2909	485
24	480	?	262	233	235	321	1531	306
34	156	164	666	673	112	100	1871	312
38	205	254	116	572	500	?	1647	329
40	337	118	142	128	221	380	1326	221
41	300	280	268	297	351	459	1955	326
43	443	714	553	697	579	305	3291	549
45	161	162	214	313	364	241	1455	243
46	283	432	305	334	311	584	2249	375
47	166	658	1031	988	697	336	3876	646
48	133	783	661	432	373	327	2709	452
51	97	582	281	239	280	290	1769	295
55	499	236	203	532	251	100	1821	304
56	234	180	?	251	585	409	1659	332
59	552	265	479	694	453	287	2721	454
SUM	6478	7751	8735	10652	8420	6566	48593	8366
Average	308	388	437	507	401	346	2314	398

The participants wrote reflection diaries in the OPTD programme in Forms (Office 365). Using Forms presented some challenges. One example is that some of the participants reported that this was not a good choice because of word limitations. A couple of them chose to send their reflective diaries directly to me via email. By doing this, they could write as much as they needed.

5.1.6. The survey

Survey research is a quantitative method that is suitable for large samples. The main data source in Substudy 3 was a survey that the SBTEs answered when they evaluated their field practice in the school year 2019/2020. The original plan was to evaluate field practice at a physical seminar in April. However, this was cancelled because of COVID-19. Together with the department, I developed a survey. Five colleagues at the university and partner schools' quality-checked if the items were understandable and to avoid that they could be interpreted in different directions. Two previous standardised surveys were used as references when the survey was developed (Finne et al., 2014; Munthe & Ohnstad, 2008[7]). The survey can be found in Appendix V.

Survey data were collected via Nettskjema.no and carried out in Norwegian to avoid miscommunication. The participants filled out the survey online. It covered several areas related to evaluating field practice, and both closed-ended and open-ended questions were used. Most items involved a five-point Likert scale (1: strongly disagree; 5: strongly agree) and the alternative 'I have not reflected about this'. The alternative option was to gain insights into whether the participants had reflected upon the items. The survey consisted of eight sections. In developing the survey, five sections were considered relevant to Substudy 3: Biographical (A), participants' experiences of being part of a partner school (D), the assessment (F), collaboration with the university (G), and an overall evaluation of the school year (H). The open-ended items allowed the participants to provide information on what they found important, and their responses contributed to the qualitative data material used in Substudy 3.

[7] Munthe and Ohnstad (2008) is a part of the project 'Nyutdannede læreres mestring av yrket' (NYMY-project). Heggen and Thorsen (2015) have used parts of the original data material from 2008 in their studies. Andreasen et.al., (2019) have used some of the items in their studies.

Twenty-three items were relevant to the current paper and were included in the statistical analysis. The items are presented in Table 8.

Table 8

Overview of Items

Themes	Items	Item
Being an SBM	B5	Being a school-based mentor is important work (MO)
	B7	I have chosen to become an SBTE because I want to train good future teachers
	B8	I have chosen to become an SBTE because I like contributing to preservice teachers' understanding of the teacher's role (MO)
Teaching in two arenas	C1	The teaching at the campus and the practice period is well connected (F)
Being a partner school	D1	Preservice teachers are considered a resource in this school (MO)
	D3	Being a partner school is a collective responsibility at our school (MO)
	D4	Leadership at my school follows up my work as an SBTE in a good way (MO) (F)
	D5	The annual plan for practice works well
	D6	The work environment at the partner school motivates preservice teachers (F)
	D7	The teachers at my school are good role models for preservice teachers (F)
	D9	Preservice teachers get to participate in subject-related discussions with school employees
	D11	The SBTE and coordinator at my school have useful collaboration meetings
	D12	Employees at our school discuss 'what it means to be a partner school'
University collaboration	G1	Teacher education collaborates well with the partner schools to ensure good practice periods for preservice teachers (MO)
	G3	The university does a good job in preparing the practice period for preservice teachers (MO)
	G5	The UBTE contributes to increased learning in the practice period for preservice teachers this school year
	G6	The UBTE and I have collaborated well this school year
Assessment of PSTs	F4	My school has worked hard on assessing preservice teachers (MO)
	F5	The UBTE and I have collaborated in assessing preservice teachers (MO)
Assessing one's efforts as an SBTE	H1	I am certain preservice teachers have learned a lot from me (MO)
	H2	I am certain that I have the necessary skills for teaching preservice teachers (MO)
	H3	I am certain that my knowledge about education is sufficient to ensure good education for preservice teachers (MO)
	H4	Preservice teachers who have their practice period with me learned a lot by spending time with me and my pupils (MO)

Note: (MO) = Munthe and Ohnstad (2009), (F) = Finne et al. (2014)

The left column in Table 8 shows the themes in the survey. The researcher's initials are noted in parentheses next to the items taken from Finne et al. (2014) and Munthe and Ohnstad (2008). The university where the current study was situated organised all partner schools in partnerships a few years before the study took place. New items were added to take the field practice context into account.

The survey was sent to the participants (N=372) at the end of April 2020. The time was chosen because all SBTEs had finished field practice and that their experiences would be relatively clear in their minds. A high response rate was expected because an online survey could be completed from one's home office during the COVID 19 pandemic and would not take much time, especially when compared to the half-day physical seminar to which the participants were originally invited. The introduction of the survey provided information about the survey and stated that the

survey data would be used in this study. The participants had the option of answering the survey without participating in the study, and six of the SBTEs chose that option. In total, 242 SBTEs (n = 242, 65,1%) expressed their willingness to participate in the study. High response rates were conducive to analysis, as they increased the probability of correlations between groups and variables being statistically significant, making it possible to draw reliable inferences about the population from the sample.

The open responses gave the participants the opportunity to comment using their own words. These comments were collected in a word document consisting of 57 pages, containing all the comments from the whole survey, not only the items chosen for the quantitative analysis. The reason for choosing all responses was because I wanted to get insights into all the feedback on their experiences of collaboration and arenas for field practice activities.

4.2. Data analyses

The mixed methods case study design gave me the opportunity to gain deep and unified data material (Walton et al., 2020), and rich data from different data sources were included (Tashakkori & Teddlie, 2009). According to Creswell and Plano Clark (2011), each strand or method used should be clearly described. In the substudies, word limitations resulted in brief and superficial descriptions of the analysis, giving the impression of linear processes. The synopsis gave me an opportunity to go more in depth and reflect on the analysis processes. This section is organised based on three main themes: the constant comparative approach (4.3.1), descriptive analysis with numerous data (4.3.2) and abductive approach when analysing the thesis' main research question (4.3.3).

5.1.7. Analysis of qualitative data: The constant comparative approach

The aim of data analysis in qualitative research is to structure the collected material into themes or patterns (Creswell, 2013). In all three substudies—and when analysing the main research question—a constant comparative approach was used to analyse the qualitative data material. Constant comparisons are defined as '(t)he analytic process of comparing different pieces of data against each other for similarities and differences' (Corbin & Strauss, 2015, p. 85). The constant comparative approach (Charmaz, 2014; Corbin & Strauss, 2015) inspired and guided the analysis of qualitative data material in

the present doctoral project; it helped me to keep the content 'open', striving to stay close to the data material without interpretations (Corbin & Strauss, 2015).

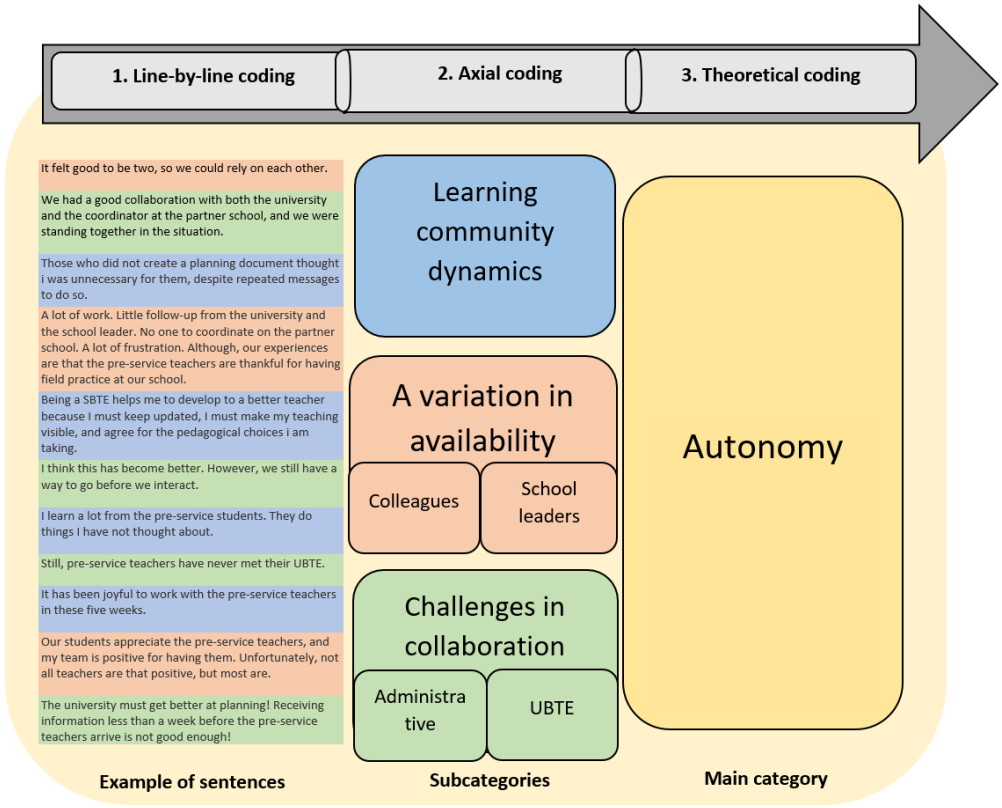
Overall, the constant comparative approach involves dividing the data into smaller parts and comparing the similarities and inequalities between them; then, the parts that fit together are assigned to categories (Corbin & Strauss, 2015; Langdridge, 2015). The analysis process consists of three main phases: *open coding*, *axial coding* and *theoretical coding*.

Next, I describe and reflect on the process of the constant comparative analyses. Figure 8, which is presented on the next page, was developed in Substudy 3. The figure will be used to give examples and illustrate the process. In the first phase, *open coding* involves '[b]reaking data apart and delineating concepts to stand for interpreted meaning of raw data' (Corbin & Strauss, 2015, p. 239). All reflective diaries and open responses in the survey were read through several times.

I marked the keywords in the text that were closely related to the content. Then, using the keywords and sentences' meaning, I colour-coded the responses as the next step. By marking these with different colours, simple sentences were united with longer phrases concerning the same topic (Corbin & Strauss, 2015). This process can be described as *line-by-line* coding, which 'enables you to take compelling events apart and analyse what constitutes them and how they occurred' (Charmaz, 2014, p. 125). Strategies given by Corbin and Strauss (2015) to create, compare and combine preliminary codes were used to reveal both similarities and differences in the data material. As a next step in the line-by-line coding process, phrases with similar colours were united. Up to this point, the data material provided me with information without any interpretation.

Figure 8

The Process of Categorisation of the Qualitative Data Material in Substudy 3



To avoid hasty analysis, I followed the strategies outlined by Corbin and Strauss (2015). At times, it was challenging not to rush ahead, but I appreciated the process. During the initial phase, I used multiple colours to mark keywords and phrases tightly connected to the text, including red for utterances about partner schools, blue for activity with PSTs and green for university collaboration. Although Figure 8 provides a simplified impression of the process because numerous colours were used during the early phase, going back and forth in the data material led to the grouping of similar utterances and removal of less relevant colours. This phase resulted in several 'containers' filled with different content, which served as the starting point for the second main phase.

The second main phase was *axial* coding, where the characteristics and dimensions that were revealed during the initial phase became clearer. 'Axial coding relates categories to subcategories, specifies the properties and dimensions of a category, and reassembles the data you have fractured during initial coding to give coherence to the emerging analysis' (Charmaz, 2014, p. 147). When conducting axial coding, I engaged in a dialogue with the utterances (Thornberg & Frykedal, 2015). Nilssen (2012) emphasises the significance of asking effective questions in this dialogue because it impacts the quality of the analysis. I asked the data material about similarities and differences and the ways in which they could be categorised and stored (Thornberg & Frykedal, 2015). The responses provided me with fresh ideas and thoughts, and I was able to discern patterns in the data material (Nilssen, 2012).

Overlapping data such as codes, categories and themes can be a challenge in qualitative analysis (Miles et al., 2014). The present study's focus on different actors and arenas' challenges with overlap was not something I noticed. However, I experienced that I was tempted to split the data material into groups where they were connected in the tripartite collaboration. I realised that this categorisation was bounded in my need to organise the data material in preorganised containers, not as categories grounded in what the data material *actually* contained. After going back and forth between the different reflection diaries, I managed to shift my focus from my preconceptions to what the SBTEs said.

The names of the categories and subcategories were preliminary, and they were changed throughout the entire process. Postholm (2005) claims that changing names is an important part of the process because it helps develop logical connections. I found it challenging to find appropriate names for the categories without losing relevant information. Charmaz (2014) suggests that giving preliminary category names that are tightly connected to the participants' utterances helps avoid being 'stuck' with theoretical category names. Inspired by Charmaz, I understood that *enjoying mentoring* was better in an early phase compared with *motivation* because, while *motivation* is a theoretically loaded construct, *enjoying mentoring* described the data material in a more concrete manner. Another example is when I first labelled a category *partner school*; here, I became aware that it was important to include the breadth and variation in the SBTEs' experiences, so the category ended up being labelled *a variation in availability*.

As Figure 8 illustrates, the axial coding process resulted in categories with different strengths and power. During the process, the codes became more abstract and tighter connected to more general categories (Charmaz, 2014). The three subcategories of *learning community dynamics, a variation in availability* and *challenges in collaboration* were developed from the codes, and they became clearer using axial coding and scrutinising characteristics and dimensions (Charmaz, 2014). The subcategory *learning community dynamics* was connected to how the SBTE valued the activity with their PSTs. *Variation in availability* was connected to collaboration at their partner schools. The category was divided into two groups: colleagues and school leaders. The last subcategory, *challenges in collaboration,* concerns their collaboration with the university. This category also contained two groups: administrative work and UBTEs. *Autonomy* stood out as the main category, having the greatest strength, being connected to the subcategories (Corbin & Strauss, 2015).

Discovering the different strengths indicated that the data analysis had reached the third main phase: *theoretical coding*. The purpose of this phase was to relate the categories to each other and put together the different parts of the research to form a whole, which enabled me to answer the research question (Postholm & Jacobsen, 2018). According to Strauss and Corbin (1998), theories are built when the researcher understands how the categories are connected. The process in which preliminary categories are connected to a main category is described as integration, which is crucial for theory development (Corbin & Strauss, 2015). Corbin and Strauss (2015) emphasise that this does not only happen at the end of the analysis, but it grows throughout the process when going back and forth with the data material (Postholm, 2019). Although Figure 8 might seem to depict a linear process and that the figure indicates subcategories being developed during the axial coding, the development of the categories was also central during the theoretical coding.

A theoretical model can be the result of the analysis (Thornberg & Frykedal, 2015). Because of the reduction of details through constant comparative analysis, the theory became more abstract. However, as highlighted by Corbin and Strauss (2015), even if analysis is becoming more abstract, it is important that the theory is anchored to the data. According to Corbin and Strauss (2015), the main category should be abstract so that it can be used for the development of theory. The development of theory will also be presented when presenting analyses of the overall research question (4.3.3). The

main category in Substudy 3, *Autonomy*, reflects both an abstract theory and individual responsibility that the SBTEs are given in their role as teacher educators, which are the core of the data material.

As previously described in section 4.1.3 regarding the researcher's role, one of the strengths of the present study was the ample time available for the research process, which also proved to be an advantage in the data analysis. Despite having an active researcher role and possessing contextual knowledge, it would have been easy to add personal information and interpretations to the participants' explanations. Therefore, I made a conscious effort to be aware of my preconceptions and theoretical knowledge while analysing the data (Thornberg & Frykedal, 2015); this will be further discussed in relation to the study's trustworthiness in section 4.4. I believe that I managed to balance my own background and maintain an awareness of my close relationship with the research.

Given my familiarity with the research field, spending ample time in the first main phase was particularly important to detect nuances in the data without imposing interpretations, as highlighted by Langdridge (2015). For instance, with this awareness, I tried to maintain some level of objectivity by illustrating the data material through figures. These dynamic processes also helped me become more confident with the categorisation and determine how they could or could not answer the research questions. Additionally, while establishing the categories and linking them to the content described earlier, I reflected on the effectiveness and suitability of the labels used. In addition to working on the computer, I also wrote down keywords and reflections by hand and created figures capturing both strengths and dynamic processes. Memos were used to document the processes involving me and the study's data material; they helped me be curious about the activity involved in conducting the analysis and, thus, were important analytical tools (Corbin & Strauss, 2015).

I learned that getting to know the data material takes time. The different processes gave me time to stay close to the participants' responses, and I focused on treating all responses equally. According to Corbin and Strauss (2015), qualitative research should be interpretive and dynamic, relaxing and flexible; thus, a static approach can be avoided. In the processes of facilitating dynamic flexibility, creativity became important. When I went back and forth in the analysis, new perspectives were added, and others were removed. To get an overview of the processes, Corbin and

Strauss (2015) recommend creating visual connections between categories and codes. Through visualisation of the data material, which in Substudy 3 resulted in Figure 8, I managed to store and find patterns that gave direction for the analysis (Charmaz, 2014). The creative processes were also helpful in deciding which data material should be taken for further processes (Corbin & Strauss, 2015). The creative approaches helped me find connections in the data material and store and sort the information. These processes made it easier for me to visualise, reflect upon and gain new insights into SBTEs' experiences. These processes were helpful in understanding and seeing connections in the data material (Strauss & Corbin, 1998).

5.1.8. Analysis of quantitative data

This brief section describes how the survey data were prepared for analysis and how the analysis was conducted. In Substudy 3, the data were analysed through descriptive and inferential statistics and factor analysis using the Statistical Package for the Social Sciences (SPSS Version 29) (IBM Corp, n.d.).

Descriptive statistics provided contextual information about the participants and general response trends. Survey data were subjected to a distribution analysis, factor analysis, and bivariate correlation analysis using SPSS. The items were normally distributed, particularly when skewness was reduced by treating the option 'I have not reflected about this' as the neutral score of 3 on the Likert scale. This resulted in leptokurtic distributions, but only the items concerning the role of an SBTE were skewed towards higher values, as shown in Figure 9. The distribution of the items allowed for visualising the findings and provided a basis for discussion. Missing was handled by averaging the informants' responses before and after on the same item.

An exploratory principal component analysis (PCA) factor analysis and correlation analyses supported the validity of the quantitative data and the identified areas of interest. The Kaiser–Meyer–Olkin measure of sampling adequacy (0.799) and Bartlett's test of sphericity (< 0.05) showed the sample to be appropriate for factor analysis. After six iterations of oblimin rotation with Kaiser normalisation, the resulting factors coincided with the question groups in the survey and revealed the four areas of importance, as illustrated in Figure 9.

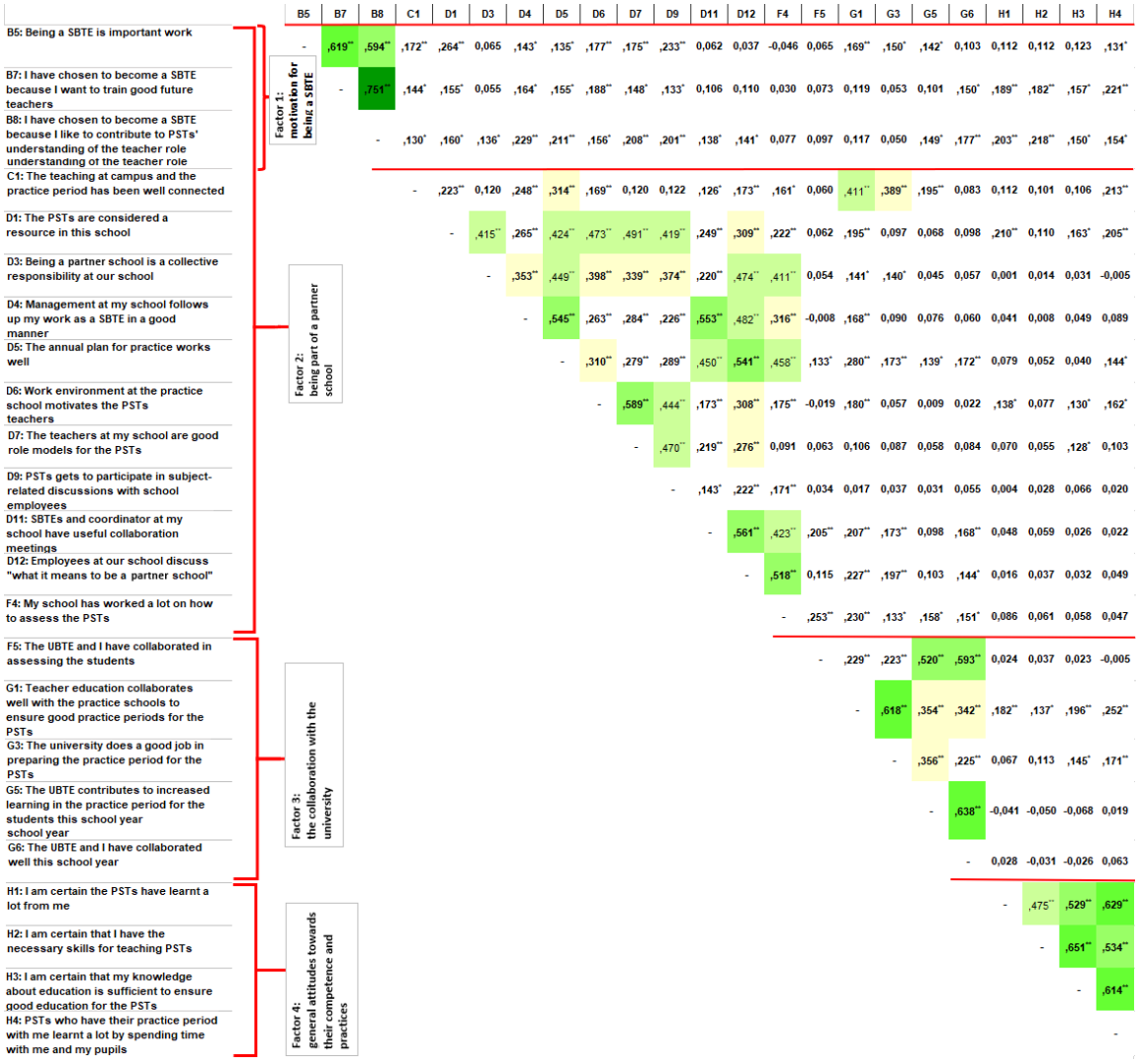
Figure 9 provides an adapted visualisation of Pearson's r correlations on Microsoft Excel, with correlations significant at the 0.01 (**) and 0.05 (*) levels (two-

tailed). The colours indicate the correlations, and the darker colours represent higher significant correlations ($\rho > 0.3$). A concurrence of factors and areas of high correlation were found, as illustrated in red. Four areas of importance were derived from the analysis: *motivation for being a SBTE*, *being part of a partner school*, *collaboration with the university*, and *general attitudes towards their competence and practices*. The factor´s labels were tightly connected to the themes in the survey, and we chose to label the second and third factor based on the arena they belonged to. The two other factors were connected to SBTEs work, where motivation for having the role captured the first factor, and their general attitude towards their competence described the other factor.

The factors showed high internal consistency (Chronbach's $\alpha = [0.777, 0.851] \geq 0.6$). Finally, the bivariate correlation analysis showed that items in the same factors were significantly correlated and had high Pearson's r values, confirming the identified areas of importance.

Figure 9

Factors and Correlations in the Quantitative Analysis



5.1.9. Analysing the main research question: Abductive approach

When analysing the main research question, the data material consisted of the three substudies. The approach can be described as abductive. Abductive approaches enable a researcher to go back and forth with the data material and compare wholes and parts during the research processes (Alvesson & Sköldberg, 2008). This contrasts with inductive processes, which are grounded in the data material (e.g., constant comparative methods), and deductive processes, which are tested using predefined codes (e.g., factor analysis) (Langdridge, 2015; Schoonenboom & Johnson, 2017). In abductive processes, it is prudent for the researcher to continually shift between the steps involved (Postholm & Jacobsen, 2018). The opportunity to go back and forth with the data material helps to reduce researcher subjectivity (Postholm, 2019). Abductive processes were deemed important in this study, as they helped combine different data sources, ensure their closeness to the context in which the study took place, and use previous studies and theories as active contributors in the analysis.

Although the analysis had an abductive approach, the constant comparative method provided inspiration throughout the analysis process. Codes and categories were formed as I repeatedly reviewed the studies. Initially, I read through the sub-studies and compiled the main findings in a document. Then, I attempted to identify similarities and differences in the data between the sub-studies. To gain a comprehensive understanding of the findings, I created figures.

The challenge of simplifying the findings was central in the process of developing a figure to illustrate the study. Similar with developing the figure, I also developed Table 9 (presented in Section 5.4). The table shows which theories are connected to each category. This kind of tabular presentation might indicate a static and dichotomous situation, which was not my intention. I have chosen to organise and connect the findings of each study to theory in the table to make it easier to get an overview of the findings. I was aware that organising the findings in tables or figures also might reduce complexity; some of the findings were not included because they were not considered strong enough to be prioritised in the discussion.

As presented in Chapter 3, CHAT was an inspiration in the development of Figure 11 and Table 9. The abductive processes in the interaction between the substudies' findings and CHAT gave insights into theories that were tightly connected, as, for example, that different types of contradictions could be connected to each of the

categories: while the primary contradiction dealt with SBTEs' engagement, the second and third contradictions were appropriate in the two subcategories belonging to connecting, and the fourth contradiction could be placed in university activity.

When creating categories during the abductive analysis, difficulties can arise in trying to fit them into existing theories. However, it is crucial to identify similar patterns to make the study relevant and useful to other readers. To ensure a coherent thread throughout the analysis process, I wrote memos, which Postholm and Jacobsen (2018) also emphasise as significant. The significance of writing memos was also highlighted in the constant comparative approach (4.3.1) and will be central when discussing the study's dependability (4.4.4).

4.4. Trustworthiness

The social constructivist perspective emphasises that knowledge evolves through interactions between those involved in professional development activities while also stating that the context and history of the situation are important (Postholm, 2020). Specifically, situations change and develop according to context and history (Postholm, 2020). 'Qualitative research is subjective. It is personalistic. Its contributions towards an improved and disciplined science are slow and tendentious' (Stake, 2010, p. 29). Because a case study cannot be measured, Yin (2009) reflects on what a good case study is. Despite the insecurity about case study quality, the opportunities for subjectivity and the important contributions from the context and history, several criteria must be followed when conducting a research study. In this chapter, I have strived to describe and discuss the research processes and the quality assurance as transparently as possible. However, as in all research, uncertainty must be considered.

Because the present research followed a qualitative-dominant mixed methods case study design, qualitative terms are used in the explanations. Lincoln and Guba (1985) highlight four crucial criteria for a study's trustworthiness: credibility (4.4.1), transferability (4.4.2), confirmability (4.4.3) and dependability (4.4.4). I also chose to add a fifth criterion: utilisation (4.4.5) (Miles & Huberman, 1994).

5.1.10. Credibility

Credibility can be described as the internal validity, authenticity or true value of the research (Miles & Huberman, 1994). The present study's design consists of different

components, and by using a mixed methods case design, the processes working with different data material have enhanced the current study's credibility (Yin, 2009). Despite the strengths of combining different methods, weakness can, as in all research, also be found in the present study. One example to illustrate potential weaknesses is the items used in the survey. Even if several items have been standardised and used in previous studies (Munthe & Ohnstad, 2008; Finne, 2014), items were added, removed and adapted to the context (Figure 8). These processes might have reduced their credibility. It was tempting to add more items to strengthen credibility, but a survey should not be too extensive for the participants. Additionally, because the survey was also used for evaluating field practice during that school year, a middle ground had to be found to balance items relevant to both parties.

5.1.11. Transferability

Transferability, which can also be explained as the external validity of a study, asks whether the study is transferable and whether the findings can be applied in other contexts (Lincoln & Guba, 1985). The transferability of findings relies on the study's methodological transparency and rich, thick descriptions of the phenomenon being studied (Teddlie & Tashakkori, 2009). Postholm (2019) emphasises that thick descriptions must be context rich. Because translating the data from Norwegian to English could affect transferability, I tried to keep the content of the translated versions as close to the original texts as possible. A native speaker translated the content from Norwegian to English to maintain the intended meaning. The discussions I had with other researchers during the research process also strengthened the transferability. The transferability was strengthened because the thick descriptions gave other researchers the opportunity to make sense of the study, and they also obtained insights into how this study could be transferred to their own contexts (Miles & Huberman, 1994).

A challenge related to the present study's transferability was that field practice and teacher education varied between local programmes at universities and between Norwegian and international contexts. The current study's sample was from one university, with SBTEs who were working in different types of schools, both in rural and central parts of the district, and the size of their schools varied. Therefore, the sample cannot be generalised to other contexts. Despite these limitations, the findings contribute to research on field practice in higher education. The present study adds

some new perspectives, such as the opportunity to use OTPD programmes in SBTEs' professional development. Mostly, the current study confirms previous research highlighting different aspects of the importance of a stronger connection between universities and partner schools. Even if single-case studies have their limitations because they represent a small scope, comparing the results with previous research and broader theory indicates that analytic generalisation is an opportunity, as highlighted by Yin (2009).

4.4.3. Confirmability

High *confirmability* refers to objective research in which the researcher's motives have not affected the process (Lincoln & Guba, 1985). Andersen (2013) argues that having knowledge about the research field is crucial for obtaining in-depth insights into the case. However, my close connection to the context presents a dilemma in the current doctoral study. In section 4.1.3, the researcher's central role is presented and reflected upon. By combining experiences from my own work and the reviews conducted in Substudy 1 and Chapter 2, I have gained a comprehensive understanding of the complexity surrounding field practice and SBTEs' professional development. These processes aided in obtaining the necessary distance from my own study. As Stake (2010) notes, 'Becoming a researcher, especially for a person doing qualitative research, is partly a matter of learning how to deal with bias' (p. 164). This quote reveals that, despite being aware of the researcher's position and the research process, subjective assumptions, values, and biases may still have affected the results.

Even if objectivity and neutrality are not the objectives of a researcher following a constructivist perspective, it is important to reflect on the criteria of confirmability. As described above, discussing the study with others strengthened its credibility and transferability, and it has also been central to assess the study's confirmability. Discussions have given me a distance—or objectivity—from the study. Parts of the study were presented at national and international conferences, discussed with peers from the national researcher school and in masterclasses with experts. Experts familiar with the field and those who were novices provided honest responses to my research, which is important for enhancing the study's validity (Lincoln & Guba, 1985). The reviewers of journals also provided responses that strengthened the study's

confirmability. The feedback I received showed that the responders recognised the findings, indicating a good level of confirmability. Further, Stake (2010) claims that, even when including others and describing the processes' transparency, their research will still be biased.

When reflecting on confirmability, Postholm (2019) emphasises coherence and cohesion between the different components in a study. My experiences were that coherence and cohesion in the substudies were mostly easy to describe. However, several times, I needed to follow up on surprises (Miles & Huberman, 1994). One example is when I, during the qualitative analysis in Substudy 3, realised that the new SBTEs only described working with the OTPD programme as their contact with the university. In addition to going through the data material once again, I created figures of different sizes, depending on different occurrences. The figures helped me illustrate the lack of collaboration between the new SBTEs and university. Software programmes analysing the data also helped identify any errors or inconsistencies.

4.4.4. Dependability

Dependability refers to the study's reliability—whether the results can be reproduced in other contexts, at other times and by other researchers (Kvale & Brinkmann, 2015). The strengths and weaknesses of qualitative research are an opportunity to develop the research question(s) during the research process (Yin, 2009). The original plan was to meet the new SBTEs at an evaluation seminar in April 2020. Because of COVID-19 restrictions, physical meetings were not allowed. Therefore, I was forced to change the study's design. I also added research questions in both Substudies 2 and 3. Because the design changed, it is not possible to replicate the original design. However, according to Yin (2009), I have strived to describe the different processes during the research process, and hopefully, this transparency can inspire other researchers in their studies.

Researchers' subjective individual theories influence research processes (Postholm, 2019). As described above, to reduce eventual researcher bias, I aimed to maintain a reflective position and remain aware of my prejudices and subjectivity throughout the study (Creswell & Poth, 2018; Kvale & Brinkmann, 2015). One artefact used in this process was to write memos and create figures, which helped me be aware of my own subjectivity (Postholm, 2019).

Dependability can also refer to a study's consistency (Lincoln & Guba, 1985). An example is how Cronbach's alpha was used to measure the internal consistency of the factors in the survey. Being able to use a measurement tool became important for me to feel more secure about reliability. Although challenges related to dependability in case studies arose in Substudies 2 and 3, the scoping process in Substudy 1 should be easy to replicate if other researchers follow the five steps suggested by Arksey and O'Malley (2005). Because I was a novice in conducting reviews, I experienced challenges in conducting the first step of the scoping process. I carried out several pilot searches, with different results each time. For example, I experienced that the technical aspects of developing the search string offered some challenges: one extra space between words or an extra parenthesis in the search string led to different results. Therefore, involving the coauthor and librarians in the first phase became important to ensure dependability. Further, as reflected upon in Chapter 2, it was challenging to include all relevant terms and nuances in the research field when developing the search concepts.

I aimed to understand SBTEs' experiences as teacher educators; therefore, there was no reason to doubt their experiences. Kvernbekk (2005) highlights the importance of trusting the participants' voices. Some researchers claim that member checking is important during the research process (e.g., Postholm, 2019). Although I could have invited the participants to discuss both the analysis and results, I chose not to do this for two reasons. First, there was limited time, and second, the pandemic gave reduced opportunities for meetings. In addition, the analysis emphasised *my* understanding of the data material, which is emphasised as being positioned under a social constructivist paradigm. Eight focus group interviews were held: four at the beginning and four at the end of the school year. The data from these interviews were not used as intended, as explained when discussing ethical considerations (4.5). However, the conversations were important for informing my facilitator role in the OTPD programme, making me aware of what I could ask in the survey in Substudy 3 and in mail correspondence with the new SBTEs. The participants told me that they appreciated the email reminders I sent about the OTPD programme, and this gave me the confidence to send further emails.

4.4.5. Utilisation

Summarising the four themes above indicates that, despite some challenges during the process, the trustworthiness of the present doctoral study is satisfying. It is crucial to consider the implications of the current study for the individuals who participated in it, as well as for other stakeholders (Miles & Huberman, 1994). Throughout the research process, I strove to conduct a study that would be relevant and important for the involved actors—that is, the SBTEs and their partner schools, leaders and policymakers at various levels of teacher education, as well as national and international researchers.

Miles and Huberman (1994) highlight the importance of presenting findings that are accessible to readers. Being familiar with the field being studied is a strength of case studies. However, it is important to describe the study so that it can be analysed and understood by others who are not that familiar (Postholm, 2019). Given my background as a classroom practitioner, I initially faced a disconnect with the academic world. My aim in pursuing academia was to make research more approachable for individuals who may not be well versed in academic jargon. However, despite my intentions, I have received feedback that my use of academic language can be overly complex. Furthermore, my decision to write in English could pose a challenge when it comes to accessibility for practitioners.

4.5. Ethical considerations

Ethical principles are intertwined with the entirety of a research process (Postholm, 2019). In line with Creswell and Creswell (2018), the ethical aspects in this section are presented based on the study's timeline. In the first phase of the research process, it was important for me to determine what I felt confident about focusing on in the study. Instead of focusing on the UBTEs, who were my colleagues, I found it easier to collaborate with the SBTEs. Activities with the SBTEs allowed for maintaining the needed distance between me and the study topic.

It was important to consider all relevant actors when developing this research project. First and foremost, this included the SBTEs and their partner schools. However, I also needed to be aware of the UBTEs and the department in which I work, because they would play a central role. Since they did not have an opportunity to be heard, they had an indirect role in this study.

I filled in and sent a notification form for how personal data were going to be processed in the study. The notification form was sent digitally to the Norwegian Centre for Research Data (NSD), which was subsequently accepted (Appendix I). Since I changed the research design following the advent of COVID-19 and developed a survey, I needed to inform the NSD and gain their approval. In the early stages of the research, the order of authorship was also declared (Creswell & Creswell, 2018). Each of my supervisors became the coauthor of a substudy. Authors could also be included later on in the process (Creswell & Creswell, 2018), so a third coauthor was invited to help me with the quantitative analysis in substudy 3 when the study´s design were changed.

The next step involved meeting the participants. Denzin and Lincoln (2011) wrote about the challenges related to the close relationship between the researcher and participants when following the constructivist paradigm. I reflected upon these challenges at the beginning of the research process. It is not possible to know for certain whether the participants experienced any issues with the relationship. However, the participant feedback I gathered via the reflective diaries and the survey did not contain only positive descriptors of the activities, suggesting that they were honest in their responses.

Trust building was important in the initial phase of the study (Creswell & Creswell, 2018). I conveyed the purpose of the project and potential outcomes, both positive and negative, to the participants orally and via information letters. The information letters are presented in Appendices II–IV. The 59 SBTEs who wanted to participate in the project signed a contract, and data collection was based on the participants' informed consent. By sending me an email, the participants could withdraw from the project whenever they wanted. The participants who answered the survey could decide whether they wanted their responses to be used in the study. As presented in 4.2.3, six participants chose to answer the survey with the purpose to evaluate the school year without being interested to participate in the study.

The participants were also informed about my dual role in the study. According to Creswell and Creswell (2018), 'Selecting a site to study in which you have an interest in outcomes is not a good idea' (p. 92). Therefore, I emphasised the overall focus of my doctoral study. Further, in line with Creswell and Creswell (2018) and Polit and Beck (2004), my intention was to identify the happenings in an interactive process rather than

to look for causes and effects, prescribe changes, or predict outcomes. With this focus on the interactive process, the participants could pay attention to the content and activities involved in the OTPD programme without having to assess the knowledge they had gained through the process. For instance, all the reflective diaries provided during the OTPD programme included information about their purposes (Appendix VI). Throughout the research process, I attempted to provide information in a simple and unequivocal manner.

Third, anonymity was of importance and a core focus during the research process. The participants wrote their names in their reflective diaries during the OTPD programme. As mentioned in the application form submitted to the NSD, I anonymised the participants when storing their responses in an MS Word file. The participants were assigned numbers, and a document with the key to the numbers was stored separately. At the end of the process, the 21 participants in Substudy 2 were given fictitious names.

As previously mentioned in this chapter, four groups participated in focus group interviews in autumn and spring. Only a few of these participants fulfilled the OTPD programme requirements, so I was unsure whether I should anonymise and include only their responses. Based on the ethical considerations in this scenario, I decided not to include the interview data. My supervisors and I made this decision collectively and agreed that the reflective diaries provided enough information to answer the research question in Substudy 3. Another challenge that appeared during the process was my connection to the OTPD programme. I wanted all the participants to be active in the programme and sometimes found it difficult to maintain a balance between *encouraging* and *pushing* their involvement; however, the focus group interviews negated my worries in this regard.

I endeavoured to obtain multiple perspectives and be honest during the analysis, when describing the findings. This awareness of the need to report multiple perspectives can also be described as an intention to avoid 'going native' (Creswell & Creswell, 2018, p. 94). To this end, when presenting the results of Substudy 3, I included both the positive aspects and the challenges the participants faced during the OTPD programme. I also shared and discussed the results with other experts, as explained in Section 4.4.1.

4.6. Summary

This chapter presented the study's methodological considerations and procedures. The qualitative-dominant mixed methods case study design was presented, revealing how the methodological choice was strongly affected by the constructivist positioning. The positioning in a constructivist paradigm was specifically central when discussing the processes and deciding upon the design to be changed or adapted during the research process.

A mix of approaches were presented in this chapter, and various interactions – such as those between the researcher and data material or the researcher and participants and others invited to discuss the study – were highlighted throughout it. The various sampling strategies used in this study were presented. This resulted in an opportunity to use different ways of collecting data. The abductive approach and the constant comparative method dominated the analysis. Further, creative processes contributed to the development of codes and categories.

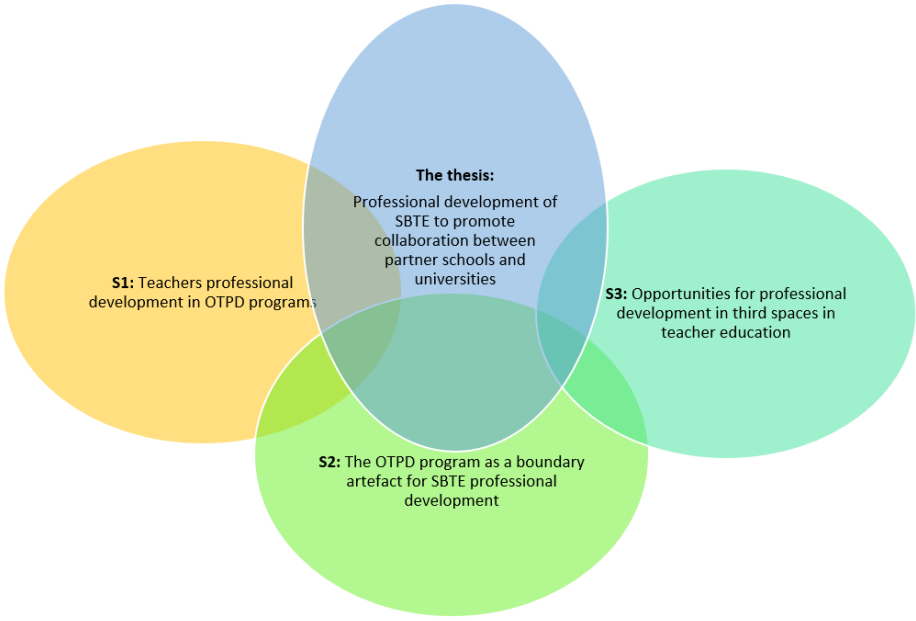
In addition to presenting transparent processes in the first part of this chapter, the study's quality was highlighted by discussing its trustworthiness, and the ethical considerations.

5. Summarising the findings

Chapter 5 presents the findings of the three substudies and a summary of the results. The articles containing the substudies have been provided as appendices to be found in Part II. Here, I first describe the main findings of the substudies and focus on the aspects most relevant for answering the overall research question (5.1.–5.3.). Then, I will connect the findings to the theoretical framework guiding this dissertation (5.4). Figure 10 provides a procedural diagram of the dissertation as a mixed methods case study that intersects the three themes in the substudies.

Figure 10

A Procedural Diagram of the Dissertation (Inspired by Walton et al., 2020, p. 449)



As illustrated in the figure above, each of the substudies makes independent contributions to the research field and enlightens the study topic from different angles (Tashakkori & Teddlie, 2009). The area in which the circles coincide shows how the three substudies provide new knowledge and perspectives and answer the overall research question. The figure also shows that Substudies 1 and 3 do not directly affect each other, but they are both connected to Substudy 2 and the overall research question.

5.2. Substudy 1: Teachers' professional development in formal online communities

(Dille & Røkenes, 2021)

RQ1: *What does previous research reveal about teachers' formal online professional development?*

The purpose of Substudy 1 was to examine the literature on formally organised OTPD programmes. The findings revealed that a one-size-fits-all design is an illusion for teachers' professional development. A focus on participants' interests and content that's relevant for practice is crucial for OTPD. Participants were found to appreciate flexible designs, and a facilitator who could scaffold the processes was also highlighted as important. The findings revealed that significant effort should be put into the startup phase of teachers' professional development. Helping/scaffolding participants during the initial phase can, for example, prevent them from displaying negative attitudes towards online activities.

The results of Substudy 1 are indicative of the experiences of participants (subjects in the CHAT triangle) in OTPD programmes. First and foremost, OTPD programmes can be considered mediating artefacts based on the CHAT triangle. The teachers who were active in the OTPD programmes held in the 52 reviewed studies needed to be scaffolded when standing at the boundary of their professional development.

As presented in 4.2.1, the participants in Substudy 1 were not SBTEs. Nevertheless, this substudy provides knowledge about what teachers, as first order practitioners, deem important in OTPD programmes. Both the design of the OTPD programme and the community were found to be important for teachers' professional development. The participants´ context, including both the facilitator, the OTPD programmes design, and their communities were valuable for their professional development. For the teachers who participated in the OTPD programme, scaffolding stood out as crucial for crossing boundaries in their professional development.

5.3. Substudy 2: An OTPD programme as a boundary artefact for new school-based mentors[8]

(Dille, 2022)

RQ2:

a. *How do new school-based mentors experience an online teacher professional development programme to develop in their new role?*
b. *How does an OTPD programme serve as a boundary artefact for new school-based mentors' professional development?*

Substudy 2 had two purposes: The first was to understand how new school-based mentors' experiences with an OTPD mentoring programme helped them in their new role. The second was to pay attention to how an OTPD programme works as a boundary artefact to strengthen the coherence between a university and its partner schools. The participants found the programme useful and reflected upon how they grew into, were both engaged in, and connected to their new role.

Despite their positive experiences, the participants also paid attention to the challenges related to online collaboration with school-based mentors at their partner schools. Several highlighted the importance of seamless technologies at their partner schools and the university. The necessity of handling two technological systems was regarded as an overload, as they were being spread between their two roles – that is, the role of a teacher for school-going students (as first order practitioners) and that of a school-based mentor for PSTs (as second order practitioners).

Even though the reflection logs showed variations in how the new school-based mentors handled the OTPD programme and how their first year as teacher educators went, the participants in Substudy 2 were found to have used all four learning mechanisms when standing on the boundary of becoming teacher educators. The following examples illustrate their learning mechanisms:

> Identification: 'Sending my regards in your direction, it has been very useful to have this OTPD programme as a tool in the work of mentoring.' (Una)
>
> Coordination: 'Online collaboration does not work out as intended. Maybe the university [facilitator] could follow up so we can get started?' (Carol)

[8] Because the term school-based mentor is used in Substudy 2, I chose to use the term when summarizing the substudy.

Reflection: ‘What I learned in this OTPD programme became useful. Reflection on how theory and practice are related taught me a lot. Working in groups with assignments was instructive. Exchanging experiences [was] very useful. We, who are school-based mentors, do not have time to do this at school.’ (Ingrid)

Transformation: ‘I can’t wait to receive preservice teachers in February. I believe and hope I will be well prepared thanks to this great OTPD programme. With help from this programme, I feel that I am well prepared.’ (Ingrid)

The findings revealed that the OTPD mentoring programme facilitated the participants’ understanding of their role in teacher education.

Despite these positive results, the findings also revealed that the OTPD programme and the facilitator represented the university’s activities, which led to few SBTEs considering other university activities as important during their first year as teacher educators. Overall, the school-based mentors activity took place within their well-known context, their partner schools. Most of the participants collaborated with their colleagues, which shows that their activities mainly took place in one activity system: their partner school. The school-based mentors also reflected upon their resistance to participating online with other school-based mentors, which reduced the intended third-space activity.

5.4. Substudy 3: School-based teacher educators’ experiences of collaboration in teacher education

(Dille et al., minor revisions)

RQ3:

a. *How do school-based teacher educators experience collaboration in teacher education?*
b. *Which arenas are teachers given for professional development in their role as school-based teacher educators?*

The aim of Substudy 3 was to explore how SBTEs experience collaboration in field practice and which arenas they are given for professional development. The finding reflected broad variations with limited third space activity and a lack of coherence between the involved parties. The overall conclusion was that field practice activity is a job for the individual SBTE, and their professional development relies on their

autonomy. The SBTEs describe an autonomous role and think they have the necessary skills and knowledge for their role as teacher educators.

Despite their satisfaction in their role as second order practitioners, the results in substudy 3 revealed some challenges: Just over half of the participants (55%) had the required ECTS credits in mentoring and most of them performed the job individually. Even if partner schools are main responsible for PSTs field practice, the results revealed that school leaders took a passive role. The SBTE described themselves as passive recipients in the communication with the university, and the UBTEs stood out as random partners. Not surprisingly, with the reported limited field practice activity both within their partner schools and with the university, the findings revealed that the SBTEs did the assessment of PSTs on their own.

The shared object between the two arenas responsible for field practice was found to be limited, indicating that the third space was closely tied to the SBTEs partner schools. The finding is also important for understanding the context of field practice activity: SBTE are not participants in a third space consisting of different activity systems but, instead, are active in their respective activity systems and partner schools, mainly with their PSTs. The SBTE described a professional development, both in their roles as first and second order practitioners, together with the PSTs. Because SBTEs are mentors *and* responsible for assessing the PSTs, they have different roles, which indicate that SBTEs and PSTs are not equal partners in third space activities.

With the limited collaboration in third spaces, the learning mechanisms that were adopted most frequently by the participants were identification and coordination. The SBTE expressed they were aware of what the role of a second order practitioner entails, and they coordinated their activities based on the information they obtained from the university and their everyday life at school. Summarised, the SBTE experiences of collaboration in third space activities, their activities can be described in terms of the second-generation sociocultural theory. Substudy 3 does not give any information on the quality of field practice. Neither does it reveal how the SBTE understand their role. Based on previous research on the importance of professional development when becoming second order practitioners, it is likely to believe that field practice is based on SBTEs individual understanding of the role.

5.5. Summary of the substudies

By summarising the findings of the three substudies, this part of the synopsis answers the overall research question*: In what ways can professional development of school-based teacher educators promote collaboration between partner schools and universities?* Table 9 reveal the categories and how each of the substudies contributed to answer the research question.

Table 9

An Overview of the Categories that Summarise the Findings

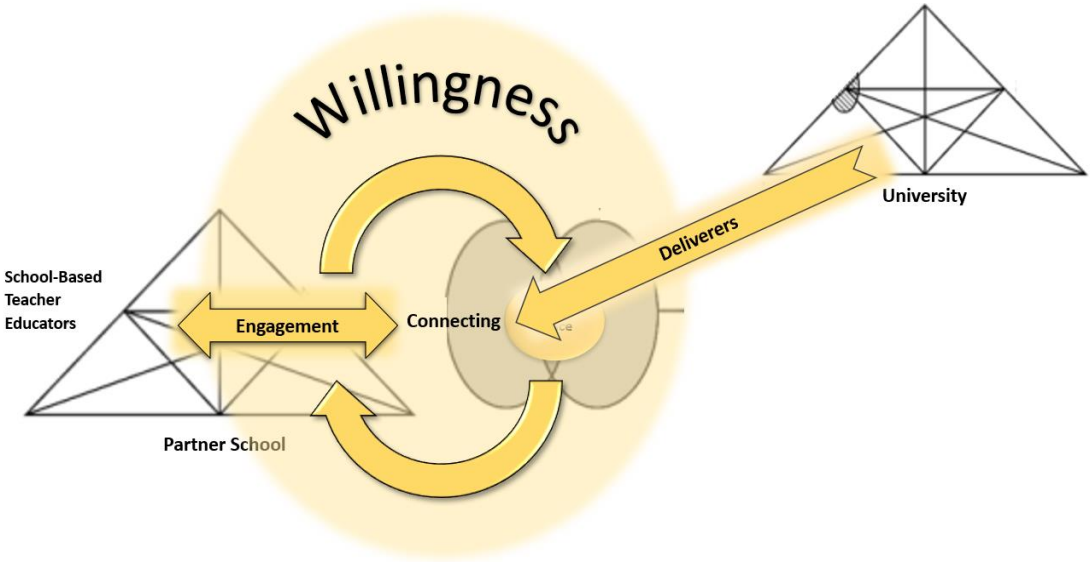
Categories	Willingness			
	Engagement	Connecting		Deliverers
Theories	Intrapersonal boundary crossing Subjects Primary contradictions	Artefacts Second contradictions	Interpersonal boundary crossing Horizontal activity Division of labor Context Third contradictions	Institutional boundary crossing Vertical activity The rules Forth contradictions
Sub-study 1	Internal factors were crucial for teacher's professional development. What they brought into the program (categorized as interest, needs and attitude) affected the activity and the potential outcome. Scaffolding became crucial. Constructing attainable goals forced self-directed processes.	Relevance and flexibility were important in the OTPD programs design, with integrated resources and clear guidelines. A balance between autonomy and agency.	Meet fellows with mutual interests. Participants who established communities were more willing to share experiences. No economic or geographical barriers.	Facilitators, initiators, and creators were pointed out as having a critical role in developing professional communities. The facilitator's overall job was to facilitate a shared understanding, scaffold and reduce gaps. School-leaders should reduce development programs and give time to participate.
Sub-study 2	The SBTE felt connected to teacher education while participating in the OTPD programme. The SBTE understood their role and felt better prepared and more competent to handle the dual role. The participants expressed concerns around lack of time because of the double role. Insecurity due to potential challenges in using different technological tools.	OTPD programs worked out as a boundary artefact and strengthened the connection between the two arenas. The participants experienced the programme as relevant and useful, and appreciated the blended design where theory and practice were connected.	Three connections were important: colleagues at schools, online relationships with other new SBTE and the facilitator. A major part experienced online collaboration across schools as an annoyance. School leaders should give extra time for SBTE professional development when becoming second order practitioners.	It is not enough to have intentions about coherence between the arenas. More effort is required to ensure consistency in conducting mentoring programs. At a governmental level, the training of SBTE should be made mandatory. Different technologies at the schools and the university disrupted the participants' activity. The university facilitator supported the participants' development in the OTPD programme.
Sub-study 3	The participants are experienced teachers who are satisfied with their own effort as SBTE. Lack of coherence indicate that there is a broad variation in SBTEs understanding and beliefs about their role. Only 55% of them had ECTs in mentoring.	The digital resources used in communication were not easily accessible which reduced the communication between the arenas.	One major conclusion was that working with field practice is still an individual job for SBTEs. The PST were crucial for how the job worked out. The UBTE stood out as random partners.	The university was described as a "black box", controlling which information is delivered and when the information is given. The SBTE wanted to get information earlier. Despite governmental directions, there is a considerable discrepancy between trends and actual practices.

As shown in Table 9, *willingness* was revealed as the overarching category in this study, and it was derived from an analysis of the broad variations in how the participants' reflected upon their experiences with professional development and the collaboration between partner schools and the university. In addition, three main categories were identified: *engagement* represented the SBTEs' activities, *deliverers* indicated the dominant activity among the university´s activities, and the *connecting* represented the activities that took place in the hybrid space. Because the connecting category captured activities involving other actors as well as artefacts, I've divided this category into two columns. Table 9 also reveal which theories that was found appropriate to understand the categories. The categories derived from the analysis, appropriate theories, and previous research will be compared and discussed in chapter 6.

The abductive approach presented in Section 4.3.3 resulted in Figure 11, which summarises the findings.

Figure 11

Professional Development of SBTEs to Enhance Collaboration in Field Practice



The bias in Figure 11 reveal that field practice activities are mostly connected to SBTEs' partner schools. The bidirectional arrow from the left activity system indicates

that SBTEs use the third space activity in their work with field practice and their professional development. Despite their participation in third spaces, the university in the other activity system is not an active contributor in the SBTEs professional development. Because vertical activity is dominating, the right activity system is positioned higher up than the left activity system. The passive university contribution is illustrated with the one-way arrow. The arrow is not bidirectional because the university activities in the third space mostly involved sharing directives or information. The first two categories – *engagement* and *deliverers* – indicate that there are different strengths associated with the participation of subjects in the activity systems. Since the university's main activity was to deliver information about field practice rather than to invite SBTEs to collaborate, the activity (shown in the big yellow circle) is biased towards and placed closer to the SBTEs and their partner school's activity system. As a result, the third space (see Figure 3 on page 29) has 'disappeared' behind the arrow illustrating the university's delivery.

The findings are discussed in relation to this study's theoretical framework and past research in the following chapter.

6. Discussion

The overarching category *willingness* highlight the aspect with overall importance for SBTEs' professional development in order to promote collaboration between partner schools and the university. The overarching category will first be presented (6.1) before the three types of willingness are discussed: *willingness to invite* (6.2)*, willingness to interact* (6.3)*,* and *willingness to (be) include(d)* (6.4). These are connected to the main categories developed when I summarised the findings of the three substudies (Table 9). Willingness to invite mirrors the deliverers of a university context (the right activity system), willingness to interact is connected to SBTEs' engagement in the context at their partner schools (the left activity system), and willingness to be included can be seen as a category that connects to the third space context. The findings are in accordance with previous research, where for example Postholm (2019) highlight that interactions with the context are crucial for professional development. The discussion is grounded in the understanding of the context as crucial for professional development through boundary crossing. My understanding of context in the discussion is that the context refers to the arenas where activity takes place, such as the SBTEs' partner schools (concrete contexts) and online activity (abstract third space activity). Although the context does not have a prominent role in the discussion, it plays a crucial role.

6.1. Willingness for professional development

The importance of the willingness of third space activities of all involved actors is in line with Zeichner (2010), who report that successful third spaces involve actors with different competencies who are willing to merge their cultures. Willingness is tightly connected to *embodying boundaries*, which is central to boundary crossing and professional development (Vesterinen et al., 2017). The findings revealed that willingness depended on the situation or context, and some key factors stood out as important for enhancing collaboration between the two arenas.

Overall, this study's results reveal that third space activities are not seamless, intertwined, or in line with national guidelines. The activity bias indicates that the third space activity was limited in this study when considering Emstad and Sandvik´s (2020) description of a third space as a 'potential for dialogue, reflection and transformation, all of which are seen as key competencies for teacher professionalism' (p. 3).

Furthermore, the study's findings differ from those of Wenger (1998), who posited that mutual engagement is crucial for development when striving towards a shared object.

How the three types of willingness are crucial for promoting collaboration between the two arenas is discussed next. The key factors guide the following discussion, with tensions and contradictions indicating points of development and the kind of support that is needed (Akkerman & Bakker, 2011a; Engeström & Sannino, 2010). Both Akkerman and Bakker (2011a) and Engeström (2001) claimed that tensions and contradictions are important for development when participating in different activity systems. However, this study highlighted the importance of understanding the context behind contradictions to gain an understanding of the kind of support needed for professional development, as Akkerman and Bakker (2011a) and Engeström and Sannino (2010) have emphasised.

6.2. Willingness to invite

Willingness to invite emphasises the importance of facilitating activities in third spaces, with the startup phase being especially significant. When universities invite teachers to participate in third spaces, it should be with the intention of developing a shared understanding among the participants. The importance of developing a shared understanding has previously been highlighted by Engeström (2001). Two factors stood out as crucial in the startup phase for how SBTEs' professional development can enhance collaboration in field practice: *Engaging participants´ interests* (6.1.1) and *A welcoming atmosphere* (6.1.2).

6.2.1. Engaging participants´ interests

As highlighted in Substudies 1 and 2, the startup phase is important when boundaries are to be crossed. The importance of the startup phase has also received attention in previous studies (Postholm, 2020; Reinhardt, 2017). The SBTEs in Substudy 2 appreciated the physical startup seminar and the online work for the OTPD programme during their first year in the role. The opportunities provided to identify what their new role entailed made it easier for them to be open to collaboration with other actors for field practice. Also the SBTEs in Jakhelln and Postholm´s (2022) study appreciated being invited and treated as equals in the third space from the very beginning of the project.

The blended design of Substudy 2, which began with a physical seminar, was considered valuable. Physical meetings were also found to be appreciated in the studies of Helgevold and Munthe (2016) and Jakhelln and Postholm (2022). The results from the overall doctoral study emphasised the importance of an early invitation to participate in the third space as second order practitioners so that the university and SBTEs could collectively determine what the latter's role should involve. The invitation sent by the university during the startup phase in the Substudy 2 seemed to have reduced what Butler and Cuenca (2012, p. 35) problematised as a 'sink-or-swim approach', and the professional development of SBTEs helped promote collaboration between the partner schools and university.

A central finding of this study is that the two roles – teacher and SBTE – involve the need for different types of knowledge and competencies, and as newcomers in third spaces, they enter an unfamiliar arena. They do not know the context. However, Substudy 2 revealed the importance of how SBTEs understand and implement knowledge about their new role, which Akkerman and Bruining (2016) highlighted as crucial for professional development. Identification as a learning mechanism led to new knowledge about the other activity system, indicating that this boundary-crossing learning mechanism is important and appropriate in the startup phase. This finding aligns with theories on boundary crossing (Akkerman & Bakker, 2011a). Further, in Substudy 3, where most participants were experienced SBTEs, the findings indicated that boundary crossing occurred with the same learning mechanisms. Using the explanation given by Akkerman and Bruining (2016), the SBTEs legitimised the university (the other activity system) through coexistence, with the activities defined in comparison to those of the other system (e.g., 'this versus that' or 'us versus them'). The findings also indicate that even though half of the participants had the required ECTS credits in mentoring, the professional development of SBTEs was not enough to promote collaboration between the partner schools and the university.

This study highlighted the importance of understanding the participants' backgrounds to determine *who* the SBTEs are and *what* they need in their development processes. Considering SBTEs' backgrounds during professional development reveals the value of their contexts, and the findings are clear that both history and culture can promote collaboration between the two arenas (Engeström, 2001). The findings of Substudies 1 and 2 make it clear that listening to the participants' needs and interests at

an early stage of their professional development is crucial to bridge the gap between the persons standing on the boundary. Dialogue around the kind of knowledge and experiences the participants bring into third spaces and how these qualities should be further built upon during the development processes are factors that Kiviniemi et al. (2021) and Sewell et al. (2018) have reflected upon in their studies.

Further, both personal and emotional aspects must be considered when SBTEs are included in partnerships in third spaces, which was also highlighted by Zeichner (2010). With regard to professional development processes, the findings reveal that SBTEs appreciate getting opportunities to chart the direction for their professional development by operationalising *how* they understand the guidelines and *which* activities they should perform to reach the intended outcome. Allowing participants to create goals that could guide their professional development processes and be modified through discussions and reflections stood out as important. When teachers clarify their needs and formulate appropriate goals in an early phase, it is easier for them to understand the purpose of the professional development process and take control of their activities (Jakhelln & Postholm, 2022). As discussed in Chapter 3, working towards goals can provide direction and clarity for the objects. In the present study, the professional development process was found to enhance the SBTEs' understanding of their new roles, which could be used to enhance the collaboration between the two arenas.

Internal factors are personal conditions within the subjects´ control and represent the first contradiction (Engeström & Sannino, 2010). As Substudy 1 highlighted, it is unrealistic to expect all participants to meet the same goals. For example, the SBTE in Substudy 2 who was afraid of technological struggles chose to join her peers instead of participating in the intended online collaboration across partner schools. Some of the participants in this doctoral study met contradictions with the intent and willingness to solve them. For instance, one of the new SBTEs who tried the online collaboration was positively surprised. In contrast, other participants did not even try to collaborate online and, instead, worked on the OTPD programme individually or with their peers at the partner school. Further, a group of participants talked about previous challenges they had faced and were not willing to 'struggle' with the technology. This illustrates how previous experiences and learning patterns affect the activities of new SBTEs. This finding aligns with the central finding of the review in Substudy 1: participants reflected

upon the feeling of being overwhelmed, which led to chaos, confusion, and resistance to participation in several studies (e.g. Graham & Fredenberg, 2015), and the participants struggled to be active participants (e.g. Ciampa & Gallagher, 2015).

In sum, when SBTEs are invited to third spaces, it is crucial to focus on their existing knowledge and interests. In addition, their history and culture must also be considered when designing the activities. The examples above illustrate in what ways professional development of SBTEs can promote collaboration between the two arenas – that is, partner schools and universities.

6.2.2. A welcoming atmosphere

This study highlighted the importance of facilitators who welcome and introduce SBTEs to their role in third spaces. Substudies 1 and 2 revealed that a facilitator's guidance enables participants to develop a shared understanding, or a shared object, and work towards both individual and common goals. The importance of a facilitator meeting the SBTEs in an early phase is in line with Vygotsky´s (1978) explanations about how learning starts with external processes before it transforms into internal processes.

The findings emphasise the importance of a vertical role, similar to what Engeström and Sannino (2010) have described. The facilitator was important because of the participants being unfamiliar with the contexts, helping them when they faced 'different, possibly conflicting, contexts and perspectives' (Akkerman & Van Eijck, 2013, p. 60). The facilitator took on different roles, from experts, with vertical approaches, to a more horizontal and equal approach, capturing both affective and cognitive roles. A challenge associated with the vertical approach is that it can reduce the participants to being seen as peripheral or inexperienced in the community, which Akkerman and Van Eijck (2013) have also reflected upon. An example of a lack of vertical roles is when the participants in Substudy 3 raised questions about the role of a UBTE. Their uncertainty about this role indicated that they did not receive the required knowledge about what this role consisted of or that the role did not work out as intended. Either way, the professional development of SBTEs can promote collaboration between the two arenas.

The findings showed that the facilitators supported the participants to a large degree in understanding, identifying, and coordinating their roles. Coordination as a

boundary-crossing learning mechanism was revealed through dialogue and cooperation between the activity systems, the aim of which was to organise activities with minimal friction, as Akkerman and Bakker (2011a) claimed. In addition, Akkerman and Bruining (2016) described coordination as a learning mechanism that often appears in the first phase of a professional development process because it helps organise connections between the involved parts. Closely connected to this learning mechanism are technological tensions, which posed recurring challenges in all three substudies. One of the challenges in Substudies 2 and 3 appeared because of different technological programmes being used at the partner schools and university. Some of the new SBTEs in Substudy 2 showed a willingness to solve the problem, and the tensions were resolved with vertical help from the facilitator. This indicates that tensions and contradictions can be important for professional development (Akkerman & Bakker, 2011a). However, technological tensions also reduced the SBTEs' willingness to interact during the activities. The facilitator played an important role in handling this contradiction. Since the contradictions took place between the subjects and artefacts, the challenges presented in this section can be described as constituting a second contradiction (Engeström & Sannino, 2010).

The activity bias illustrated in Figure 11 highlights the importance of understanding that being invited and getting information is not automatically the same as being included and understanding what a role should entail and how to handle tasks. An invitation from a university does not mean that SBTEs are invited as guests in the arena of teacher education but as active participants and contributors. Several studies, such as those of Helleve and Ulvik (2019) and Zeichner (2010), have emphasised the need for equality and mutual confidence between participants in third spaces. The SBTEs in this doctoral study, as mentors of PSTs in their schools, gave the impression of having control over field practice activities, thus indicating that they did not consider themselves guests in collaboration with the university. Neither did they perceive themselves as strangers in both worlds because of being connected to the two activity systems, which is in contrast to that of Heggen and Thorsen´s (2015) study. Enhanced collaboration in field practice is important to avoid a situation of participants ending up as strangers (Akkerman & Van Eijck, 2013). The guest metaphor illustrates a challenge that Ellis et al. (2020) problematised, highlighting the importance of relationships between SBTEs and UBTEs, which forms the backdrop for the upcoming section.

6.3. Willingness to interact

It seems like the SBTEs in this study visited third spaces for a short period and then returned to their activity system. The SBTEs in Substudies 2 and 3 reported limited field practice participation *together* with the UBTEs. This is exemplified by the SBTEs in Substudy 3 being satisfied with their jobs as teacher educators. Not knowing what is required for an activity due to limited third-space collaboration results in the activity proceeding in different directions, as described by Akkerman and Van Eijck (2013).

Shifting between different activity systems, such as between partner schools and universities, is known to be challenging (Akkerman & Bruining, 2016). The two activity systems in this study represent different traditions, which results in constant negotiations about what kind of expertise is most relevant (Daza et al., 2021). Even if SBTEs are invited to participate and develop in third spaces, as discussed in the previous section, their *willingness to interact* is essential for professional development and collaboration between partner schools and universities. The following sections discuss the need *to facilitate interaction* (6.3.1) and have *someone to interact with* (6.3.2).

6.3.1. To facilitate interaction

The findings of Substudies 1 and 2 clearly revealed that the SBTEs appreciated professional development as a horizontal approach to learning, as Engeström and Sannino (2010) suggested. Since the teachers in this study were educated and experienced, it was important to keep in mind that they entered the development process with a lot of knowledge and experience. They were not blank slates that needed to be filled with knowledge. Central to the third spaces and partnerships in both these substudies was the intention to maintain equality, mutual trust, and symmetric participation among the participants (Helgevold & Munthe, 2016; Jackson & Burch, 2019; Jakhelln & Postholm, 2022; Marsh, 2021).

Substudy 2 revealed that the new SBTEs in the OTPD program valued their involvement in the developmental process. Likewise, Holland (2018) highlighted the importance of SBTEs feeling ownership of their development processes. Similar to Akkerman and Van Eijck´s (2013) study, the findings of this doctoral study emphasised that horizontal approaches gave the participants opportunities to shift between the different activity systems. In addition, horizontal approaches allowed the participants to

make use of their previous experiences and knowledge. Finding the content relevant was crucial for the participants' professional development. For example, the participants' second order practitioner role was highly affected by their first order practitioner role in Substudy 2. A similar finding was presented in Klemp and Nilssen´s (2016) study, wherein the participants appreciated the opportunity to use their experiences during online mentoring.

When SBTEs get opportunities to create a shared understanding, or a shared object, as emphasised in Substudies 1 and 2, they are also able to develop the language used in field practice activities. Developing a shared language is crucial for reducing tensions between the two arenas (Butler & Cuenca, 2012). The OTPD programme in Substudy 2 gave the participants opportunities to negotiate their understanding of their new SBTE role. With limited university involvement, the OTPD programme stood out as important for new SBTEs crossing the boundary to becoming teacher educators. The OTPD programme, similar to other interventions (e.g. Parker et al., 2021), showed how participants' knowledge and understanding of their new role went from interpersonal to intrapersonal or from externalisation to internalisation, in line with Vygotsky´s (1978) argument. Raising one's voice in an unfamiliar arena is not easy, but the OTPD mentoring programme helped mediate the SBTEs' voices and understanding of their role as second order practitioners, making it easier for them to claim their membership status, which Andreasen et al. (2019) highlighted as important.

Boundary artefacts were important for SBTEs' professional development as well as for promoting collaboration between partner schools and universities in this study. Substudy 2 demonstrated that an OTPD programme can serve as a boundary artefact for SBTEs' professional development and for enhancing the partnership between schools and universities. This strengthened connection can be compared with infrastructure, which Smith (2017) deemed as critical for developing effective teacher education. Interestingly, the new SBTEs in Substudy 2 did not encounter difficulties in their professional development from first- to second-order practitioners, which is in contrast to the participants in Parker et al. (2021), who faced challenges. This could be attributed to the SBTEs having the chance to reflect on and discuss authentic examples closely related to their role as both first- and second-order practitioners (White & Forgasz, 2017). Notably, the OTPD programme achieved the objective of horizontal

development, which, according to Engeström (2001), involves expanding what the participants already know rather than elevating them to new vertical dimensions.

6.3.2. Someone to interact with

The participants in Substudies 1 and 2 appreciated getting opportunities to collaborate and share their experiences related to being teacher educators, or second order practitioners. The findings are similar to those of other studies (Berg & Rickels, 2018; Kiviniemi et al., 2021; Margevica-Grinberga & Odiņa, 2021). In Substudy 2, horizontal development processes took place with SBTEs from the same or other partner schools. From the perspective of the third-generation CHAT, the new SBTEs in Substudy 2 were found to prefer collective development with their colleagues, representing the left triangle in the activity system. The OTPD programme and facilitator represented the university and were responsible for facilitating the development.

Meeting in a shared space gave the SBTEs in Substudy 2 various opportunities to discuss and reflect upon contradictions and tensions together with other SBTEs, which, according to Akkerman and Bakker (2011a) and Engeström and Sannino (2010), drives professional development. The third space facilitated development processes via the learning mechanisms of reflection and transformation, as Akkerman and Bakker (2011a) described. The findings of Substudy 3 did not indicate whether the SBTEs' identities shifted. Although these participants were satisfied with their contact with the university because they could get help when needed, their experiences were not in accordance with the national directions for field practice. Even though the national government has focused on partner schools rather than individual SBTEs over the last few decades, both quantitative and qualitative studies have shown that being an SBTE is still perceived as a lonely activity (Heggen & Thorsen, 2015; Munthe & Ohnstad, 2008; Nilssen, 2016).

Transformation as a boundary-crossing mechanism 'leads to changes in practices or even the creation of a new in-between practice' (Akkerman & Bakker, 2011b, p. 3). Therefore, transformation is a suitable learning mechanism for crossing boundaries. The satisfied SBTEs who participated in the OTPD programme stated that transformation in teachers' professional development is something that universities and partner schools should strive for. Through their participation in the OTPD mentoring programme, the SBTEs reflected upon *owning* the professional development process.

These findings are in contrast with those of Parker et al.´s (2021) study, in which SBTEs struggled with their professional development. Although they were invited to participate in a third space as equal partners, these SBTEs found it hard to change from being first- to second order practitioners.

The SBTEs in Substudy 2 who chose to take part in the online collaboration created their own third spaces with participants representing different partner schools. The importance of OTPD for SBTEs to promote collaboration between the two arenas was emphasised, especially among the SBTEs who reported a lack of support at their partner schools. These findings are similar to those of previous research (Karam et al., 2018; Trust & Horrocks, 2019). The activities in the shared or common space transcended geographical boundaries, as revealed by the studies of Holland (2018) and Näykki et al. (2021). Substudy 1 also revealed the importance of horizontal activity, as the participants were able to meet fellow SBTEs with mutual interests, without any economical or geographical hindrance. The university was minimally involved in the OTPD programme activities, but participants were encouraged to engage in online collaboration or what Wetzel et al.´s (2019) described as establishing supportive spaces. The SBTEs in Substudy 2 supported each other and reported having good experiences with collaborative mentoring, which aligns with the results of Wetzel et al. (2019) study.

The activities conducted with UBTEs varied in Substudy 3. While some SBTE in this substudy described positive collaboration with the UBTEs, several raised questions about the purpose of the UBTE role. The participants revealed broad variations in the UBTE role and described the limitations of activities that affected their jobs as teacher educators. Several SBTEs reported that it was not necessary to arrange visits with the UBTEs and provided examples of UBTEs lacking knowledge of and interest in the schooling system, PSTs, and the purpose of field practice. The results regarding the blurry role of UBTEs and the reliance on individuality are similar to those of other studies (Amdal & Mastad, 2022; Heggen et al., 2018). The UBTEs did not have a role in the OTPD mentoring programme in Substudy 2. Therefore, the SBTEs' professional development took place without UBTE collaboration.

The qualitative analyses in Substudies 2 and 3 revealed that PSTs are crucial determinants of how an SBTE's job works out, and they form the most important community for teacher educators. The findings indicate that they have developed a

learning community together. Their activities were found to have collided and merged, as Engeström (2005) described. Based on Zeichner´s (2010) understanding of third spaces, it can be stated that the activities between the SBTEs and PSTs formed a successful third space because both parts were willing to merge their cultures. Using these learning mechanisms are possible when being stated in their familiar context, their partner schools. The results can be seen in relation to the studies of Trevethan and Sandretto (2017) and Parker et al. (2021), who emphasised the importance of matching PSTs and SBTEs and claimed that this is the most important factor for successful field practice activities.

6.4. Willingness to (be) include(d)

This study revealed broad variations in how SBTEs experience third-space activities, which is in line with the results of both international and national studies (e.g. Canrinus et al., 2019) and reports (e.g. Munthe et al., 2020). Overall, the findings indicate that the two arenas are not in a 'true' partnership with equal participants as Smith (2016) has called for. A *willingness to (be) include(d)* is the third factor that's important when discussing the research question guiding this doctoral study. According to Akkerman and Bakker (2011a), the space between activity systems can provide opportunities for growth. As presented above, inviting and interacting with participants is crucial for professional development and enhanced collaboration between the arenas. While interactions involve a focus on horizontal activities, inclusion, which is discussed in this section, focuses on the importance of participants' willingness to put effort into the activities.

Not all participants experienced mutual engagement when working towards a shared object, which Wenger (1998) highlighted as important for professional development in a community. In this section, the importance of SBTEs' willingness to be included (6.4.1) is discussed, followed by the importance of universities' (6.4.2) and their partner schools' (6.4.3) willingness to take responsibility for SBTEs' professional development and thus promote collaboration between the arenas.

6.4.1. The SBTEs

For the professional development of SBTEs to promote collaboration between the two arenas, SBTEs must show their willingness to be included in the process and to cross

boundaries in third spaces. Overall, the SBTEs in this study described positive engagement in their role as second order practitioners. The SBTEs in Substudy 2 used terms such as *looking forward to*, *being excited*, and *looking interesting* when describing field practice activity, which indicated a willingness to engage in their role. Their utterances revealed that the SBTEs were active participants who wanted to be included in third spaces. The participants in Substudies 2 and 3 felt connected to the SBTE role and described themselves as teacher educators. However, these findings are in contrast with those of other studies, which have reported challenges related to SBTEs' self-identification as teacher educators (Heggen & Thorsen, 2015).

Based on the findings of Substudies 2 and 3, it can be stated that SBTEs are mainly responsible for facilitating field practice and can be described as boundary brokers. Boundary brokers are persons who embody boundaries (Vesterinen et al., 2017). The results indicate that the substudy participants crossed boundaries and moved from being first- to second order practitioners (White & Berry, 2022). The bidirectional arrow in Figure 11 illustrates the SBTEs professional development: they used the knowledge gained in the third space when working with field practice at their partner school. Comparing the SBTEs in these two substudies revealed that the SBTEs in Substudy 3 were individual boundary brokers, working independently, whereas the new SBTEs in Substudy 2 were brokers in a community due to collaborating with others about the OTPD programme. The contradictions among the SBTEs who stood alone were solved in the first space without support from others, indicating that boundary crossing took place on an intrapersonal level. The results of Substudy 3, in which SBTEs stood alone, are similar to those of previous research (Heggen & Thorsen, 2015; Munthe & Ohnstad, 2008; Nilssen, 2016).

SBTEs' days as teachers for their students *and* as mentors for PSTs are hectic, and this dual role regulates their willingness to be included in a third space. While the participants in Substudy 2 reported that the OTPD mentoring programme helped them handle the dual role (similar with Jaspers et al., 2014), others withdrew from the programme because of the dual role. The latter group stated that work for the OTPD programme came *on top* of all other tasks and that they had to prioritise their teaching job. A successful factor of the OTPD programme was its design. Due to their dual role, the participants appreciated flexibility in the design and content of Substudy 2. Dynamic processes were found to be preferred, similar to the results of previous studies

(e.g.Reinhardt, 2017). Enhanced flexibility helped balance the participants' individual needs and the online programme's contents; thus, the OTPD programme met the needs of diverse participants. For instance, an SBTE in Substudy 2 preferred to work on the OTPD mentoring programme at night when their children were asleep. The tensions related to the dual role are further discussed in Section 6.4.3.

The SBTEs in Substudy 3 were satisfied with the activities, which indicates that they reached their object or achieved their goal. Since they had limited contact with UBTEs and the university delivered most of the information, it can be said that the SBTE knew their responsibilities, whereas the university had other tasks. The SBTEs claimed that as long as they knew *who* the PSTs were and *when* they would arrive, they could handle the role. Despite the positive attitudes of these experienced teachers, Substudy 2 highlighted that the new SBTEs appreciated the OTPD programme because of the activities involved. Previous studies have revealed that there is no automaticity in good teachers becoming good teacher educators, and the transition from being a teacher to being an SBTE is not something that happens automatically either (e.g. Jaspers et al., 2014; Orland-Barak, 2001). In addition, Bullough Jr (2005) claimed that different competencies are required for teaching students in schools and mentoring PSTs in field practice. Based on these studies, it is likely that SBTEs find it difficult to work individually and to use boundary-crossing learning mechanisms on a reflection or transformation level. Rather, the learning mechanisms tend to be on an identification or coordination level, as Akkerman and Bakker (2011a) stated. Using these learning mechanisms are possible when being stated in their familiar context, their partner schools without having someone to collaborate with.

6.4.2. The university

The results of this doctoral study revealed that field practice in teacher education does not fit the criteria for a partnership. Despite participants' positive descriptions of the university collaboration in Substudy 3, the university was described as a 'black box' by other SBTEs. The university controlled *what* information was delivered and *when* that information was given. Therefore, the SBTEs described themselves as passive recipients. Notably, the responsibility of conducting field practice activities lies with the participants. Akkerman and Bakker (2011a) discussed the importance of individual activity when structures for collaboration are not established. The SBTEs' experiences

in this doctoral study were not in line with partnership theories that define partnership as 'an agreement between teacher education institutions and stakeholders of education who work together towards a shared goal, to improve education at all levels.' (Smith, 2016, p. 20). Similar to Raaen (2017), the lack of university involvement resulted in an increase in SBTEs' responsibility to integrate what the PSTs learned at the university, such as theories and relevant research, and to connect these to field practice.

The university activities in third spaces mostly involved sharing directives or information. One example is the OTPD programme, which mediated the SBTE professional development. However, it was minimal activity from university when the SBTEs participated in the programme. Therefore, the findings of Substudy 3 indicate that the arrow from university in the activity system are not bidirectional, in contrast to the CHAT triangle (Figure 3). In the CHAT triangle, the bidirectional arrows illustrate that all nodes interact with each other (Engeström, 1987). The bias in Figure 11 illustrates that field practice activities are mostly connected to SBTEs' partner schools, their familiar context. Since the activities often took place in a single activity system, the field practice activities in this study can be described as following the second-generation sociocultural theory. By directing questions to the OTPD programme facilitator, UBTEs, or university administrators when needed, the activities could be described as vertical and in the division of labor node, as described by Engeström and Sannino (2010). Despite the low levels of activity between the two arenas responsible for field practice, a majority of the SBTEs were satisfied with the university's communications.

Communication, rather than collaboration, seemed to dominate the activities, indicating that SBTE professional development takes place on an identification or coordination level, as Akkerman and Bakker (2011a) described. Two examples illustrate this situation: First, several participants in Substudies 2 and 3 expressed that they aimed to connect the theories that PSTs learn at university with field practice. They stated that *if* they could gain insights into these theories, they could use them when planning lessons and thus improve their focus during mentoring sessions. However, this was impossible when there was insufficient time between their receiving information and the scheduled field practice. Second, they wanted to obtain information on which PSTs would arrive to their partner school as early as possible. They appreciated the PST community and were very curious about *who* the PSTs were because PSTs´ approaches

to learning affected the SBTEs´ role. For instance, insecure PSTs and PSTs with more solid knowledge needed different help. Meeting PSTs early in the school year would give SBTEs information on how they needed to perform their role. Receiving information in a timely manner has also been presented as important in other studies (Heggen et al., 2018; Heggen & Thorsen, 2015).

The findings presented in this section make it clear that merely delivering information is not enough, but it is still crucial for the professional development of SBTEs and for promoting collaboration between partner schools and universities. The SBTEs in this doctoral study were interested in strengthening the connection between the two arenas. The literature on boundary crossing has revealed that crossing boundaries is often challenging because it 'face[s] the challenge of negotiating and combining ingredients from different contexts to achieve hybrid situations' (Engeström, 1995, p. 319). This quote highlights the importance of facilitating SBTEs' professional development. Even if it is challenging to compare, most of the participants in Substudy 2 reflected upon boundary crossing on an interpersonal level, and only a few of the participants in Substudy 3 did the same. A non-hierarchical collaboration between the actors, in line with Zeichner´s (2010) descriptions, could be seen in Substudies 2 and 3, which involved SBTEs and their peers at partner schools and PSTs.

Not preparing SBTEs in their role as second order practitioners indicate that the university cannot expect participants to be equal partners in third spaces. The findings of all three substudies show that a lack of time was a recurring tension, which is not a surprise when considering past research. The findings of Substudy 2 did not provide any answers for why some SBTEs did not sign up for the OTPD programme. A total of 97 new SBTEs participated in the mandatory startup seminar, and of the 59 who wanted to participate in the programme, only 21 completed it. The participants failure to complete the programme is not unique to this study (e.g. Palazzolo et al., 2019). The professional development of SBTEs in field practice takes time (Langdon, 2017; Walters et al., 2021).

6.4.3. The partner schools

The results of this study shed light on Zeichner et al.'s (2015) statement that 'even when school and universities are aware of each other's world, they do not necessarily share a vision of quality teaching and teacher preparation' (p. 23). Therefore, SBTEs'

professional development must be seen in accordance with their partner schools. The principals of partner schools are responsible for field practice and are committed to participating in meetings involving the arenas (UHR, 2016a, 2016b). As seen in Substudy 3, there are broad variations in principals' activities during field practice as well as in their assessment approaches. The survey findings revealed that most of the SBTEs in Substudy 3 worked alone when assessing PSTs. Few SBTEs collaborated to perform assessments in this study compared to those in the study of Munthe and Ohnstad (2008).

When SBTEs are invited to cross boundaries and go from being first to second order practitioners, they are part of their respective partner schools. Overall, the SBTEs in Substudy 3 were satisfied with the professional development process, although many reported a lack of engagement among their school leaders. This result is in contrast to that of Andreasen et al.'s (2019) study, in which the partner schools highly affected how the SBTEs experienced their role as teacher educators. Notably, Munthe (2015) showed that partner schools are more aware about being an arena in teacher education. The results of Substudy 3 are in agreement with Munthe and Ohnstad (2008) study; the latter reported that few teachers were involved in the preparation of field practice at their partner schools.

Tension around the dual role of SBTEs was a central finding of Substudies 2 and 3. Although many SBTEs in Substudy 2 were willing to participate in the OTPD mentoring programme, some withdrew because of a work overload. Another challenge was that the participants were exposed to many development programmes at their partner schools, which reduced their focus on their professional development as SBTEs. To reduce some of the tensions experienced by new SBTEs, they could be given the opportunity to participate in an OTPD programme instead of being active in other development programmes during their first year as teacher educators (Denoyelles & Raider-Roth, 2016; Varanasi et al., 2019). This finding aligns with those of previous studies (e.g. Berg & Rickels, 2018). It has been shown that when SBTEs experience tension between the two roles, their attention is directed towards their students' best interests (e.g. Jaspers et al., 2014). Another example showing that students are 'winners' in this tug of war is the emphasis on the national curriculum *Kunnskapsløftet* and schools' local plans instead of the national guidelines for teacher education (Thorsen, 2016).

Boundaries between activity systems tend to be porous and complex (Akkerman & Van Eijck, 2013). This study revealed the presence of complex boundaries between the SBTEs and their partner schools. Even though they belonged to the same activity system, shared activity levels were low in Substudy 3. The activity systems for these SBTEs were connected to their classrooms and the PSTs. In contrast, the SBTEs in Substudy 2 were active in their collaboration with others. Although this was not in line with the intentions of the OTPD mentoring programme, the findings of Substudy 3 revealed limited field practice collaboration within the partner schools, which may explain why the SBTEs in Substudy 2 chose to work with colleagues. The activities within the OTPD programme might have strengthened the field practice activities at the partner schools. Other studies have described relational aspects as crucial to SBTEs' engagement and achievement (Sandvik et al., 2020). The current study's findings revealed that the participants appreciated getting to know their colleagues better through the OTPD programme. Another explanation for this preference may be the need for enhanced focus on field practice at their respective partner schools.

The SBTEs appreciated being able to collaborate with colleagues at their partner schools, which aligns with the findings of previous research. One example of collegial collaboration is Jackson and Burch´s (2019) study, where one SBTE claimed that meetings with colleagues to discuss field practice were 'the most powerful meetings I have in school' (p. 146). Some of the challenges revealed in this study can be described as constituting the fourth form of contradictions presented by Engeström and Sannino (2010), namely the contradiction between old and new practices. An example of this in Substudy 3 is that the annual plan for field practice at the partner schools correlated with the partner schools and field practice. This indicates that concrete activities might strengthen the focus of field practice because participants get a shared understanding of the activity. This finding is in line with that of Fauskanger et al.'s (2019) study, wherein SBTEs had positive experiences when creating plans for field practice at their partner schools. The shared activity resulted in engaged headmasters and colleagues, and the partner school developed a shared language about field practice. Notably, an SBTE who participated in the OTPD programme in Substudy 2 aimed to reorganise the field practice at his partner school, which shows that professional development of SBTEs can promote collaboration between partner schools and universities.

6.5. Summary

This chapter discussed the findings that indicate the ways in which SBTEs' professional development can promote collaboration between partner schools and universities. In the next chapter, the implications of the study are presented, followed by the study's limitations and suggestions for further research.

7. Concluding remarks

This doctoral study revealed that the professional development of SBTEs can promote collaboration between partner schools and universities in different ways. The originality of this study lies in its qualitative-dominant mixed methods design and its consideration of SBTEs' experiences of being teacher educators. In this section, the research implications are first presented (7.1), followed by the limitations of the study and suggestions for further research (7.2).

7.1. Implications

This dissertation has several implications for partner schools and universities. An overall implication of this doctoral dissertation is that it contributes with knowledge about different ways to strengthen SBTE professional development and collaboration between the actors in field practice. The findings can contribute to enhanced quality of teacher education, which can lead to better conditions for all participants involved in a development programme. In the long term, the implications of this study can result in better-qualified, newly educated teachers, which will lead to a better learning environment for students. The contribution can be explained through four different implications: empirical, theoretical, methodological, and political.

The primary empirical contribution of the present dissertation is an enhanced understanding of the SBTEs' experiences with extensive variations in coherence in third spaces. The results demonstrate that merely emphasising the significance of coherence between a university and its partner schools, such as through national guidelines, is insufficient. The SBTEs in the current research had diverse experiences concerning coherence in third spaces, indicating that the quality of teacher education still relied on individualised field practice.

A willingness, both to invite, interact, and include others, stood out as crucial in activities taking place in third spaces. These activities should involve both vertical and horizontal activity. A facilitator being responsible for organising collaboration was found crucial for vertical activity, and collaboration with peers exemplifies horizontal activity. However, the tension between the SBTEs roles as first order practitioners for their students and second order practitioners as mentor for PSTs was found challenging.

Further, the findings revealed that OTPD programmes can function as boundary artefacts to strengthen the connection between the two learning arenas. However, an

important implication is that technological tensions must be taken into consideration if collaboration between the two arenas is to be promoted. Relations between actors are crucial for collaboration. Therefore, physical meetings at the university are important for further online collaboration of SBTEs from different schools. The low number of participants who collaborated online in this study indicates that both the facilitator and the school leaders should have taken more responsibility for encouraging and promoting collaboration between colleagues instead of leaving participants alone in the OTPD programme.

The SBTE highly valued the activity with PSTs. The findings revealed that field practice activities mostly took place in classrooms; therefore, the corresponding activity system is a *classroom* rather than a *partner school.* However, PSTs should not be the only group with which SBTEs work during field practice.

The implications of this study are mostly related to boundary crossing on an institutional level; universities and partner schools need to develop and align their practices. Overall, boundary crossing on an institutional level is crucial for further development of field practice in teacher education. Universities are responsible for facilitating PSTs' development, and they are also responsible for the content, quality, and assessments involved in field practice (UHR, 2016a, 2016b). However, since universities and partner schools 'are partners pursuing the same goal, educating teachers to improve education at all levels' (Smith, 2016, p. 27), the two actors must strengthen their collaboration. Although the term partner school was implemented almost 20 years ago, this doctoral dissertation has revealed that the partner school is not used in its entirety as a collective arena for PSTs' professional development.

Second, a theoretical implication of this dissertation is that using CHAT and boundary crossing as theoretical framework is helpful for understanding the results of the present dissertation. The SBTEs mostly conduct field practice at their partner schools and have limited contact with the associated universities, and this lack of collaboration also results in bias in the activities involved. The figure illustrating third generation CHAT (Figure 3) was helpful to get an understanding of the intended balance between two activity systems. The substudies findings resulted in a figure inspired of third generation CHAT (Figure 11). The figure illustrates the bias in the activity and revealed that despite an intention to promote equal and intertwined

collaboration between the two activity systems, universities are deliverers of information.

Theories of boundary crossing enhanced the understanding of SBTE professional development. The theory was helpful to reveal how different professional development mechanisms took place in third spaces. The findings indicate that an established direction and an intention to be in a partnership are not enough to facilitate coherence and collaboration. It is not sufficient to merely identify and coordinate activities; boundary crossing must take place on a reflection or transformation level as well. A third space, such as the OTPD mentoring programme in Substudy 2, can facilitate development processes by using reflection and transformation as learning mechanisms. The participants in Substudy 2 reflected upon boundary crossing on an intrapersonal level. Nevertheless, the activities of the university and partner schools were still found to take place in two different worlds, as Ulvik and Smith (2011) described more than a decade ago.

Third, this doctoral dissertation uses a qualitative dominated mixed methods case study design. By implementing an intervention in a doctoral study gives opportunities to the university where the dissertation is located. In addition to personal qualification of the PhD candidate, this doctoral dissertation can contribute to a development of the department. In this study, field practice at the department has got a new artefact that can be used for new SBTE. In the mixed methods design, a scoping review was implemented as Substudy 1. To combine a review in the design gave a broad overview over relevant studies and became an important contributor. In addition, the review has become an important contributor on the research field for other researchers. Overall, throughout the process, an underlying intention about transparency opened for opportunities for other researchers to replicate the study. The emphasis on how illustrations have been helpful during the analysis is a concrete example that can be found interesting in further research.

Last, but not least: political implications are central because of this dissertations results. The Norwegian national guidelines provide clear directions for collaboration, routines, and educational demands for participants in field practice. An implication of this study is to involve actors from the government level, both from teacher education and partner schools, in third-space activities may enable a greater level of shared understanding among the actors. The government also has the money required to

strengthen coherence. Many studies have shown that education of SBTEs can contribute to better coherence in teacher education. Nevertheless, my study shows that a lack of financial support to carry out mentoring education means that many SBTEs do not prioritize this. Having leaders who support mentoring education, also financially, can contribute to better qualified SBTE, and again, better field practice for PST. Because the results from this study are in line with international studies, the political implications can also be drawn into an international perspective.

7.2. Limitations and suggestions for further research

There are some limitations to this study. Field practice in teacher education is complex, and methodological choices are not without their limitations in the research process. Even so, the main findings are important in relevant contexts. Because this study is a small case study that drew on data gathered from two programmes at one university providing teacher education, it does not search for universal knowledge. Although the study focused on two programmes, the results should be of interest to all programmes that include practical components. SBTEs' views and how they experienced the situation were focused on in this study. Including other samples might have added other perspectives. In the future, it will be valuable to understand the viewpoints of other participants in teacher education.

The activities were conducted locally with SBTEs. Nevertheless, because both the SBTEs and the programs are linked to historical and cultural resources, I believe they may also be applicable and can be generalised to a larger population. The findings are also potentially applicable to other contexts and professions and might be considered when designing and implementing new OTPD programmes. Since the national guidelines provide directions for teacher education in Norway, the results of this study may also be relevant for other universities. It would be interesting to replicate this study in different contexts, both nationally and internationally. To gain further insights into the professional development of SBTEs to promote collaboration between the two learning arenas, studies could be conducted in other contexts with a longitudinal design and quantitative data. New perspectives will help strengthen this important field.

An objective of this study was to gain insights into the established routines involving collaboration between partner schools and universities. It seems like the COVID-19 pandemic did not affect the professional development of SBTEs or the

promotion of collaboration between the arenas. In this study, the SBTEs took part in field practice during different periods of the school year, depending on the PSTs different stages in their education. SBTEs mentoring first-year PSTs were the most affected by COVID-19 because three weeks with field practice were cancelled. These weeks were half of their field practice period. The second-year PSTs only lost one week. For the third-year PSTs, field practice was reduced by one day. Field practice for fourth-year PST was not affected by the pandemic because field practice took place in November 2019. The new SBTEs did not mention the pandemic affecting their activities during the OTPD programme. Therefore, even though there was a pandemic at the time of this doctoral project, it was not given attention when answering the research question. However, since the participants responded to the survey in May 2020, they might have been influenced by the special circumstances. Their role as first order practitioners, might potentially have limited their focus on their role as second order practitioners. COVID-19 has resulted in a paradigm shift and changes in teachers' online competencies and experiences; it would be interesting for future research to investigate whether the pandemic affected OTPD.

My role as a researcher and the local context of this study were valuable, but they may have affected the results. I was aware of my role, preconceptions, and understanding of the context throughout the project. Nevertheless, for example the formulations in the reflection logs and the survey, as well as the search strings in the scoping process, may have affected the results. I tried to address this by giving some participants opportunities to make comments about what they found relevant throughout the process. Considering my active role in this research, it would be interesting for other researchers for comparative purposes. The limitations of this study open promising avenues for further research in this area.

References

Aderibigbe, S., Gray, D. S., & Colucci-Gray, L. (2018). Understanding the nature of mentoring experiences between teachers and student teachers. *International Journal of Mentoring and Coaching in Education*, *7*(1), 54-71. https://doi.org/10.1108/IJMCE-04-2017-0028

Advisory Panel for Teacher Education. (2020). *Transforming Norwegian teacher education: The final report of the international advisory panel for primary and lower secondary teacher education.* https://www.nokut.no/globalassets/nokut/rapporter/ua/2020/transforming-norwegian-teacher-education-2020.pdf

Akkerman, S., & Bruining, T. (2016). Multilevel boundary crossing in a professional development school partnership. *Journal of the Learning Sciences*, *25*(2), 240-284. https://doi.org/10.1080/10508406.2016.1147448

Akkerman, S. F., & Bakker, A. (2011a). Boundary crossing and boundary objects. *Review of Educational Research*, *81*(2), 132-169. https://doi.org/10.3102/0034654311404435

Akkerman, S. F., & Bakker, A. (2011b). Learning at the boundary: An introduction. *International Journal of Educational Research*, *50*(1), 1-5. https://doi.org/10.1016/j.ijer.2011.04.002

Akkerman, S. F., & Van Eijck, M. (2013). Re-theorising the student dialogically across and between boundaries of multiple communities. *British Educational Research Journal*, *39*(1), 60-72. https://doi.org//10.1080/01411926.2011.613454

Alles, M., Apel, J., Seidel, T., & Stürmer, K. (2019). How candidate teachers experience coherence in university education and teacher induction: The influence of perceived professional preparation at university and support during teacher induction. *Vocations and Learning*, *12*(1), 87-112. https://doi.org/10.1007/s12186-018-9211-5

Alvesson, M., & Sköldberg, K. (2008). *Tolkning och reflektion: Vetenskapsfilosofi och kvalitativ metod*. Studentlitteratur.

Amdal, I. I., & Mastad, L. B. T. (2022). Forståelsen av lærerutdannerrollen blant skolebaserte lærerutdannere i Norge. *Acta Didactica Norden*, *16*(1), 1-23. https://doi.org/10.5617/adno.9154

Andersen, S.A. (2013). *Casestudier. Forskningsstrategi, generalisering og forklaring* (2.ed.). Fagbokforlaget.

Andreasen, J. K., Bjørndal, C. R., & Kovač, V. (2019). Being a teacher and teacher educator: The antecedents of teacher educator identity among mentor teachers. *Teaching and Teacher Education*, *85*, 281-291. https://doi.org/10.1016/j.tate.2019.05.011

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, *8*(1), 19-32. https://doi.org/10.1080/1364557032000119616

Arstorp, A.-T., & Røkenes, F. M. (2022). Extended editorial. *Nordic Journal of Digital Literacy*, *17*(1), 4-15. https://doi.org/10.18261/njdl.17.1.1

Baran, B., & Cagiltay, K. (2010). The dynamics of online communities in the activity theory framework. *Journal of Educational Technology & Society*, *13*(4), 155-166. http://www.jstor.org/stable/jeductechsoci.13.4.155

Berg, M. H., & Rickels, D. A. (2018). Mentoring for mentors: The music mentor plus program. *Journal of Music Teacher Education*, *27*(2), 39-51. https://doi.org/10.1177/1057083717720634

Betlem, E., Clary, D., & Jones, M. (2019). Mentoring the Mentor: Professional development through a school-university partnership. *Asia-Pacific Journal of Teacher Education*, *47*(4), 327-346. https://doi.org/10.1080/1359866X.2018.1504280

Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher*, *34*(6), 3-15. https://doi.org/10.3102/0013189X03400600

Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic approaches to a successful literature review* (2 ed.). Sage.

Bullough Jr, R. V. (2005). Being and becoming a mentor: School-based teacher educators and teacher educator identity. *Teaching and Teacher Education*, *21*(2), 143-155. https://doi.org/10.1016/j.tate.2004.12.002

Butler, B. M., & Cuenca, A. (2012). Conceptualizing the roles of mentor teachers during student teaching. *Action in Teacher Education*, *34*(4), 296-308. https://doi.org/10.1080/01626620.2012.717012

Campbell, T., McKenna, T. J., Fazio, X., Hetherington-Coy, A., & Pierce, P. (2019). Negotiating coherent science teacher professional learning experiences across a university and partner school settings. *Journal of Science Teacher Education*, *30*(2), 179-199. https://doi.org/10.1080/1046560x.2018.1547033

Canrinus, E. T., Klette, K., & Hammerness, K. (2019). Diversity in coherence: Strengths and opportunities of three programs. *Journal of Teacher Education*, *70*(3), 192-205. https://doi.org/10.1177/002248711773730

Cavanna, J. M., Molloy Elreda, L., Youngs, P., & Pippin, J. (2021). How methods instructors and program administrators promote teacher education program coherence. *Journal of Teacher Education*, *72*(1), 27-41. https://doi.org/10.1177/0022487119897005

Charmaz, K. (2014). *Constructing grounded theory*. Sage.

Chilton, H., & McCracken, W. (2017). New technology, changing pedagogies? Exploring the concept of remote teaching placement supervision. *Higher Education Pedagogies*, *2*(1), 116-130. https://doi.org/10.1080/23752696.2017.1366276

Ciampa, K., & Gallagher, T. L. (2015). Blogging to enhance in-service teachers' professional learning and development during collaborative inquiry. *Educational Technology, Research and Development*, *63*(6), 883-913. https://doi.org/10.1007/s11423-015-9404-7

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage.

Creswell, J. W. (2013). *Qualitative inquiry and research design choosing among five approaches* (3 ed.). Sage.

Creswell, J. W. (2015). *A concise introduction to mixed methods research*. Sage

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2 ed.). Sage.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (4 ed.). Sage.

Critical Appraisal Skills Programme. (2018). *CASP qualitative checklist*. 7a-casp-qualitative-cat.pdf (unisa.edu.au)

Czerniawski, G., Guberman, A., & MacPhail, A. (2017). The professional developmental needs of higher education-based teacher educators: An

international comparative needs analysis. *European Journal of Teacher Education*, *40*(1), 127-140. https://doi.org/10.1080/02619768.2016.1246528
Dahl, T., Askling, B., Hegge, K., Kulbrandstad, L., Lauvdal, T., Qvotrup, L., Salvanes, K., Skrøvseth, S., Thue, F., & Mausethagen, S. (2016). *Ekspertgruppa om lærerrollen. Om lærerrollen: et kunnskapsgrunnlag*. Fagbokforlaget.
Daza, V., Gudmundsdottir, G. B., & Lund, A. (2021). Partnerships as third spaces for professional practice in initial teacher education: A scoping review. *Teaching and Teacher Education*, *102*, 1-14. https://doi.org/10.1016/j.tate.2021.103338
Denoyelles, A., & Raider-Roth, M. (2016). Being an 'agent provocateur': Utilising online spaces for teacher professional development in virtual simulation games. *Technology, Pedagogy and Education*, *25*(3), 337-353. https://doi.org/10.1080/1475939X.2015.1049652
Denton, D. W., & Heiney-Smith, J. (2020). Characteristics of an effective development program for mentors of preservice teachers. *Educational Studies*, *46*(3), 337-351. https://doi.org/10.1080/03055698.2019.1584854
Denzin, N. K., & Lincoln, Y. S. (2011). *The Sage handbook of qualitative research*. Sage.
Dille, K. B. (2022). An online teacher professional development programme as a boundary artefact for new school-based mentors. *International Journal of Mentoring and Coaching in Education*, *11*(4), 381-397. https://doi.org/10.1108/IJMCE-11-2021-0105
Dille, K. B., & Røkenes, F. M. (2021). Teachers' professional development in formal online communities: A scoping review. *Teaching and Teacher Education*, *105*, 1-17. https://doi.org/10.1016/j.tate.2021.103431
Dille, K. B., Sandvik, L. V., & Einum, E. (minor revisions). School-based mentors' experiences of collaboration in teacher education. *Acta Didactica Norden*
Emstad, A. B., & Sandvik, L. V. (2020). School–university collaboration for facilitating in-service teacher training as a part of school-based professional development. *Acta Didactica Norden*, *14*(3), 1-20. https://doi.org/http://dx.doi.org/10.5617/adno.7934
Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Orienta-Konsultit.
Engeström, Y. (1995). Objects, contradictions and collaboration in medical cognition: An activity-theoretical perspective. *Artificial Intelligence in Medicine*, *7*(5), 395-412. https://doi.org/10.1016/0933-3657(95)00012-U
Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14*(1), 133-156. https://doi.org/0.1080/13639080020028747
Engeström, Y. (2005). *Developmental work research: Expanding activity theory in practice* (Vol. 12). Lehmanns Media.
Engeström, Y., Engeström, R., & Kärkkäinen, M. (1995). Polycontextuality and boundary crossing in expert cognition: Learning and problem solving in complex work activities. *Learning and Instruction*, 319-336. https://doi.org/10.1016/0959-4752(95)00021-6
Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, *5*(1), 1-24. https://doi.org/10.1016/j.edurev.2009.12.002
Ertsås, T. I., & Irgens, E. J. (2021). Developing organizational knowledge in schools: The role of theory and theorizing in collective capacity building. *Journal of Educational Change*, 1-24. https://doi.org/10.1007/s10833-021-09433-3

European Commision. (2013). *Supporting teacher educators for better learning outcomes*. European Commision.
European Higher Education Area. (2021). *European Higher Education Area and Bologna Process*. http://www.ehea.info/
Fauskanger, J., Hanssen, B., & Helgevold, N. (2019). Fra ensomme svaler til fugler i flokk–skolebaserte praksisplaner som redskap i utvikling av felles forståelse i praksisskolen. *Nordisk tidsskrift for utdanning og praksis*, *13*(1), 133-146. https://doi.org/10.23865/up.v13.1940
Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, *103*(6), 1013-1055. https://doi.org/10.1111/0161-4681.00141
Finne, H., Mordal, S., & Stene, T. M. (2014). *Oppfatninger av studiekvalitet i lærerutdanningene 2013* (SINTEF A26113). SINTEF Teknologiledelse. http://hdl.handle.net/11250/2562981
Flaget, A. M. (2021). *Praksis i lærerutdanningene. Hva kjennetegner vellykket og mislykket praksis?* Respons Analyse AS. https://www.pedagogstudentene.no/globalassets/_pedagogstudentene/dokumenter/undersokelser/praksis-i-larerutdanningene_2021.pdf
Graham, L., & Fredenberg, V. (2015). Impact of an open online course on the connectivist behaviours of Alaska teachers. *Australasian Journal of Educational Technology*, *31*(2), 140-149. https://doi.org/10.14742/ajet.1476
Grimmett, H., Forgasz, R., Williams, J., & White, S. (2018). Reimagining the role of mentor teachers in professional experience: Moving to I as fellow teacher educator. *Asia-Pacific Journal of Teacher Education*, *46*(4), 340-353. https://doi.org/10.1080/1359866X.2018.1437391
Grossman, P., Hammerness, K. M., McDonald, M., & Ronfeldt, M. (2008). Constructing coherence: Structural predictors of perceptions of coherence in NYC teacher education programs. *Journal of Teacher Education*, *59*(4), 273-287. https://doi.org/10.1177/002248710832212
Gruber, H. (2019). Lesson study with music: A new way to expand the dialogic space of learning and teaching. *International Journal for Lesson and Learning Studies*, *8*(4), 272-289. https://doi.org/10.1108/IJLLS-03-2019-0019
Guba, E. G. (1990). *The paradigm dialog*. Sage
Hammerness, K. (2013). Examining features of teacher education in Norway. *Scandinavian Journal of Educational Research*, *57*(4), 400-419. https://doi.org/10.1080/00313831.2012.656285
Hartmann, U., & Decristan, J. (2018). Brokering activities and learning mechanisms at the boundary of educational research and school practice. *Teaching and Teacher Education*, *74*, 114-124. https://doi.org/10.1016/j.tate.2018.04.016
Heggen, K., Raaen, F. D., & Thorsen, K. E. (2018). Placement schools as professional learning communities in teacher education. *European Journal of Teacher Education*, *41*(3), 398-413. https://doi.org/10.1080/02619768.2018.1448779
Heggen, K., & Thorsen, K. E. (2015). Praksisopplæring- et felles prosjekt mellom høgskole og praksisskole? *Norsk pedagogisk tidsskrift*, *99*(5), 362-374. https://doi.org/10.18261/ISSN1504-2987-2015-05-05
Helgevold, N., & Munthe, E. (2016). Veiledning på elevens vilkår. In A. L. Østern & G. Engvik (Eds.), *Veiledningspraksiser i bevegelse i skole og utdanning* (pp. 81-99). Fagbokforlaget.
Helleve, I., & Ulvik, M. (2019). Tutors seen through the eyes of mentors assumptions for participation in third space in teacher education. *European Journal of*

Teacher Education, *42*(2), 228-242. https://doi.org/10.1080/02619768.2019.1570495
Holland, E. (2018). Mentoring communities of practice: What's in it for the mentor? *International Journal of Mentoring and Coaching in Education*, *7*(2), 110-126. https://doi.org/10.1108/IJMCE-04-2017-0034
Hvalby, M., & Thortveit, J. (2022). Det er en fremmed tanke å skulle ha studentene for seg selv. *Nordisk tidsskrift i veiledningspedagogikk*, *7*(1), 1-14. https://doi.org/10.15845/ntvp.v7i1.3465
Hyett, N., Kenny, A., & Dickson-Swift, V. (2014). Methodology or method? A critical review of qualitative case study reports. *International Journal of Qualitative Studies on Health and Well-being, 9*(1), 23606. https://doi.org/10.3402/qhw.v9.23606
Høynes, S.-M., Klemp, T., & Nilssen, V. L. (2018). Mentoring prospective mathematics teachers as conductors of whole class dialogues-Using video as a tool. *Teaching and Teacher Education*, 77, 287-298. https://doi.org/10.1016/j.tate.2018.10.014
IBM Corp. (n.d.). *SPSS Statistics for Windows*. https://www.ibm.com/products/spss-statistics
Jackson, A., & Burch, J. (2019). New directions for teacher education: Investigating school/university partnership in an increasingly school-based context. *Professional Development in Education*, *45*(1), 138-150. https://doi.org/10.1080/19415257.2018.1449002
Jakhelln, R., & Postholm, M. B. (2022). University–school collaboration as an arena for community-building in teacher education. *Educational Research*, *64*(4), 457-472. https://doi.org/10.1080/00131881.2022.2071750
Jaspers, W. M., Meijer, P. C., Prins, F., & Wubbels, T. (2014). Mentor teachers: Their perceived possibilities and challenges as mentor and teacher. *Teaching and Teacher Education*, *44*, 106-116. https://doi.org/10.1016/j.tate.2014.08.005
Jenset, I. S., Hammerness, K., & Klette, K. (2019). Talk about field placement within campus coursework: Connecting theory and practice in teacher education. *Scandinavian Journal of Educational Research*, *63*(4), 632-650. https://doi.org/10.1080/00313831.2017.1415968
Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112-133. https://doi.org/10.1177/1558689806298224
Kalgraf, S., & Lindhardt, E. M. (2018). Lærerutdannerens profesjonelle rolle i praksismøtet. *Nordic Studies in Education*, *38*(01), 67-81. https://doi.org/10.18261/issn.1891-5949-2018-01-06
Karam, R., Straus, S. G., Byers, A., Kase, C. A., & Cefalu, M. (2018). The role of online communities of practice in promoting sociotechnical capital among science teachers. *Educational Technology, Research and Development*, *66*(2), 215-245. https://doi.org/10.1007/s11423-017-9541-2
Kiviniemi, U., Tynjälä, P., Heikkinen, H. L. T., & Martin, A. (2021). Running a hybrid: Mingling in-service and pre-service teachers in peer-mentoring groups. *European Journal of Teacher Education*, *44*(4), 555-571. https://doi.org/10.1080/02619768.2020.1766442
Klemp, T., & Nedberg, A. (2016). Å studere elevers læring gjennom en fokuselev. *Nordisk tidsskrift for utdanning og praksis*, *10*(2), 23-43. https://hdl.handle.net/11250/2652952.

Klemp, T., & Nilssen, V. (2016). Skriving i et digitalt triadisk refleksjonsfellesskap i lærerutdanninga. *Acta Didactica Norge*, *10*(2), 347-365. https://doi.org/10.5617/adno.2484
Klemp, T., & Nilssen, V. (2017). Positionings in an immature triad in teacher education. *European Journal of Teacher Education*, *40*(2), 257-270. https://doi.org/10.1080/02619768.2017.1282456
Klemp, T., & Nilssen, V. (2018). *Praksisstudier i lærerutdanninga*. Fagbokforlaget.
Krumsvik, R. J. (2014). *Forskningsdesign og kvalitativ metode-ei innføring*. Fagbokforlaget.
Krumsvik, R. J., & Røkenes, F. M. (2019). Hvordan finne kunnskapsfronten? Litteraturreview i masteroppgaven i grunnskolelærerutdannignen. In R. J. Krumsvik (Ed.), *Kvalitativ metode i lærerudanninga* (pp. 96-136). Fagbokforlaget.
Kuutti, K. (1996). Activity theory as a potential framework for human-computer interaction research. In B. A. Nardi (Ed.), *Context and consciousness: Activity theory and human-computer interaction* (pp. 17-44). The MIT press.
Kvale, S., & Brinkmann, S. (2015). *Det kvalitative forskningsintervju* (3 ed.). Gyldendal.
Kvernbekk, T. (2005). *Pedagogisk teoridannelse- insidere, teoriformer og praksis*. Fagbokforlaget.
Lammert, C., DeWalt, L. M., & Wetzel, M. M. (2020). "Becoming" a mentor between reflective and evaluative discourses: A case study of identity development. *Teaching and Teacher Education*, *96*, 1-10. https://doi.org/10.1016/j.tate.2020.103179
Land, C. L. (2018). Examples of c/critical coaching: An analysis of conversation between cooperating and preservice teachers. *Journal of Teacher Education*, *69*(5), 493-507. https://doi.org/10.1177/0022487118761347
Langdon, F. J. (2014). Evidence of mentor learning and development: An analysis of New Zealand mentor/mentee professional conversations. *Professional Development in Education*, *40*(1), 36-55. https://doi.org/10.1080/19415257.2013.833131
Langdon, F. J. (2017). Learning to mentor: Unravelling routine practice to develop adaptive mentoring expertise. *Teacher Development*, *21*(4), 528-546. https://doi.org/10.1080/13664530.2016.1267036
Langdridge, D. (2015). *Psykologisk forskningsmetode. En innføring i kvalitative og kvantitative tilnærminger*. Fagbokforlaget.
Lantz-Andersson, A., Lundin, M., & Selwyn, N. (2018). Twenty years of online teacher communities: A systematic review of formally-organized and informally-developed professional learning groups. *Teaching and Teacher Education*, 75, 302-315. https://doi.org/10.1016/j.tate.2018.07.008
Leont'ev, A. N. (1974). The Problem of Activity in Psychology. *Soviet Psychology*, *13*(2), 4-33. https://doi.org/10.2753/RPO1061-040513024
Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, *5*(1), 1-9. https://doi.org/10.1186/1748-5908-5-69
Lillejord, S., & Børte, K. (2016). Partnership in teacher education–a research mapping. *European Journal of Teacher Education*, *39*(5), 550-563. https://doi.org/10.1080/02619768.2016.1252911
Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

Lloyd, G. M., Rice, C. L., & McCloskey, A. V. (2020). Opportunities for professional learning about mathematics instruction: The role of joint work in student-teaching triads. *Journal of Mathematics Teacher Education*, *23*(5), 499-525. https://doi.org/10.1007/s10857-019-09439-y

Macià, M., & García, I. (2016). Informal online communities and networks as a source of teacher professional development: A review. *Teaching and Teacher education,* 55, 291-307. https://doi.org/10.1016/j.tate.2016.01.021

Major, L., Warwick, P., Rasmussen, I., Ludvigsen, S., & Cook, V. (2018). Classroom dialogue and digital technologies: A scoping review. *Education and Information Technologies*, *23*(5), 1995-2028. https://doi.org/10.1007/s10639-018-9701-y

Margevica-Grinberga, I., & Odiņa, I. (2021). Mentoring for school-based teacher education. *Cypriot Journal of Educational Sciences*, *16*(5), 2389-2401. https://doi.org/10.18844/cjes.v16i5.6348

Marsh, B. (2021). Developing a project within a school-university partnership: Factors that influence effective partnership working. *Research Papers in Education*, *36*(2), 233-256. https://doi.org/10.1080/02671522.2019.1646794

Mathisen, P., & Bjørndal, C. (2016). Tablets as a digital tool in supervision of student teachers' practical training. *Nordic Journal of Digital Literacy*, *11*(4), 227-247. https://doi.org/10.18261/issn.1891-943x-2016-04-02

Maxwell, J. A. (2006). Literature reviews of, and for, educational research: A commentary on Boote and Beile's "Scholars before Researchers". *Educational Researcher*, *35*(9), 28-31. https://journals.sagepub.com/doi/pdf/10.3102/0013189X035009028

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3 ed.). Sage.

Ministry of Education and Research. (2005). *Nye avtaler for øvingslærere*. (Rundskriv F-04/2005). https://www.regjeringen.no/no/dokumenter/rundskriv-f-04-05/id109530/.

Ministry of Education and Research. (2010a). *Nasjonale retningslinjer for grunnskolelærerutdanningen 1.-7. trinn*. [National guidelines for teacher education 1-7]. https://www.uhr.no/_f/p1/i53d3c7277ee14e9c8acbffd8e1dbdb8f/retningslinjer_grunnskolelaererutdanningen_1_7_trinn_fire_rig.pdf

Ministry of Education and Research. (2010b). *Nasjonale retningslinjer for grunnskolelærerutdanningen 5.-10. trinn*. [National guidelines for teacher education 5-10]. https://www.uhr.no/_f/p1/i1e18ac5a-1a194b5e886221781dbd2748/retningslinjer_grunnskolelaererutdanningen_5_10_trinn_fire_rig.pdf

Ministry of Education and Research. (2015). *Kompetanse for kvalitet. Strategi for videreutdanning av lærere og skoleledere frem mot 2025.* [Competence for quality. Strategy for further education of teachers and school leaders until 2025]. Oslo. http://www.publikasjoner.dep.no/

Ministry of Education and Research. (2017). *Teacher Education 2025. Natonal strategy for quality and cooperation in teacher education*. Oslo. Teacher Education 2025. National Strategy for Quality and Cooperation in Teacher Education (regjeringen.no)

Moen, K. M., & Standal, O. F. (2014). Student teachers´ perceptions of the practicum in physical education teacher education in Norway. *Nordic Studies in Education*, *34*(2), 111-126. https://doi.org/10.18261/ISSN1891-5949-2014-02-04

Moen, K. M., & Standal, Ø. (2016). Practicum in Physical Education Teacher Education: An Educational Partnership? *SAGE Open*, *6*(1), 1-10. https://doi.org/10.1177/2158244016635715

Molitor, S., Parker, L., & Vetter, D. (2018). Mentoring for all: Building knowledge and community. *Journal of Professional Capital and Community*, *3*(4), 242-255. https://doi.org/10.1108/JPCC-12-2017-0035

Morud, E. B., & Engvik, G. (2019). Skolebasert videreutdanning for praksislærere. Utvikling i praksisveiledningen og i skolehverdagen gjennom bruk av «Lesson Study»? En case fra praksislærerutdanningen ved én av NTNUs universitetsskoler. *Paideia,* (18), 38-49. https://tidsskrift.dk/Paideia/article/view/125513

Munn, Z., Peters, M. D., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology, 18*(1)*,* 1-7. https://doi.org/10.1186/s12874-018-0611-x

Munthe, E. (2015). *Grunnskulelærarutdanningane etter fem år. Status, utfordringar og vegar vidare* (Rapport nr. 5). Rapport nr. 5 frå Følgjegruppa.pdf (uis.no)

Munthe, E., & Ohnstad, F. O. (2008). Ensomme svaler? En studie av praksisskolelæreres rapportering om identitet, kollektivitet og gjennomføring av praksisopplæringsperioder. *Norsk pedagogisk tidsskrift*, *92*(6), 471-483. https://doi.org/10.18261/ISSN1504-2987-2008-06-06

Munthe, E., Ruud, E., & Malmo, K.-A. S. (2020). *Praksisopplæring i lærerutdanninger i Norge; en forskningsoversikt* (KSU 1/2020). Kunnskapssenter for utdanning. https://www.uis.no/sites/default/files/inline-images/mlZHTpKpRyQ6V5sACwmIbYYIumQcSBDtRx7gNEc7vqO8JSmxTG.pdf

Nardi, B. A. (1996). Studying context: A comparison of activity theory, situated action models, and distributed cognition. In B. A. Nardi (Ed.), *Context and consciousness: Activity theory and human-computer interaction* (pp. 69-102). The MIT Press.

Nilssen, V. (2012). *Analyse i kvalitative studier. Den skrivende forskeren.* Universitetsforlaget.

Nilssen, V. (2014). Ny som praksislærer-motivasjon, inspirasjon og frustrasjon. *FoU i Praksis*, *8*(2), 71-87. https://web.s.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=8e252c35-9d36-4e27-9622-8fcf365b57ff%40redis

Nilssen, V. (2016). The first-year as a mentor in Norwegian teacher education–asking for the authoritative word. *Nordisk tidsskrift i veiledningspedagogikk*, *1*(1), 1-12. https://doi.org/10.15845/ntvp.v1i1.997

Näykki, P., Kontturi, H., Seppänen, V., Impiö, N., & Järvelä, S. (2021). Teachers as learners–a qualitative exploration of pre-service and in-service teachers' continuous learning community OpenDigi. *Journal of Education for Teaching*, *47*(4), 495-512. https://doi.org/10.1080/02607476.2021.1904777

Olsen, R. (2020). Posisjonering i kunnskapsrelasjoner: En kasusstudie om FoU-veiledning i grunnskolelærerutdanningen. *Nordisk tidsskrift for utdanning og praksis*, *14*(3), 17-38. https://doi.org/10.23865/up.v14.2213

Orland-Barak, L. (2001). Learning to mentor as learning a second language of teaching. *Cambridge Journal of Education*, *31*(1), 53-68. https://doi.org/10.1080/03057640123464

Ortlipp, M. (2008). Keeping and using reflective journals in the qualitative research process. *The Qualitative Report*, *13*(4), 695-705. https://doi.org/10.46743/2160-3715/2008.1579

Palazzolo, A., Shahbazi, S., & Salinitri, G. (2019). Working towards change: The impact of mentor development on associate teachers and faculty advisors. *Interchange*, *50*(3), 321-337. https://doi.org/10.1007/s10780-019-09365-1

Parker, A. K., Zenkov, K., & Glaser, H. (2021). Preparing school-based teacher educators: Mentor teachers' perceptions of mentoring and mentor training. *Peabody Journal of Education*, *96*(1), 65-75. https://doi.org/10.1080/0161956X.2021.1877027

Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods*. Lippincott Williams & Wilkins.

Postholm, M. B. (2005). *Kvalitativ metode. En innføring med fokus på fenomenologi, etnografi og kasusstudier*. Universitetsforlaget.

Postholm, M. B. (2019). *Research and development in school: Grounded in cultural historical activity theory*. BRILL.

Postholm, M. B. (2020). The importance of the start-up phase in school-based development for learning and enduring change. *European Journal of Teacher Education*, *44*(4), 572-586. https://doi.org/10.1080/02619768.2020.1793944

Postholm, M. B., & Jacobsen, D. I. (2018). *Forskningsmetode for masterstudenter i lærerutdanningen*. Cappelen Damm Akademisk.

Postholm, M. B., & Skrøvset, S. (2013). The researcher reflecting on her own role during action research. *Educational Action Research*, *21*(4), 506-518. https://doi.org/10.1080/09650792.2013.833798

Prawat, R. S. (1996). Constructivisms, modern and postmodern. *Educational psychologist*, *31*(3-4), 215-225. https://doi.org/10.1080/00461520.1996.9653268

Raaen, F. D. (2017). Placement mentors making sense of research-based knowledge. *Teacher Development*, *21*(5), 635-654. https://doi.org/10.1080/13664530.2017.1308429

Raaen, F. D., & Thorsen, K. E. (2020). Student teachers' conditions for professional learning on and across the learning arenas of teacher education: A theoretically grounded account. *Nordic Journal of Comparative and International Education*, *4*(3), 105-116. https://doi.org/10.7577/njcie.3736

Reinhardt, K. S. (2017). Mentoring in clinical placements: Conceptualization of role and its impact on practices. *Action in Teacher Education*, *39*(4), 381-396. https://doi.org/10.1080/01626620.2017.1347533

Richmond, G., Dershimer, R. C., Ferreira, M., Maylone, N., Kubitskey, B., & Meriweather, A. (2017). Developing and sustaining an educative mentoring model of STEM teacher professional development through collaborative partnership. *Mentoring and Tutoring: Partnership in Learning*, *25*(1), 5-26. https://doi.org/10.1080/13611267.2017.1308097

Røkenes, F. M. (2016). *Preparing future teachers to teach with ICT: An investigation of digital competence development in ESL student teachers in a Norwegian teacher education program* [Doctoral Thesis, Norwegian University of Science and Technology]. http://hdl.handle.net/11250/2395012

Røkenes, F. M., Grüters, R., Skaalvik, C., Lie, T. G., Østerlie, O., Järnerot, A., Humphrey, K., Gjøvik, Ø., & Letnes, M.-A. (2022). Teacher educators' professional digital competence in primary and lower secondary school teacher education. *Nordic Journal of Digital Literacy*(1), 46-60. https://doi.org/10.18261/njdl.17.1.4

Røkenes, F. M., & Krumsvik, R. J. (2014). Development of student teachers' digital competence in teacher education-A literature review. *Nordic Journal of Digital Literacy*, *9*(4), 250-280. https://doi.org/10.18261/ISSN1891-943X-2014-04-03

Sandvik, L. V., Solhaug, T., Lejonberg, E., Elstad, E., & Christophersen, K.-A. (2019). Predictions of school mentors' effort in teacher education programmes. *European Journal of Teacher Education*, *42*(5), 574-590. https://doi.org/10.1080/02619768.2019.1652902

Sandvik, L. V., Solhaug, T., Lejonberg, E., Elstad, E., & Christophersen, K.-A. (2020). School mentors' perceived integration into teacher education programmes. *Professional Development in Education*, *46*(3), 424-439. https://doi.org/10.1080/19415257.2019.1623286

Schoonenboom, J., & Johnson, R. B. (2017). How to construct a mixed methods research design. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *69*(2), 107-131. https://doi.org/10.1007/s11577-017-0454-1

Sewell, A., Cody, T.-L., Weir, K., & Hansen, S. (2018). Innovations at the boundary: An exploratory case study of a New Zealand school-university partnership in initial teacher education. *Asia-Pacific Journal of Teacher Education*, *46*(4), 321-339. https://doi.org/10.1080/1359866X.2017.1402294

Sewell, A., Hansen, S., & Weir, K. (2017). Enhancing the capabilities of associate teachers in the practicum: A New Zealand case study. *New Zealand Journal of Educational Studies*, *52*(1), 21-39. https://doi.org/10.1007/s40841-017-0078-z

Smith, K. (2005). Teacher educators´ expertise: What do novice teachers and teacher educators say? *Teaching and Teacher Education, 21(2).* 177-192. https://doi.org/10.1016/j.tate.2004.12.008

Smith, K. (2007). Empowering school-and university-based teacher educators as assessors: A school–university cooperation. *Educational research and evaluation*, *13*(3), 279-293. https://doi.org/10.1080/13803610701632109

Smith, K. (2016). Partnerships in teacher education-going beyond the rhetoric, with reference to the Norwegian context. *ceps Journal*, *6*(3), 17-36. https://doi.org/10.25656/01:12510

Smith, K. (2017). Learning from the past to shape the future. *European Journal of Teacher Education*, *40*(5), 630-646. https://doi.org/10.1080/02619768.2017.1385058

Smith, K. (2018). Accountability in teacher education in Norway: A case of mistrust and trust. In C. Wyatt-Smith & L. Adie (Eds.), *Innovation and Accountability in Teacher Education. Setting directions for new cultures in teacher education.* (pp. 19-35). Springer.

Smith, K., & Ulvik, M. (2014). Learning to teach in Norway: A shared responsibility. In O. McNamara, J. Murray, & M. Jones (Eds.), *Workplace learning in teacher education. Professional learning and development in schools and higher education* (Vol. 10, pp. 261-277). Springer. https://doi.org/10.1007/978-94-007-7826-9_15

Stake, R. E. (2010). *Qualitative Research. Studying how things work.* Guilford.

Steele, A., & Danielsen, A. (2014). Action learning in tripartite teacher student partnership: Dialog seminar, a tool for integration of research and development in teacher education. In A. L. Østern (Ed.), *NAFOL year book 2014. Once a teacher - always a teacher?* (pp. 155-173). Fagbokforlaget.

Steele, A. R. (2017). An alternative collaborative supervision practice between university-based teachers and school-based teachers. *Issues in Educational Research*, *27*(3), 582-599.

https://www.proquest.com/docview/2393116333/fulltextPDF/E8904D4D8EEA423DPQ/1?accountid=12870
Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: techniques and procedures for developing grounded theory.* Sage.

Suchman, L. (1993). Working relations of technology production and use. *Computer Supported Cooperative Work*, *2*(1), 21-39. https://link.springer.com/content/pdf/10.1007/BF00749282.pdf
Tang, C. (2002). Reflective diaries as a means of facilitating and assessing reflection. In *Quality conversations: Proceedings of the 29th HERDSA Annual Conference Perth* (pp. 7-10). https://nursing-midwifery.tcd.ie/assets/director-staff-edu-dev/pdf/ReflectiveDiaries-CatherineTang.pdf
Tashakkori, A., & Teddlie, C. (2009). Integrating qualitative and quantitative approaches to research. In L. Bickman & D. J. Rog (Eds.), *Handbook of applied social research methods* (Vol. 2, pp. 283-317). Sage.
Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Sage.
Thornberg, R., & Forslund Frykedal, K. (2015). Grundad teori. In A. Fejes & R. Thornberg (Eds.), *Handbok i kvalitativ analys* (pp. 44-68). Liber.
Thorsen, K. E. (2016). Practice teachers' role in teacher education–individual practices across educational curricula. *Acta Didactica Norge*, *10*(2), 179-192. https://doi.org/10.5617/adno.2417
Trevethan, H., & Sandretto, S. (2017). Repositioning mentoring as educative: Examining missed opportunities for professional learning. *Teaching and Teacher Education*, *68*, 127-133. https://doi.org/10.1016/j.tate.2017.08.012
Trust, T., & Horrocks, B. (2019). Six key elements identified in an active and thriving blended community of practice. *TechTrends*, *63*(2), 108-115. https://doi.org/10.1007/s11528-018-0265-x
Tsui, A. B., & Law, D. Y. (2007). Learning as boundary-crossing in school–university partnership. *Teaching and Teacher Education*, *23*(8), 1289-1301. https://doi.org/10.1016/j.tate.2006.06.003
Ulvik, M., Helleve, I., & Smith, K. (2018). What and how student teachers learn during their practicum as a foundation for further professional development. *Professional Development in Education*, *44*(5), 638-649. https://doi.org/10.1080/19415257.2017.1388271
Ulvik, M., & Smith, K. (2011). What characterises a good practicum in teacher education? *Education Inquiry*, *2*(3), 517-536. https://doi.org/10.3402/edui.v2i3.21997
Ulvik, M., Smith, K., & Helleve, I. (2017). Ethical aspects of professional dilemmas in the first year of teaching. *Professional Development in Education*, *43*(2), 236-252. https://doi.org/10.1080/19415257.2016.1178163
Universities Norway. (2016a). *Regulations relating to the framework plan for primary and lower secondary teacher education for years 1-7*. UHR. national_guidelines_for_the_primary_and_lower_secondary_teacher_education_programme_for_years_1_7.pdf (uhr.no)
Universities Norway. (2016b). *Regulations Relating to the Framework Plan for Primary and Lower Secondary Teacher Education for Years 5–10*. UHR. national_guidelines_for_the_primary_and_lower_secondary_teacher_education_programme_for_years_5_10.pdf (uhr.no)

Varanasi, R. A., Kizilcec, R. F., & Dell, N. (2019). How teachers in India reconfigure their work practices around a teacher-oriented technology intervention. *Proceedings of the ACM on Human-Computer Interaction*, *3*, 1-21. https://doi.org/10.1145/3359322

Vesterinen, O., Kangas, M., Krokfors, L., Kopisto, K., & Salo, L. (2017). Inter-professional pedagogical collaboration between teachers and their out-of-school partners. *Educational Studies*, *43*(2), 231-242. https://doi.org/10.1080/03055698.2016.1277131

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Wallin, P., & Adawi, T. (2018). The reflective diary as a method for the formative assessment of self-regulated learning. *European Journal of Engineering Education*, *43*(4), 507-521. https://doi.org/10.1080/03043797.2017.1290585

Walters, S. M., Hirsch, S. E., McKown, G., Carlson, A., & Allen, A. A. (2021). Mixed-reality simulation with preservice teacher candidates: A conceptual replication. *Teacher Education and Special Education*, *44*(4), 340-355. https://doi.org/10.1177/08884064211001453

Walton, J. B., Plano Clark, V. L., Foote, L. A., & Johnson, C. C. (2020). Navigating intersecting roads in a mixed methods case study: A dissertation journey. *Journal of Mixed Methods Research*, *14*(4), 436-455. https://doi.org/10.1177/155868981987242

Waters, S., Pellegrino, A., Hensley, M., & Kenna, J. (2021). Forming school and university partnerships to learn and teach with primary sources. *Journal of Social Studies Education Research*, *12*(3), 47-78. https://www.learntechlib.org/p/219965/.

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.

Wertsch, J. V. (1981). Trends in Soviet cognitive psychology. *Storia e Critica della Psicologia*, *2*(2), 219-295.

Wetzel, M. M., Svrcek, N. S., LeeKeenan, K., & Daly-Lesch, A. (2019). Coaching through the hard parts: Addressing tensions in teaching with one preservice teacher learning to teach literacy in a fifth-grade classroom. *Teaching and Teacher Education*, *82*, 43-54. https://doi.org/10.1016/j.tate.2019.02.006

White, S. (2019). Once were teachers? Australian teacher education policy and shifting boundaries for teacher educators. *European Journal of Teacher Education*, *42*(4), 447-458. https://doi.org/10.1080/02619768.2019.1628214

White, S., & Berry, A. (2022). School-based teacher educators: Understanding their identity, role, and professional learning needs as dual professionals. In *The Palgrave Handbook of Teacher Education Research* (pp. 1-20). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-59533-3_11-1

White, S., & Forgasz, R. (2017). Supporting mentoring and assessment in practicum settings: A new professional development approach for school-based teacher educators. In M. A. Peters, C. Bronwen, & I. Menter (Eds.), *A companion to research in teacher education* (pp. 283-297). Springer.

Yin, R. K. (2009). *Case study research. Design and Mehtods* (Vol. 4). Sage.

Yin, R. K. (2014). *Case study research. Design and Methods* (Vol. 5). Sage.

Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college-and university-based teacher education. *Journal of Teacher Education*, *61*(1-2), 89-99. https://doi.org/10.1177/0022487109347671

Zeichner, K. (2012). The turn once again toward practice-based teacher education. *Journal of Teacher Education*, *63*(5), 376-382. https://doi.org/10.1177/0022487112445789

Zeichner, K., Payne, K. A., & Brayko, K. (2015). Democratizing teacher education. *Journal of Teacher Education*, *66*(2), 122-135. https://doi.org/10.1177/0022487114560908

Zeichner, K. M. (2017). *The struggle for the soul of teacher education*. Routledge.

Part II: The articles

Article I

Dille, K. B., & Røkenes, F. M. (2021). Teachers' professional development in formal online communities: A scoping review. *Teaching and Teacher Education*, *105*, 1-17. https://doi.org/10.1016/j.tate.2021.103431

Teaching and Teacher Education 105 (2021) 103431

Contents lists available at ScienceDirect

Teaching and Teacher Education

journal homepage: www.elsevier.com/locate/tate

Teachers' professional development in formal online communities: A scoping review

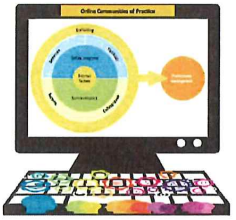
Karen Birgitte Dille*, Fredrik Mørk Røkenes

Department of Teacher Education, Norwegian University of Science and Technology, Norway

HIGHLIGHTS

- Scaffolding became central in all phases of teachers' professional development.
- The facilitator had a major role in guiding the teachers during the developmental process.
- Lack of common understanding between the actors involved was a major challenge.
- Internal factors, like teachers' interests and attitude, were crucial for professional development.
- Personalized and flexible online programmes being close to the teachers' interests and needs were preferred.

GRAPHICAL ABSTRACT



ARTICLE INFO

Article history:
Received 10 November 2020
Received in revised form
21 June 2021
Accepted 23 June 2021
Available online 5 July 2021

Keywords:
Teachers' professional development
Formal online programmes
Online communities
Scoping review
Sociocultural theory
Scaffolding

ABSTRACT

The purpose of this scoping review is to examine the literature regarding formally organised online teacher communities emphasising teachers' online professional development (oTPD) focusing on studies that took place between 2015 and 2019. By mapping and synthesising 52 empirical studies, a wide range of online programmes are represented. The analysis reveals oTPD as complex processes. Teachers' internal factors were crucial in their dynamic interactions with the content, facilitators and peers. Scaffolding became the overarching category. Four main concepts were revealed as central for scaffolding oTPD: The teachers, their context, the online programme and facilitating a shared understanding.

Contents

1. Introduction and background 2
2. Methodology and methods 2
   2.1. Identifying relevant studies 4

* Corresponding author. Department of Teacher Education, Norwegian University of Science and Technology, Gunnerus gate 1, 7012, Trondheim, Norway.
E-mail address: Karen.B.Dille@ntnu.no (K.B. Dille).

https://doi.org/10.1016/j.tate.2021.103431

2.2. Screening ... 4
2.3. Eligibility ... 4
2.4. Studies included in data extraction and synthesis ... 4
3. Analysis and results ... 4
3.1. Online programmes: a descriptive overview ... 5
3.1.1. Research context ... 8
3.1.2. Participants and recruitment ... 9
3.1.3. Goals, design and methodology ... 10
3.2. A substantive overview ... 11
3.2.1. Professional development ... 11
3.2.2. Internal factors affecting professional development ... 11
3.2.3. Online programmes affecting professional development ... 12
3.2.4. Communication affecting professional development ... 12
4. Discussion: towards a better understanding of oTPD ... 14
4.1. The role of scaffolding in teachers' professional development ... 14
4.2. Limitations and further research ... 15
Funding ... 16
References ... 16

1. Introduction and background

To reach politicians' and stakeholders' goals for increasing the quality of teaching and learning in schools, facilitating teachers' professional development is crucial (e.g. Bostancioglu, 2018; OECD, 2009; Tsiotakis & Jimoyiannis, 2016; S.; Zhang, Liu, Zhu, et al., 2019; Zhang et al., 2017). Online developmental activity is becoming "a steadily growing area of teacher education research" (Lantz-Andersson et al., 2018, p. 310). The enhanced focus on online teacher professional development (oTPD) can be seen in conjunction with the economy, is more accessible and flexible, and provides new opportunities for distance collaboration (Lay et al., 2020). Information and communications technology have created new opportunities for professional development among teachers, and online learning programmes provide new spaces for teachers to share, interact, reflect and collaborate online, meeting other teachers, supervisors or professionals in their development processes (e.g. Blitz, 2013; Philipsen et al., 2019; Tsiotakis & Jimoyiannis, 2016).

We believe learning is affected by culture and history, developing in interaction with artefacts and the context (e.g. Burner & Svendsen, 2020). A prerequisite for professional development is that teachers are willing to participate and engage both cognitively and emotionally in the activity (e.g. Albers et al., 2015; Avalos, 2011; Hargreaves & Fullan, 2012; Lantz-Andersson et al., 2018). That the teachers find the activity meaningful is also essential in these professional development processes (Trust & Horrocks, 2017).

Vygotsky (1978) explains a developmental relationship between internal and external processes, wherein the activity starts on an interpersonal level before it is transformed into intrapersonal processes. These two processes are central in Engeström's definition of the zone of proximal development: "it is the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated" (Engeström, 1987, p. 174). There is a tight connection between these processes, wherein both collective and individual activity develop (Hauge & Wan, 2019).

Scaffolding is often used in connection with the zone of professional development. In this study, we use scaffolding to describe how 'experts' guide some who are less experienced in their development processes (Wood et al., 1976). The intention is to withdraw the support when the participants understand and can manage the activity, individually or with peers (Wittek, 2012). Scaffolding can be organised by creating interesting and challenging enough tasks. Appropriate tasks give directions and, through examples and models, can facilitate helping learners to obtain enhanced control over their learning situations (Rogoff, 1990, p. 94). Although the 'experts' have an important role in facilitating the activity, Rogoff (1990) emphasises that also the learners should become active.

Several literature reviews have summarised and presented studies about teachers' professional development and online learning (e.g. Albers et al., 2015). OTPD can appear in both formal and informal online communities (Lantz-Andersson et al., 2018). While Macià and García (2016) focused on informal online communities as a source of teachers' professional development, Lantz-Andersson et al. (2018) put attention on both formally organised and informally developed professional learning communities. Still, there is a need for further research on the complexity of formally organised oTPD.

The current review aims to develop a broader insight into the significant factors for teachers' participation and professional development in formally organised online communities, which can be explained as "top-down professional development endeavours, initiated by schools, districts and government agencies or [. . .] private companies. These are also often organised with predefined content and goals" (Lantz-Andersson et al., 2018, p. 304). In addition, different aspects affecting oTPD will be presented. This research question is the following: *What does previous research reveal about teachers' formal online professional development?*

2. Methodology and methods

A scoping review can be understood as a retrospective process of mapping the existing literature, and one that is becoming increasingly popular when examining studies within educational research (e.g. Arksey & O'Malley, 2005; Krumsvik & Røkenes, 2019; Major et al., 2018). Following Arksey and O'Malley's (2005) iterative and dynamic six-step process, the research question was first defined (Step 1). Next, relevant studies were identified and selected, and the data were charted (Steps 2–4). The results of the studies were then collated, summarised and reported (Step 5). The final step, a consultation exercise including consumer and stakeholder involvement, is optional but was not included (Levac et al., 2010). The scoping process is illustrated in Fig. 1.

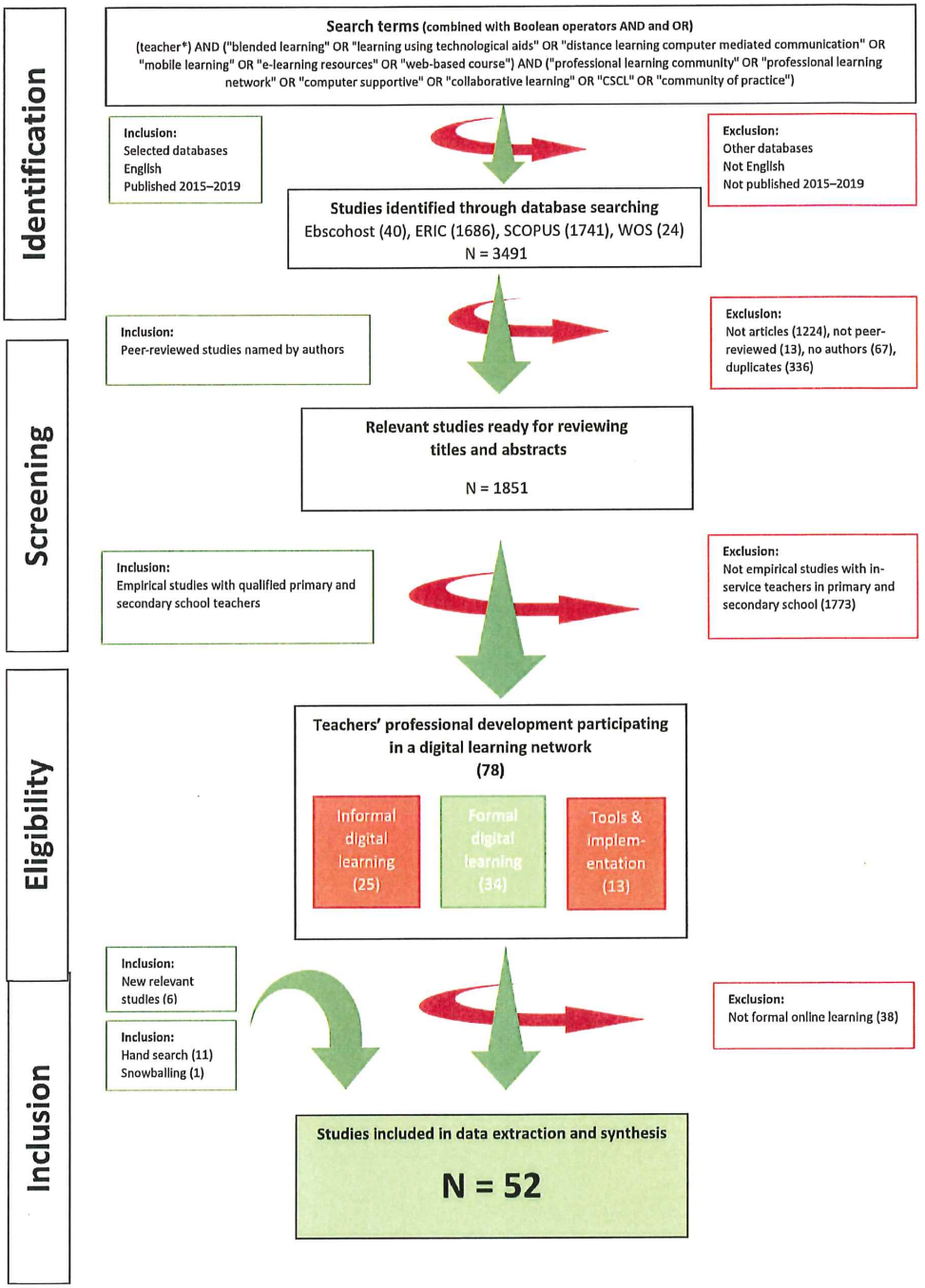


Fig. 1. The scoping process (inspired by Moher et al. (2010).

2.1. Identifying relevant studies

As presented in Fig. 1, the process of selecting relevant articles occurred through identification and screening processes. Keywords for database searches were developed by reading previous studies, consulting encyclopaedia and contacting experts in the field. Based on the research question, different synonyms for *teachers*, *online learning* and *professional learning* emerged. These concepts laid a foundation for scoping the field of relevant studies. Search terms were combined into a search string using the Boolean operators AND and OR (Table 1).

A pilot search using the databases Ebscohost, ERIC, SCOPUS and Web of Science was conducted with expert guidance. These results were controlled with results in the last search. The database searches were conducted on August 20, 2019, resulting in 3491 articles that were transferred to the bibliographic software EndNote.

Inclusion and exclusion criteria were developed during the whole scoping process, narrowing and maintaining the intention of answering the research question. The process started with confining the search to studies written in English that were published between January 2015 and August 2019. To ensure methodological quality, only peer-reviewed studies were included (Philipsen et al., 2019).

2.2. Screening

The screening process was completed using Endnote. First, non-articles and studies with no authors were excluded. Second, duplicates and studies that had not been peer-reviewed were removed. Third, reading titles and abstracts resulted in further exclusions. Studies representing in-service teachers teaching at primary (students aged 6–12) and lower secondary (students aged 13–15) schools participating in formal online programmes were included. Examples of excluded studies in this phase were studies focusing on higher education, high school or kindergarten, pre-service teachers, offline processes or teachers' implementation of online programmes in their teaching. Non-empirical studies were also excluded. Two main barriers appeared in the screening process: (1) the school type and grade level the teachers were teaching were sometimes not explicitly mentioned in the study methodology, and (2) a lack of clarity regarding the study context was an issue for some studies. However, if these studies were relevant to answering the research question, they were included in the eligibility process.

2.3. Eligibility

In total, 78 studies focused on primary and secondary school teachers and their professional development through digital learning communities' participation. These were included in the eligibility phase. After full-text reading, the studies were divided into three main groups: (1) *formal digital learning communities*, (2) *informal digital learning communities* and (3) *tools and implementation*. Due to difficulties in controlling whether only in-service teachers participated in informal social networks such as Twitter, LinkedIn and Facebook and the research focus on oTPD processes in formal settings, only the studies belonging to the first group were pursued further in the scoping process.

Because the initial database search was conducted in August 2019, an additional search was carried out on May 26, 2020, to identify relevant studies published between August 20 and December 31, 2019. This resulted in the inclusion of an additional six studies (2, 9, 19, 32, 46, 50). No relevant studies were found in Web of Science, while the other databases contributed with two studies each. In most reviews, hand searching can be used as a supplement to identify potential studies not included or potentially missed in the database searches (Krumsvik & Røkenes, 2019) and can strengthen main search's reliability (Arksey & O'Malley, 2005). Two previously published literature reviews were scrutinised, which resulted in two additional studies. The studies included in Lantz-Andersson et al. (2018) added one study (15), and studies referring to Macià and García (2016) also added one (31). The authors found one study through journal alerts (34). Eight studies were added through examining every issue and volume in five journals published in the relevant period, three of which produced results: *Teaching and Teacher Education* (3, 11, 26, 29, 35, 42), *Professional Journal of Development in Education* (23) and *Educational Researcher* (4). Neither *Journal of Educational Change* nor *Computers and Education* contributed new relevant studies. Snowballing added one study (48), which was referred to in one of the other studies.

2.4. Studies included in data extraction and synthesis

A total of 52 articles met the inclusion criteria for further analysis (Table 2).

3. Analysis and results

The 52 studies were analysed and classified through an abductive coding and categorisation approach inspired by the constant comparative method (Corbin & Strauss, 2014). The data were extracted, coded and categorised in two main processes. The predefined categories in the deductive analysis identified similarities and variations (3.1), and the constant comparative analysis consisted of a more in-depth analysis (3.2). During the within-study analysis, studies were contextualised, followed by a synthesis of the between-study analysis studies (Onwuegbuzie et al., 2012).

Table 1
Keywords facilitating searches (from Major et al., 2018, p. 2000).

	Concept A: teachers (and associated terms)	Concept B: online learning (and associated terms)	Concept C: professional learning (and associated terms)
▲ OR ▼	Search terms used: Teacher*	Search terms used: Blended learning Learning using technological aids Distance learning computer-mediated communication Mobile learning E-learning resources Web-based course	Search terms used: Professional learning community Professional learning network Computer supportive Collaborative learning CSCL Community of practice
	◀ AND ▶		

Table 2
The corpus of 52 studies forming the scoping review.

Nr.	First author	Year	Title
1	Alimirzaee	2016	On the effect of online peer knowledge sharing on Iranian EFL teachers' professional development
2	Azukas	2019	Cultivating blended communities of practice to promote personalized learning
3	Beach	2017	Self-directed online learning: A theoretical model for understanding elementary teachers' online learning experiences
4	Blanchard	2016	Investigating technology-enhanced teacher professional development in rural, high-poverty middle schools
5	Bostancioglu	2016	Factors affecting English as a Foreign Language teachers' participation in online communities of practice: The case of webheads in action
6	Bostancioglu	2018	Online communities of practice in the service of teachers' technology professional development: The case of webheads in action
7	Brennan	2018	From checklists to heuristics: Designing MOOCs to support teacher learning
8	Cansoy	2017	Teachers' professional development: The case of WhatsApp
9	Carpenter	2019	Broadening borders to build better schools
10	Cheah	2019	Traversing the context of professional learning communities: Development and implementation of technological pedagogical content knowledge of a primary science teacher
11	Cheng	2018	The relations among teacher value beliefs, personal characteristics, and TPACK in intervention and non-intervention settings
12	Ciampa	2015	Blogging to enhance in-service teachers' professional learning and development during collaborative inquiry
13	Clary	2017	Optimizing online content instruction for effective hybrid teacher professional development programs
14	del Rosal	2016	Mentoring teachers of English learners in an online community of practice
15	deNoyelles	2016	Being an 'agent provocateur': Utilising online spaces for teacher professional development in virtual simulation games
16	Dewi	2016	Blended professional development for primary English language teachers: Design and evaluation
17	Erixon	2016	Learning activities and discourses in mathematics teachers' synchronous oral communication online
18	Forte	2016	Fostering transformative learning in an online ESL professional development program for K-12 teachers
19	Genlott	2019	Disseminating digital innovation in school–leading second-order educational change
20	Gikandi	2016	Designing and implementing peer formative feedback within online learning environments
21	Graham	2015	Impact of an open online course on the connectivist behaviours of Alaska teachers
22	Hall	2019	Personalized professional learning and teacher self-efficacy for integrating technology in K–12 classrooms
23	Herro	2017	Exploring teachers' perceptions of STEAM teaching through professional development: Implications for teacher educators
24	Ho	2016	Blended learning model on hands-on approach for in-service secondary school teachers: Combination of e-learning and face-to-face discussion
25	Hunt-Barron	2015	Obstacles to enhancing professional development with digital tools in rural landscapes
26	Jiménez	2016	Effects of web-based training on Spanish pre-service and in-service teacher knowledge and implicit beliefs on learning to read
27	Jin-Hwa	2016	Implementation of SMART Teaching 3.0: Mobile-based self-directed EFL teacher professional development
28	Karam	2018	The role of online communities of practice in promoting sociotechnical capital among science teachers
29	Kim	2017	Building teacher competency for digital content evaluation
30	Lee	2015	Dialogic understanding of teachers' online transformative learning: A qualitative case study of teacher discussions in a graduate-level online course
31	Li	2019	Towards a new approach to managing teacher online learning: Learning communities as activity systems
32	McCarthy	2019	Transforming mobile learning and digital pedagogies: An investigation of a customized professional development program for teachers in a hospital school
33	McLean	2015	Bringing it to the teachers: Refining an online learning environment for teachers in isolated settings
34	Melton	2019	Mentoring the mentors: Hybridizing professional development to support cooperating teachers' mentoring practice in science
35	Mentis	2016	Mawhai: Webbing a professional identity through networked interprofessional communities of practice
36	Moen	2018	Written speech: A barrier to knowledge building in blended learning teacher professional development
37	Nambiar	2016	Examining Malaysian teachers' online blogs for reflective practices: Towards teacher professional development
38	Philipsen	2019	Supporting teacher reflection during online professional development: A logic modelling approach
39	Prestridge	2017	Conceptualising self-generating online teacher professional development
40	Prestridge	2015	Exploring elements that support teachers engagement in online professional development
41	Sanders-Smith	2016	Practicing teachers' responses to case method of instruction in an online graduate course
42	Stornaiuolo	2016	Teaching in global collaborations: Navigating challenging conversations through cosmopolitan activity
43	Trust	2017	'I never feel alone in my classroom': Teacher professional growth within a blended community of practice
44	Trust	2019	Six key elements identified in an active and thriving blended community of practice
45	Tsiotakis	2016	Critical factors towards analysing teachers' presence in on-line learning communities
46	Varanasi	2019	How teachers in India reconfigure their work practices around a teacher-oriented technology intervention
47	Wang	2019	Effects of a visualization-based group awareness tool on in-service teachers' interaction behaviours and performance in a lesson study
48	Xie	2017	Teacher professional development through digital content evaluation
49	Yurkofsky	2019	Expanding outcomes: Exploring varied conceptions of teacher learning in an online professional development experience
50	Zhang, S.	2019	Exploring primary school teachers' technological pedagogical content knowledge (TPACK) in online collaborative discourse: An epistemic network analysis
51	Zhang, N.	2019	Analysis of temporal characteristics of collaborative knowledge construction in teacher workshops
52	Zhang, S.	2017	A study of peer coaching in teachers' online professional learning communities

3.1. Online programmes: a descriptive overview

Table 3 presents a descriptive overview of the published journals, studies' intentions, theoretical perspectives, methodology, online activity, duration of the online programmes, number of participants and teachers' teaching levels and subjects. The overview was used to identify gaps, similarities and differences in the descriptive analysis. In Table 3, the numbers in the left column refer to the studies in alphabetical order in Table 2. These numbers are used when presenting the descriptive results.

Fig. 2 illustrates that the analyses of the online programmes' intended activity revealed that they could be placed in four squares. The studies are placed in the squares based on their numbers in Table 2. The location inside the squares does not indicate the level of flexibility or collaboration. The horizontal line indicates the flexibility of participating in the online programme. High flexibility was seen in, for example, Prestridge and Tondeur (2015), where the teachers discussed and planned on a networking site. Less flexibility appeared in synchronous online activity in online programmes representing whole programmes. An example of a less flexible approach appeared in Blanchard et al.'s (2016) study, where the teachers participated in a summer school followed by monthly, synchronous online sessions. The vertical line indicates whether the development required community or individual work. Cheng

Table 3
An overview of descriptive data (Forte and Blouin, 2016; Lee and Brett, 2015).

	Journal	Focus/aim/intentions	Theoretical perspective	Metho-dology	Online activity	Duration	Participants		
							N*	Level	Subject
1	Theory and Practice in Language Studies	Creating an environment in which EFL teachers have opportunities to discuss and share to improve teaching	PC, CK, TPCK, EFL	Quant	Yahoo group, 16 sessions, two times a week to discuss issues from the researcher	8 weeks	50	N/A	EFL
2	Journal of Online Learning Research	Examine the effectiveness of a blended learning CoP model in providing PD	CoP & self-efficacy	Mix	Blended learning CoP	9 months	18	K–12	Mix
3	Teaching and Teacher Education	Find conditions affecting teachers using a PD website, strategies employed during the use and potential outcomes	Self-directed learning	Mix	Multimedia professional literacy developmental website	N/A	15	K–6	N/A
4	Educational Researcher	N/A	Constructivism	Mix	Two or three summers F2F, inquiry-based, teacher TPD supported by three school years of monthly, synchronous online collaborative sessions	3 years	20	Middle	Mix
5 (#6)	International Journal of Languages' Education and Teaching	Identify factors contributing to successful OCoPs	Sociocultural & situated learning	Qual	Webheads in action. Public group page	9 months	24	N/A	EFL
6 (#5)	Turkish Online Journal of Educational Technology	Investigate whether an OCoP approach can be an alternative to technology PD	OCoP	Mix	Webheads in action. Public group page	9 months	24/ 44 **	N/A	EFL
7 (#49)	Teachers College Record	Explore the diversity of how individual teachers experienced their learning	Constructionism	Qual	CCOW: A large-scale online learning experience for teachers to learn about Scratch	6 weeks	15	K12	N/A
8	Journal of Education and Learning	Reveal types of sharing and understand how teachers develop each other	OCoP	Qual	WhatsApp	N/A	12	N/A	Science
9	International Journal of Educational Management	Explore how rural teachers provided a PLC by leveraging virtual technologies to connect educators	PL & PLC	Mix	Participated as part of their normal practice. Three weeks F2F, lesson study process. Google classroom to meet, share and collaborate virtually	1 year	120	Grades 7–12	Mix
10	Research in Science and Technological Education	TPACK development in two interdependent learning spaces: a joint-school and within-school professional learning community	Technology-mediated pedagogical innovation	Qual	Ten teachers met monthly to co-design, lesson plans and resources	N/A	1	Prim	Science
11 (#29 & #48)	Teaching and Teacher Education	Examine the relation between teacher value beliefs, personal characteristics and TPACK	TPCK	Quant	TPD programme (EDCITE). Both F2F and online sections	1 year	109	Prim → High	Mix
12	Educational Technology, Research and Development	Identify any potential barriers associated with the teachers' blogging participation	TPL by collaborative inquiry	Mix	Introductory plenary sessions, co-planning sessions, in-class observations, teacher moderation, forum	7 months	12	Grades 8–9	N/A
13	Journal of Science Teacher Education	Examine the contribution of online and F2F instruction	OPD	Quant	Hybrid program. 13 days F2F instruction extended with two online science modules	3 years	86	Middle	Science
14	Intern. Journal of Computer - Assisted Language Learning and Teaching	Investigate how teachers interact and learn from each other in online CoP	PD & OCoP	Qual	Graduate course work, on-site mentoring & online CoP	2 sem	49	Sec	English
15	Technology, Pedagogy and Education	Understand their practice as teacher educators to improve the quality of OPD	OLC	Qual	Two venues supporting teachers' capacity to innovate their practice with new pedagogy of JCAT. Weekly (a)synchronous discussions	1 year	8	Middle	Mix
16	I-Manin India	Examine how the blended TPD programme benefits teachers participating in the BSL programme	TPD	Qual	Project-based learning model. Combination of three F2F meetings (start-middle-end) and online interactions. Two platforms: social learning network and instant messaging	3 months	5	Prim	English
17	Research in Mathematics Education	Explore the activities and identify the discourses created in the meaning-making activities	Inquiry	Qual	Seminar group consisting of four participants	1 sem	4	Sec	Maths
18	The Qualitative Report	Examine evidence of transformative experiences enrolled in an online PD programme surrounding sociocultural issues	Transformative learning	Qual	ESL programme divided in modules. Five courses. Six to eight reflective journals per semester	N/A	24	PreK–12	English
19	Education and Information Technologies	Understand opportunities and challenges involved in disseminating an ICT-based innovative method	Innovation	Quant	Share experiences and analyse work between meetings. Continuous asynchronous written formative feedback on a digital website	1 year	92	Prim	N/A
20	Technology, Pedagogy and Education	Establish how peer–peer formative feedback was facilitated in an online course and how these engaged students in meaningful learning experiences	Peer–peer feedback	Qual	Part of a post-graduate programme	N/A	11	Prim & Sec	Mix
21	Australasian Journal of Educational Technology	Maintain relevance and resilience in a quickly changing technological environment	Connectivism	Qual	Open online course for teachers in Alaska	15 weeks	36	K–8	Maths
22	Journal of Digital Learning in Teacher Education	Investigate the impact of personalized PL in teachers' comfort level and their self-efficacy toward information and communications technology	PPL Self-efficacy	Quant	PPL learning programme; summer institute learning experience. Anchor courses: offered online. Other courses: both F2F and online	2 months + 1 year implemen ting	247	PreK–12	Mix
23	Professional Development in Education Deah Community Grant Fund	Explore how placing teachers in the role of students' learning might cause them to rethink their teaching practices	Transdisciplinary teaching	Mix	Three courses with additional follow-up PD offered directly in classrooms through follow-up meetings, observations and planning sessions during the next academic year	50 hours+ follow-up	21	Middle	Science & maths
24	Education and Information Technologies	Determine the effectiveness of the BL model to deliver a course in comparison to delivering the same course F2F lectures	N/A	Quant	F2F opening and closing. Working individually and in groups, possible to get assessment from teachers	4 months	177	Sec	Science
25	Journal of Research in Rural Education	Discuss the effectiveness of online forums as tools for activity among teachers and PD providers	OPD Self-efficacy	Mix	Online forum as tools for feedback, conversation and collaboration. Each teacher created a blog	2 years	33/ 26 **	Middle & High	English & art

26	[illegible]	Analyse the effect of web-based training on teachers' knowledge and implicit beliefs on learning to read	OPD	Quant	Letra: a web based tutorial programme for reading instruction	5 months	516	Mix	Reading instruc-tion
27	[illegible]	Develop and validate a bottom-up teacher development programme through implementation	Not specified	Mix	Mobile-based teacher education programme. Voluntarily utilize learning content anytime, anywhere. Comment on video postings and weekly journals	5 months	149	Middle & High	English
28	[illegible]	Examine the factors that encourage participation in virtual CoPs and how participants influence instructional practices and attitudes	Sociotechnical systems theory	Quant	N/A	21 months	504	Prim → High	Science
29 (#11 & #48)	[illegible]	Investigate teachers' digital content evaluation competency as a combined set of intellectual ability and affect-motivation in evaluating digital content	DCE	Mix	Professional developmental programme. F2F workshops and online learning modules. Eight evaluations with feedback from specialists	1 year	102	3–12	Mix
30	[illegible]	Examine teachers' perspectives change through open-ended dialogues in online TPD course, leading to transformative learning for educational use of technologies	Dialogue & transformative learning	Qual	Discussion-based, using online readings and artifacts. Two asynchronous CoPs. Course preparation, foundation building, interactive learning, knowledge transfer	12 weeks	44	Mix	Mix
31	[illegible]	Develop an approach for teachers' practice in OLC and validate and evaluate teachers' acceptance and satisfaction	TPD & OLC	Quant	Online networking, content sharing, supportive tools. Up- and download materials. Two communities each, four professional online learning activities	2 months	117	Prim	Chinese English
32	[illegible]	Examine outcomes of a PD programme introduced to effect transformational change by enabling integrated use of mobile technologies in a school	TPD & TPACK	Mix	Workshop in group and one-on-one workshops 1h/week with coach	8 weeks	29	Mix	N/A
33	[illegible]	Examine the process of refinement undertaken in developing a network to support isolated teachers	TPD & OCoP	Mix	Webpage. In communication with experts innovative ways to support them	2 years	10	N/A	Behaviou-ral disorders
34	[illegible]	Describe key features of a hybrid professional development programme designed to prepare mentor teachers for effective instructions	PD & situated learning	Qual	Hybrid. Online modules and in-person F2F PD. Various activities	N/A	5	Elem-entary	Mix
35	[illegible]	Present a framework for interprofesional identity development that supports effective practice within and across different disciplines	CoP	Quant	Specialist training programme. Four blended courses. F2F two to three days on-campus meetings per year. Online learning management system and professional e-portfolio tool	2 years	***	Mix	Therapy
36	[illegible]	Analyse and understand the influence of written speech on knowledge building in a VCoP setting	Social constructivism	Qual	Monthly F2F, classroom-based mentoring sessions and one-on-one mentoring chat room sessions. Two or more self-directed, weekly teacher blog and discussion forum posts	6 months	11	Mix	Science
37	[illegible]	Examine the extent to which participation and reflection occurred in blogs and how effective they were in building a CoP resulting in PD	CoP Social constructivism	Qual	Starting with an F2F meeting to get to know each other. Using Google BlogSpot	5 months	15	N/A	Maths Science English
38	[illegible]	Understand how teacher reflection could be fostered through online teacher professional development	OTPD Reflection in and on action	Qual	Online programme with seven modules, weekly meetings, reflective writing and peer discussions	5 months	20	N/A	N/A
39	[illegible]	Examine a networked community built without any F2F contact and where the approach to PD was personalized and directed by the teachers	PD	Mix	Communication and Web 2.0 tools were used to implement the OPD. Including communication and information from mentor and sharing	1 year	3	Prim & Sec	N/A
40	[illegible]	Identify the most effective elements of OPD	PD	Qual	Discussion forum. Teachers planning, implementation and analysing their project	1 year	12	Prim	N/A
41	[illegible]	Analyse social presence to demonstrate the effects of case studies in the online course on student interaction	Constructive Developmental Theory	Qual	Four two-week online modules and two F2F course sessions	8 weeks	47	PreK–Grade 3	Family engage-ment
42	[illegible]	Examine teachers' participation in a global collaboration	Cosmopolitanism	Qual	Bimonthly meetings via Skype	2 years	4	Prim	Emergent literacies
43	[illegible]	Examine how teachers participate and learn from a CoP and how this shapes their growth as professionals	CoP	Qual	Blended CoP, with sharing, teaching, assisting and reporting	N/A	26	Elem-entary → Univer-sity	N/A
44	[illegible]	Examine what features of the CoP influenced participants' continual engagement and learning	CoP	Qual	Blended CoP	N/A	26	Elem-entary → District level	Mix
45	[illegible]	Describe a coherent design and analysis framework of teachers' presence within CoL and apply a combined analysis schema	Online communities	Qual	Exchanging instructional ideas, sharing experiences and educational materials, and co-creating new artefacts	N/A	100	Prim & sec	Computer science
46	[illegible]	Study how teachers in low-income schools reconfigure their practices to accommodate the introduction of a technology intervention	Teachers professionali-zation	Mix	App-based intervention delivered via Android device	4 months	30	Public school s	N/A
47	[illegible]	Facilitate social interaction among teachers in LS by visualising social interaction and to examine the effects on teachers' engagement, interaction and performance	Lesson study	Mix	Online lesson study platform (prepare, peer review and discuss teaching videos, write reflections, further learning for improvement)	8 weeks	24	Grades 3 & 4	Chinese
48 (#11 & #29)	[illegible]	Examine teachers' experience in PD programme in terms of their changes in TPACK and motivation toward digital content evaluation	TPACK	Mix	Evaluation of digital content for instructional and teaching excellence. Involves an intentional process to increase teacher motivation,	1 year	109	Elem-entary →High school	Mix
					knowledge and skills in selecting and using digital content				
49 (#7)	[illegible]	Determine teachers' value from a OPD experience, and to use this to rethink the assumptions that underlie PD research	PD	Qual	CCOW: a large-scale online learning experience for teachers to learn about Scratch	6 weeks	15	K–12	N/A
50	[illegible]	N/A	OPLC TPACK	Qual	Watching video, participating in online discourse and submitting lesson plans	120 hours	81	Prim	Mix
51	[illegible]	Present changes in knowledge construction and social interactive characteristics resulting from workshop participation	Constructivist & collaborative learning	Qual	Training programme. Asynchronous online discussions. Workshop led by a master and group leaders	6 months	91	Prim	Language
52	[illegible]	Investigate the overall situation of peer coaching in teachers' online professional learning communities and explore the related factors of peer coaching	TPD in OPLC	Mix	Online professional learning platform helping teachers design student-centred ICT integrated lessons	4 weeks	376	K–12	N/A

The colour in the left column describes the design of the online activity: green = fully online, yellow = blended, blue = mostly face to face

Some researchers took part in several studies, using the same participants. This is marked with hashtags in the left column. Qual = qualitative, Quant = quantitative, Mix = combination of qualitative and quantitative, Prim= primary, Sec= secondary

N/A: Not available

* Participants in the study, not necessarily the whole programme.

** Both qualitative and quantitative numbers. Qualitative numbers are written first.

and Xie (2018) is an example of a study that focused on collaborating, with an online programme that included face-to-face and online sessions. Only three studies focused on individual work, like that of Jiménez and O'Shanahan (2016), who studied a web-based tutorial programme for reading instruction.

Fifteen studies belonged in Square 1, where an inductive approach was emphasised. Examples belonging to this square were discussion forums and self-initiated interests. Flexibility and voluntary participation were essential for online activity. Still, the teachers could be part of formal education programmes, like in Erixon's (2016) study. In Prestridge's (2017) study, the participants contributed to the project site by, for example, blogging and sharing curriculum materials. In this first square, the mentors mostly had a facilitating role; an example is the online seminars in Alimirzaee and Ashraf (2016).

In Square 2, the teachers participated in more 'whole programmes' with a mentor or teacher supervising the learning processes towards predetermined goals. Thirty-two studies fit these criteria, such as Kim et al. (2017), where the programme consisted of two face-to-face workshops blended with eight online modules covering different types of knowledge. In Square 3, the online programme was self-directed without collaboration. Beach (2017) was the only study fitting these criteria, with a webpage giving teachers opportunities for professional development. Square 4 reveals online programmes with clear directions with no intention of collaboration between them. The participants could utilise a self-directed learning platform with learning content for their purposes and needs anytime, anywhere (Jin-Hwa & Kim, 2016).

The colours in Fig. 2 illustrate how online programmes were organised into three categories based on online activity. In 'Fully online programmes' (green), the participants only worked online, while the 'Blended programmes' (yellow) were hybrid models including both physical and online work. In the last group, 'Mostly face to face' (blue), the participants mostly met physically. The yellow colour dominates Square 2. An example is the study of Mentis et al. (2016), where the participants met for 3 day at a campus, and the remaining teaching and learning interaction occurred online.

The three studies with participants working individually online were fully online programmes (green). Fully online programmes with participants creating the learning processes also dominated Square 1. Li et al.'s (2019) study included teachers from China who shared experiences during their online participation. The studies where the participants mostly met face to face (blue) were evenly distributed in squares 1 and 2. One example is Varanasi et al.'s (2019) study, where the participants used an app but got physical support at their schools.

3.1.1. Research context

As presented in Table 3, the studies revealed a broad range of contexts within continents, types of online programmes, subjects, number of participants and duration. This variety indicates that the corpus of studies gives a good overview of the upcoming analyses. Studies from the United States were dominant, while Latin America and Africa were not represented (Table 4). Only a few countries in Europe were represented. American studies mainly were organised by a mentor or facilitator belonging to Square 2 (except 15 and 25). More than half the studies from Asia appeared in Square 1. The other continents were evenly distributed among the different squares.

Most of the participants worked at the primary and secondary levels, although it became quite challenging to cluster the

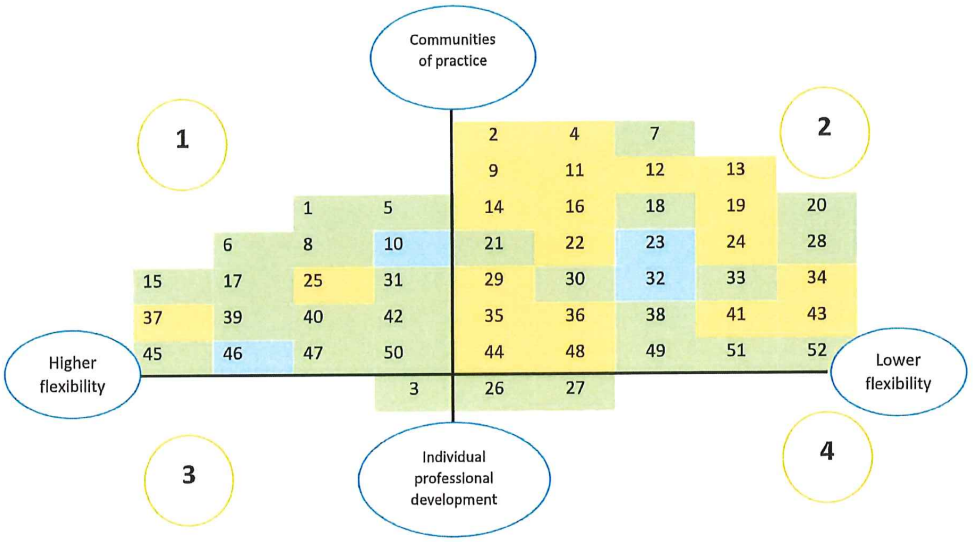


Fig. 2. Online activity in a continuum for professional development.

Table 4
Research context.

Continent	Total	Country	Studies	N
North America	21	USA	2, 4, 7, 11, 13, 14, 15, 18, 21, 22, 23, 25, 29, 34, 36, 41, 43, 44,48, 49	20
		Canada	12	1
Asia	11	China	31, 50, 51, 52	4
		Iran	1	1
		India	46	1
		Singapore	10	1
		Indonesia	16	1
		Vietnam	24	1
		Korea	27	1
		Malaysia	37	1
Oceania	6	New Zealand	20, 35	2
		Australia	32, 33, 39, 40	4
Europe	5	Sweden	17, 19	2
		Turkey	8	1
		Belgium	38	1
		Greece	45	1
International	5	Mix	5, 6, 9, 26, 42	5
Not specified	4		3, 28, 30, 47	4

participants' teaching levels because of international variations in terms (Table 3). Participants in Study 41 worked in kindergarten to Grade 3, while Study 43 had one participant working at the university level. Nine studies did not explicitly inform about the participants' teaching level.

Table 5 gives an overview of online activity and continents. As presented in this table, the professional development took place in fully online programmes (n = 27), blended learning models including both online and face-to-face sessions (n = 21) or programmes where the participants mostly met face to face (n = 4).

Most American studies contained blended online programmes, while Asia, Europe and international studies dominated the fully online programmes. The studies not specifying the online activity also belonged in this group. A minor part of the studies gave explicit information on which language was used in the online programme. Likely, the online programme's language and the country where the study was conducted were the same. This indicates that at least 36 online programmes were in English and five in Chinese. In Study 38, the participants could choose between English, Dutch or French.

The duration of the online programmes varied (Table 3). Fifteen studies lasted between four weeks and four months. Nine studies lasted between five and nine months, while 15 studies lasted for one to three years. Some studies reported their duration in hours (e.g., 23), while others used weeks (e.g., 7), months (e.g., 12), semesters (e.g., 17) or years (e.g., 48). Some teachers could participate as long as they wanted (e.g., 8), and because teachers worked with a webpage, the participants decided the duration in Study 3. The duration of the online programme was not stated in six studies.

There was an even distribution between language, mathematics/science and a mix of subjects in the studies' focus. Almost one-quarter of the studies did not specify the subject disciplines, which might result from subjects not being relevant in answering their research question (Table 6).

The subjects were also evenly distributed among the continents. Almost half of the studies from Asia focused on language, while half of the studies representing Oceania did not specify the language. Neither Asia nor Europe had studies focusing on 'others', and Europe and Oceania did not put language in focus in their studies. While more than half of the European studies emphasised science, mathematics or technology, eight of the studies from North America represented a mix of subjects.

3.1.2. Participants and recruitment

Teachers participated in the online programme with colleagues at their schools (e.g., 8, 47), in the same school district (e.g., 11, 29, 48) or as part of a governmental initiative on a national level (e.g., 17). In five studies, the teachers participated across borders, while others were not linked to specific areas (e.g., 38). Locations, funding and economics varied among their schools. Some teachers worked in isolated or rural schools (9, 29), others in low-income urban

Table 5
Online activity and continents.

Degree of online activity	Total numbers	America	Asia	Oceania	Europe	Inter-national	Not specified
Mostly face to face	**4**	23	10, 46	32			
Blended	**21**	2, 4, 11, 12, 13, 14, 22, 25, 29, 34, 36, 41, 43, 44, 48	16, 24, 37	35	19	9	
Fully online	**27**	7, 15, 18, 21, 49	1, 27, 31, 50, 51, 52	20, 33, 39, 40	8, 17, 38, 45	5, 6, 26, 42	3, 28, 30, 47

Table 6
Subject disciplines.

Subjects	N	Studies
Language	11	1, 5, 6, 14, 16, 18, 25, 27, 31, 47, 51
Science, mathematics or technology	11	4, 8, 10, 13, 17, 21, 23, 24, 28, 36, 45
Mix	13	2, 9, 11, 15, 20, 22, 29, 30, 34, 37, 44, 48, 50
Others, e.g., special education	5	26, 33, 35, 41, 42
Not specified	12	3, 7, 12, 19, 32, 38, 39, 40, 43, 46, 49, 52

Table 7
Participants and recruitment.

	N	Study number
Voluntary	15	1, 3, 5, 6, 7, 15, 27, 28, 38, 42, 43, 44, 45, 49,52
Workplace initiated	28	2, 4, 8, 9, 10, 11, 12, 13, 14, 16, 19, 22, 24, 25, 29, 31, 32, 33, 34, 36, 37, 39, 40, 46, 47, 48, 50, 51
Part of education	9	17, 18, 20, 21, 23, 26, 30, 35, 41

districts with low score results (46). Teachers at a Catholic school (36) and a hospital school (32) were also part of the corpus. Some teachers were experienced (12, 30), while others were novices (24).

More than half of the studies included teachers participating as part of their job, initiated by their leaders or governmental funding. In nine studies, the teachers got credits for participating in the online activity, while other programmes were voluntary and self-initiated (Table 7). Most programmes offered as a part of education were put in Square 2 in Fig. 2, while the workplace-initiated and voluntary programmes was represented in all squares.

There was a broad range of the number of participants in the 52 studies, from one participant in Study 10 to 375 in Study 52. In some studies, it was challenging to find the number of participants – for example, if it varied between pre-and post-tests (e.g., 32) or when the study used quantitative and qualitative data (e.g., 25), included both in-service and pre-service teachers (14) or presented different cohorts (35). The number of participants in the studies was not necessarily the same as the number of participants in the online programmes (e.g., 39). Table 8 gives an overview of the numbers of participants providing data to answer the research questions.

The number of participants seen in conjunction with continents reveals an even distribution, although eight of the studies from Asia contained more than 39 participants. Both online and blended programmes were represented in the continuum from few to many participants. The programmes where the participants mostly met face to face included fewer than 40 participants.

3.1.3. Goals, design and methodology

An overall intention was teachers' professional development, and as Squares 1 and 2 in Fig. 2 illustrate, this development took place within a community of practice in 49 of the studies. Several studies were positioned under the constructivist paradigm (e.g., 30), using sociocultural theory as their theoretical stance (e.g., 36). The cognitive aspect was central in several studies (e.g., 12), while teachers' technological pedagogical content knowledge (e.g., 32) and self-efficacy became the theoretical basis in others (e.g., 22). Many studies used different activity angles, technology, approaches to collaboration and learning theory as their primary point. A few of the studies did not explain their theoretical stance, emphasising the context or data material (e.g., 27). See Table 3 for more details.

Using terms like *growth* (e.g., 43), *process* (e.g., 20), *change* (e.g., 4), *improvement* (e.g., 33) and *transformation* (e.g., 18) indicates that researchers expected development through participation in the online programmes. Success factors were described as *satisfaction* (e.g., 31), *effectiveness* (e.g., 22) and *implementation* (e.g., 27). Professional growth appeared in studies focusing on reflection/strategies (3, 12, 14, 37, 38), subject and/or competencies (10, 17, 22, 26, 29, 34, 35, 41, 48) and/or teaching practice (4, 17, 23, 26, 28, 34, 41, 42).

The reviewed studies represented a wide variety of research designs. Case study was the most frequent methodological approach, found in 16 studies (e.g., 10, 30), and action research was used in three studies (21, 39, 40). As presented in Table 9, qualitative analysis appeared most frequently, although both quantitative and mixed methods were highly represented.

Table 8
Numbers of participants and online programme activity.

11		40						
10		38						
9		37						
8	42	36	47					
7	39	20	44					
6	34	12	43			51		52
5	33	8	32			50	31	48
4	17	7	23		41	45	29	28
3	16	4	18	46	30	35	27	26
2	15	3	6	25	14	19	11	24
1	10	2	5	21	1	13	9	22
Numbers	1–10	11–20	21–30	31–40	41–60	61–100	101–150	151→

Fully online
Blended
Mostly face to face

Table 9
Methodology.

Qualitative	5, 7, 8, 10, 14, 15, 16, 17, 18, 20, 21, 30, 34, 36, 37, 38, 40, 41, 42, 43, 44, 45, 49, 50, 51
Mixed methods/combination	2, 3, 4, 6, 9, 12, 23, 25, 27, 29, 32, 33, 39, 46, 47, 48, 52
Quantitative	1, 11, 13, 19, 22, 24, 26, 28, 31, 35

In studies with no clearly stated methodological stance, the placement is based on the methodological description. An example is that studies using both quantitative and qualitative data are put in the category 'mix', even though the 'mixed methods' term is not used (Table 3). Qualitative studies dominated the studies in Square 1, and quantitative and the mixed-methods combination represented more than half of the studies in Square 2.

3.2. A substantive overview

The overarching intention of all online programs in the reviewed studies was *Professional development*, illustrated as the outcome in Fig. 3. Three factors stood out as crucial in the teachers' professional development processes in the online communities. *Internal Factors* is placed at the core, emphasising teachers' fear of 'losing face' and technological fear determinates whether they will participate or gain anything from participation. Two main categories appeared: *Online Programmes*, which contains the subcategories Relevance and Flexibility, and *Communication*, including the subcategories Vertical Support from facilitators and school leaders and Horizontal Collaboration with peers. From a sociocultural perspective, the online programme represents the artefact, while communication emphasises both the context and the importance of language as a tool (Vygotsky, 1978). Scaffolding stands out as the overarching category, affecting all the other categories.

The analysis indicates that all categories are dynamic and must be seen in relation to each other. How they affect each other can promote or hinder professional development. In the upcoming section, the core category will be presented before the main categories. The overall category Scaffolding will be discussed in Section 4, emphasising the importance of how vertical support and online programmes scaffold the participants.

3.2.1. Professional development

Many teachers expressed positive experiences and improvement in their professional development after participating in the online programmes (Dewi, 2016; Jiménez & O'Shanahan, 2016; Jin-Hwa & Kim, 2016; McCarthy et al., 2019; Mentis et al., 2016; Prestridge, 2017; Trust & Horrocks, 2017; Tsiotakis & Jimoyiannis, 2016). Some studies revealed statistically significant results (Blanchard et al., 2016; Bostancioglu, 2018; Clary et al., 2017; Hall & Trespalacios, 2019; Ho et al., 2016; Melton et al., 2019; Wang et al., 2019; Xie et al., 2017). As a participant in Mentis et al.'s (2016) study stated: "Everything I've learnt in the past two years has developed my professional identity" (Mentis et al., 2016, p. 73).

Nevertheless, the analyses revealed that not all teachers had the same experiences. In several studies, the diversity in knowledge and activity was categorised based on the participants' professional development or activity level. Terms like *integration*, *master level* and *core participants* described the most active teachers. They had solid and holistic knowledge after their participation and could transfer their knowledge to other situations. In describing the lowest levels, terms like *resistant level* and *peripheral members* were used to describe teachers neither using their full potential nor having the skills or being able to see the purpose in utilising and generalising their new knowledge (e.g. Kim et al., 2017; Tsiotakis & Jimoyiannis, 2016). However, uninvolved participants or lurkers still seemed to have learning gains during their participation (Tsiotakis & Jimoyiannis, 2016).

3.2.2. Internal factors affecting professional development

Internal factors are crucial for teacher's professional development. A prerequisite for professional development is that teachers are willing to participate and engage both cognitively and emotionally (e.g. Albers et al., 2015). Xie et al. (2017) put forward expectations as a central barrier affecting online participation. According to Graham and Fredenberg (2015), the participants' attitude against technology and their ability to work towards goals are more important than the technological aspects. These results indicate that what participants bring into the online programmes in terms of interests, needs and attitudes affect both the activity and the potential outcome. Attitude was also central in developing the category Internal Factors, where two main barriers appeared: participants' fear of 'losing face' and technological fear.

Fear of 'losing face' or receiving negative responses from colleagues or authorities were put forward in several studies (e.g. Tsiotakis & Jimoyiannis, 2016). The participants' attitude and affective factors like empathy, emotional support and fellowship are also part of the internal factors, which can become a driving force or reduced engagement (e.g. Albers et al., 2015). Teachers feeling overwhelmed led to chaos, confusion and resistant participation in several studies (e.g. Graham & Fredenberg, 2015). Some participants openly discussed their fears in their networks (Azukas, 2019);

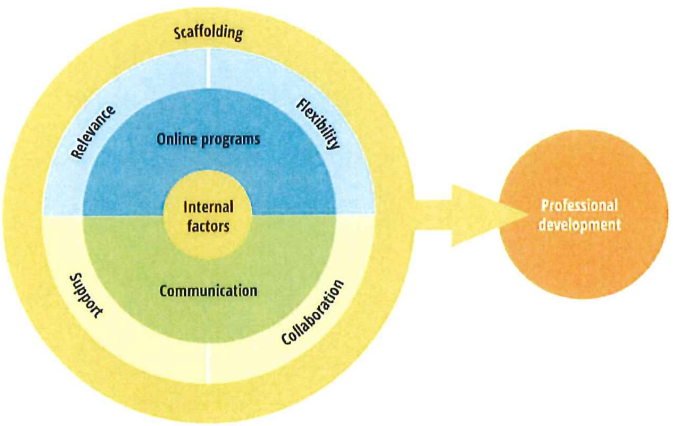


Fig. 3. Categories presenting professional development in online communities.

others chose a passive role to avoid misunderstandings (Zhang et al., 2017). These examples of openness or positivity will affect oTPD.

Affective factors also impacted the participants' low technological knowledge, which was revealed as a main internal main barrier for teachers' engagement in and contributions to online programmes (e.g. Xie et al., 2017). However, several studies reported increased satisfaction among teachers after participating in the online programme, including teachers stating they "no longer fear technology" (Carpenter & Munshower, 2019, p. 306).

3.2.3. *Online programmes affecting professional development*

Another finding from the reviewed studies highlights the online programmes as mediating artefacts affecting the activity in oTPD, more or less successfully. The design of the online programmes was revealed as one of the main factors. The online programmes' design was put forward in several studies, where the participants preferred integrated information and resources, clear assessment guidelines and relevant information on how to work with the programme during the entire process (Beach, 2017; Gikandi & Morrow, 2016; S.; Zhang, Liu, Zhu, et al., 2019). Erixon (2016) concluded her study by highlighting the design: "the actual shape of the digital media matters. If the form of online communication does not offer sufficient presence and interaction so that the conversation can be deepened, the consequence will be more superficial learning" (Erixon, 2016, p. 281).

As illustrated in Fig. 3, analyses of the main category *Online Programmes* revealed two main focuses: Flexibility and Relevance. *Flexibility* emphasises the complexity of asynchronous or synchronous spaces and physical or online meetings, and *Relevance* emphasises a tight connection to the teachers' practice at their workplace.

3.2.3.1. Flexibility. Flexible online programmes were emphasised in several studies as a positive element in teachers' professional development (e.g. Bostancioglu, 2016). By giving teachers opportunities to participate in multiple ways, both synchronous and asynchronous online programmes can facilitate powerful reflection (e.g. Denoyelles & Raider-Roth, 2016). The opportunity to be self-directed resulted in autonomous and motivated teachers in their online communities (e.g. Genlott et al., 2019). The flexibility of learning 'anytime, anywhere' and being able to meet fellows with mutual interests without being limited by economic or distance barriers was highly emphasised (e.g. Carpenter & Munshower, 2019; Dewi, 2016; Sanders-Smith et al., 2016). As one participant in the study by Jin-Hwa and Kim (2016) stated: "It was really nice to be able to access the programme via smart phones and thereby to study anywhere in my spare time" (Jin-Hwa & Kim, 2016, p. 342).

Although using asynchronous discussion forums gave space for reflections and evaluations, both individually and collectively (Erixon, 2016; Gikandi & Morrow, 2016), not all participants utilised the potential of asynchronous discussion forums and sharing experiences (e.g. Zhang et al., 2017). A lack of synchronicity explained the limited reflections in Ciampa and Gallagher (2015). Several teachers stated they preferred a more formal, traditional organisation of the online programmes, thinking this would result in more active participation (Trust & Horrocks, 2017; Tsiotakis & Jimoyiannis, 2016).

The flexibility was also central to whether the participants preferred online or physical meeting spaces. In the study by Prestridge (2017), most participants appreciated synchronous physical meetings, but they also appreciated not being limited by time or place in the asynchronous space. As a contrast, other teachers preferred online learning communities over physical ones, illustrated by this quote:

> The online component made it so that none of our conversations ever had to stop because our face-to-face class was over… I got more done and I felt more prepared for each of the face to face classes (Azukas, 2019, p. 299).

Other studies revealed participants who preferred synchronous face-to-face meetings as being more personal and facilitating meaningful learning (e.g. Clary et al., 2017; Moen & Walters, 2018). An example is Erixon (2016), who problematised participants not seeing each other's body language. The technological aspects also influenced teachers' preference for face-to-face sessions, highlighting challenges like reduced network accessibility or poor technology quality (e.g. Hunt-Barron et al., 2015; Wang et al., 2019).

3.2.3.2. Relevance. Teachers highly valued relevant work-related activities, and the analysis revealed the category of Relevance to be necessary, changing both teachers' values and teaching practice. Personal and meaningful examples and discussion forums connected to classroom practice and familiar topics reduced frustration, discomfort and high programme attrition (e.g. Brennan et al., 2018; Cheah et al., 2019). These examples illustrate how relevance and internal factors are tightly connected to teachers' professional development.

Relevance was also put forward by teachers reflecting upon plans or who had already changed their classroom practices after their online participation (e.g. Herro & Quigley, 2017; Stornaiuolo, 2016; Yurkofsky et al., 2019). The following statement indicates a teacher using something concrete she had learned: "I applied what I learned from the reading lesson videos to my class. My students loved it" (Jin-Hwa & Kim, 2016, p. 340).

By emphasising flexibility and being open-minded, some teachers reflect upon developing their teacher role, becoming a facilitator to their students' learning processes (Herro & Quigley, 2017; Mentis et al., 2016). The new understanding of their role is illustrated by this comment: "The biggest skill that I'd say I'd gained would probably be… Keeping an open mind. Being flexible. I felt like I was flexible, but I'm a lot more now, even with assignments" (Azukas, 2019, p. 298). The study from Blanchard et al. (2016) included a three-year timespan. Although there were minor differences, the results indicated that students' achievement scores increased due to their teachers' online program participation. Other teachers reported bringing back and sharing their new knowledge with colleagues (Trust & Horrocks, 2017).

3.2.4. *Communication affecting professional development*

Vygotsky (1978) put forward the major importance of language and learning. Communication between participants and their contexts and community was emphasised as a positive factor in teachers' professional development (e.g. Prestridge & Tondeur, 2015; Yurkofsky et al., 2019). There was a broad range of designs, highlighting dynamic, constructive communication leading to a higher level of reflection during participation in discussion forums (e.g. Philipsen et al., 2019). As one teacher stated, "Collective reflection through other course participants' forum postings was valuable in expanding my thinking and horizon through hearing other viewpoints" (Mentis et al., 2016, p. 73). This utterance illustrates that learning develops through external to internal processes (Vygotsky, 1978).

Engagement through sharing, reflecting and cooperating with both facilitators and colleagues were highlighted in teachers' professional development in order to build a community of practice (e.g. Cansoy, 2017; Ho et al., 2016; McCarthy et al., 2019). Stornaiuolo (2016) referred to this as processes where teachers constructed their own experiences and knowledge with their peers. This quote illustrates this aspect: "My confidence and motivation to use mobile technologies has increased this year as a result of

working with [the] coach and also watching colleagues and sharing ideas that have been used successfully in our learning area" (McCarthy et al., 2019, p. 514).

Two subcategories developed through the analyses: *Collaboration*, emphasising a horizontal activity, and Support, with a vertical activity.

3.2.4.1. Collaboration: Horizontal scaffolding. Participation in communities was equally important as the online programmes in teachers' development processes (Ho et al., 2016). It is essential to create a good environment in an online community, built on trust and confidence between the participants (Cansoy, 2017; Erixon, 2016; Zhang et al., 2017). Several verbs described online activities: *experimenting, encouraging, inspiring, helping, discussing, giving* and *sharing*. The teachers reported new perspectives, insight and experiences, and these processes strengthened and created a sense of belonging to the community (e.g. Bostancioglu, 2016; Brennan et al., 2018; Carpenter & Munshower, 2019). One quote illustrates the development of a sense of belonging to a community: "A desire also emerged among the participants to create a feeling of belonging to the group and get to know each other in this online community, for example, by giving each other compliments, referring to and addressing each other by name and talking about the group in terms of "we" and "our group"" (Erixon, 2016, p. 279). Using these terms indicated that participants had established a community and were more willing to share experiences (e.g. Karam et al., 2018; Wang et al., 2019). Carpenter and Munshower (2019) described this as creating professional friendships.

Teachers who felt isolated at rural schools, with a lack of co-located peers with common interests, seemed to value online activity highly. An absence of community at their schools predicted teachers' participation in the online programmes (e.g. Karam et al., 2018). Crossing temporal and geographical boundaries were positive in the teachers' professional development (e.g. Trust & Horrocks, 2019; Wang et al., 2019). Different backgrounds were revealed as success factors in several studies (Azukas, 2019; Mentis et al., 2016), as mentioned by a participant in Azukas's study: "The online part really promoted interdisciplinary and cross grade level work. Who would have thought that me, as a Grade Three teacher, would be partnering with a high school teacher?" (Azukas, 2019, p. 299). However, the opposite results were found by Nambiar and Thang (2016), where the participants teaching different subjects struggled with sharing practices and learning from each other. Other studies also noted success with teachers participating in homogenous groups (Bostancioglu, 2016; Carpenter & Munshower, 2019; Sanders-Smith et al., 2016; Zhang et al., 2017).

One obstacle in the teachers' professional development was that teachers collaborated on superficial levels instead of establishing a more profound quality in their professional development (Erixon, 2016; Zhang et al., 2017). Instead of teachers giving critical and constructive academic or technical support, consensus-driven communication by giving compliments and sharing information about teaching experiences on a surface level recurred most frequently (e.g. Erixon, 2016; Sanders-Smith et al., 2016). An example is when participants gave each other emotional support by writing messages where they thanked, complimented or congratulated their peers (Cansoy, 2017). Superficial collaboration levels were also raised as a challenge in studies with teachers looking for 'quick-fix-alternatives', or materials, methods or resources that could be used immediately in their teaching practices (e.g. Prestridge, 2017; Zhang et al., 2017). Consequently, collaboration in these online programmes took on a distant approach involving reduced in-depth interactions and reflections among the teachers.

N. Zhang, Liu, and Cai (2019) registered that there were always some teachers not participating during the online activity. Taking a role as an active participant was not easy for all teachers (e.g. Ciampa & Gallagher, 2015). Some teachers expected mentors or colleagues to decide the next step in the collaboration process (Graham & Fredenberg, 2015). Several studies reported teachers contributing neither to the collective processes nor to their professional development (e.g. Erixon, 2016; Zhang et al., 2017). This uneven activity, where only a few participants contributed, resulted in many dissatisfied teachers (e.g. Karam et al., 2018; Tsiotakis & Jimoyiannis, 2016; Zhang et al., 2017). However, even teachers who were not active participants appreciated being part of the online programmes (Prestridge, 2017).

The positive aspects of online programmes with a long-term duration were put forward, but the results indicated that teachers were most active at the beginning of the online programme, withdrawing after fulfilling the minimum demands (e.g. Xie et al., 2017). Although the teachers' comments also appeared in the later stages of the online activity in the study of S. Zhang, Liu, and Cai (2019), the results underscored that it is not enough only to emphasise the start-up phase. These results put forward the importance of facilitators being close to the participants during the whole professional development process.

3.2.4.2. Support: vertical scaffolding. In professional development programmes — whether these are entirely online, blended or mostly face to face — facilitators, initiators and creators were pointed out as having a critical role in developing professional communities (e.g. Brennan et al., 2018). We use the term *facilitators* to capture these supporting roles. The facilitators had a different power or status compared to the participants, indicating a vertical support (Engeström & Sannino, 2010). This vertical support is put forward by Xie et al. (2017), who suggested mentoring as one of the most crucial factors affecting participation. Nambiar and Thang (2016) also support this, claiming that participation was non-existent if the facilitator left the participants without support. The studies represented facilitators with different roles. Examples are facilitators creating a webpage without direct contact with the participants (Beach, 2017), via facilitators who send reminder emails to the participants (Hunt-Barron et al., 2015), to facilitators who gave the teachers one-on-one mentoring (Moen & Walters, 2018).

Facilitators seem to have both affective and cognitive roles. Through the facilitators' encouragement, support and offers of feedback — for example, their holding reflective discussions and sending emails — the teachers' development processes seemed to progress. (e.g. Gikandi & Morrow, 2016). The facilitators took on different roles, from experts to a more horizontal approach. A teacher in Brennan et al.'s study appreciated the horizontal approach that facilitators had in the online programme:

> The fact that there is not a right and a wrong comes with play. It is like you are learning by trying, you are learning by doing, by asking questions, by remixing, by looking at other people's work… The fact that even the experts… Very much present themselves as peers and collaborators, not as like, 'OK, we know it all and we are dumping it — doing a core dump on you, but we are learning along with you'. (Brennan et al., 2018, p. 29).

The frequency of how often facilitators and teachers met online differed. While the participants in Xie et al. (2017) met for monthly evaluation, the participants in Herro and Quigley's (2017) study met for daily check-ins. The latter study intended to help teachers become aware of their professional development phase and consider what to do in the upcoming phase.

In more than half of the studies in this review, the teachers participated in oTPD anchored to their workplace (Table 7). Belonging to a community is also emphasised in some of the

studies, like that of McLean et al. (2015), who identified put forward collegial support as especially important in the development phase. According with the need for collegial support, Trust and Horrocks (2019, p. 113) offered recommendations for school leaders facilitating these development processes. School leaders were also central for teachers' activities and professional development, through supporting and emphasising teachers' thoughts about oTPD (Nambiar & Thang, 2016; Trust & Horrocks, 2019).

Varanasi et al. (2019) noted that school leaders should reduce the number of development programmes at their schools because too many of these can result in teachers being saturated with new programmes. According to this, time management was revealed as a central factor. In several studies, teachers reported feeling overwhelmed because of online participation coming 'on top' of all other tasks (e.g. Denoyelles & Raider-Roth, 2016). For example, one of the teachers argued that "as busy people it is hard sometimes to take that time out to blog on our own… it isn't because we don't want to" (Ciampa & Gallagher, 2015, p. 897). Not having enough time to participate can result in lurking and affects internal factors.

According to the idea that time to participate must be facilitated, Carpenter and Munshower (2019) and Ho et al. (2016) emphasised that oTPD reduced travel costs and was time-saving for the participants. Both factors are essential for governmental budgets. What is also important for government and school leaders to take into account is the studies putting forward challenges with technology and internet access (e.g. Hunt-Barron et al., 2015). These types of problems are crucial contextual factors affecting the activity. With the emerging trend of oTPD, governments must have an enhanced focus on facilitating teachers' ability to participate online. As these examples illustrate, both the national level and the school level are essential for teachers' professional development. The results presented above indicate an enhanced focus on leaders scaffolding the teachers' development processes.

4. Discussion: towards a better understanding of oTPD

Teachers' online professional development (oTPD) continues to be a steadily growing area of teacher education research. By providing an overview across 52 studies, this process has enabled us to identify teachers' participation in formal online programmes from 2015 to 2019 with teachers' professional development as the overall intention. The studies represent a mix of quantitative and qualitative approaches, with breadth between continents, subjects, number of participants, methods and online programmes. Although the written language of the included studies was English, the review contributes to a global perspective of online communities of practice. Based on our findings, we propose a model that provides a holistic description of the categories identified as central for teachers' participation in online programmes (Fig. 3).

Our scoping review gives a retrospective insight of the reviewed studies, presenting oTPD as a complex field. Artefacts can fail "when they do not fully or rightfully capture multiple meanings and perspectives" (Akkerman & Bakker, 2011, p. 141). The results indicate a clear trend of what is put forward as necessary for online programmes to be successful and can therefore be used to inform the design of future oTPD. Next, we clarify the most important findings in the upcoming discussion.

4.1. The role of scaffolding in teachers' professional development

Our review can contribute to upcoming oTPD by discussing what was revealed as decisive for teachers' activity in online programmes. The broadness of individual differences, referred to as *internal factors* in Fig. 3, shows that a 'one size fits all' design is an illusion for oTPD. To capture their internal factors in relation to the activity, a key finding from our review is that scaffolding is critical in teachers' professional development phases. Therefore, facilitating development within teachers' zone of proximal development stands out as the most essential measure.

First, the study's main finding was the importance of facilitating a shared understanding as crucial for enhancing the common goal or outcome (Engeström & Sannino, 2010). The importance of creating a shared understanding and the process of professional development can be seen in accordance with Vygotsky, who argued that language is a 'tool of tools'. The participants' activity will be modified through discussions and reflections, improving their learning processes and potentially enhancing their professional development (Postholm, 2003). The facilitators are responsible for these essential discussions in oTPD, and their contribution can be seen in line with Akkerman and Bakker (2011), who claim that artefacts are not fully communicative and therefore cannot entirely displace the dialogue. The critical role of the facilitators indicates vertical activities with an unbalanced power. Getting guidance from an 'expert' is in line with the principle of scaffolding (e.g. Rogoff, 1990).

Second, facilitators scaffolding teachers' activity in oTPD appeared as one of the most important results in our review. The facilitator's overall job is to reduce gaps between the participants and the content as well as between the participants. Getting support in the initial stage can affect beliefs, motivation and engagement in the upcoming approaches. Support in the start-up phase was crucial for participants with low-value beliefs (e.g. Cheng & Xie, 2018). The support can also reduce gaps between content and knowledge, avoiding internal tensions like negative emotions (Lebec & Luft, 2007; Servage, 2008). Reducing the gaps could avoid the situation described by one of the participants in Kim et al. (2017): "I was the most confused during our first face-to-face meeting. Many of us left that first meeting still not knowing exactly what we would be doing for the project" (Kim et al., 2017, p. 318).

Unsurprisingly, our review shows that it is unrealistic to expect all participants to meet the same goals. The variation between the participants is exemplified by Kim et al.'s (2017) study, in which some teachers first and foremost needed to learn how to manage relevant technologies tightly connected to their interests and daily work before truly benefitting from oTPD. As Rogoff (1990) stated, scaffolding can be done by creating appropriate tasks that are interesting and challenging enough. This differentiation makes it possible to increase participation and engagement among both higher- and lower-performing participants by finding challenging enough tasks.

Third, emphasising the vertical role also put forward the importance of contextual factors affecting the activity. The context's significance is also emphasised by Vygotsky (1978), who explained learning begins as external processeses being transformed into internal processes. This knowledge transformation indicates the facilitator's significance in oTPD, whose task it is to facilitate these processes. Being mainly responsible for oTPD, several studies put forward the importance of facilitators knowing the participants' context, knowledge, interest and preferred artefacts (e.g. Trust & Horrocks, 2017). Participation knowledge is essential for finding appropriate strategies of scaffolding, both individually and between the participants. Getting knowledge at an individual level also provides an opportunity to see the participants as a group. Overall knowledge makes it easier when scaffolding collaboration between participants. An example of how to get to know the participants is presented in a study reviewed by Lay et al. (2020). Here, participants answered questionnaires in the start-up phase, and this information was used to create homogenous

learning groups. These measures increased the number of participants completing the course.

Several studies put forward the facilitator as necessary for collaboration between the participants early in the process – for example, to establish relationships (e.g. Mentis et al., 2016). Although facilitators have primary responsibility for establishing and developing common understandings between the participants, Rogoff (1990) emphasised both parts as being active. Active participants, guided by a facilitator, will make it possible to build a fundament with shared understanding, working towards both individual and common goals (Postholm, 2020).

Fourth, when integrating the first three points from the discussion, it can be easier for the participants to plan for oTPD. A success factor in oTPD is when the teachers are creating concrete, relevant and attainable goals (e.g. del Rosal et al., 2016). Clear goals can clarify both participants' and facilitators' directions in the developmental phase. An example illustrating a lack of understanding of the oTPD's intentions was presented by Nambiar and Thang (2016). In their study, some participants were not aware that collaboration was a central part of their professional development. To avoid unclear directions, the results revealed the importance of clarifying and creating goals early in the process.

Teachers who are active in constructing their own goals obtain opportunities to self-direct their learning, which will likely result in a more extensive engagement in their oTPD (Lowe & Holton III, 2005). This activity's engagement is also tightly connected to teachers' need for autonomy (Burner & Svendsen, 2020). Another term describing this phenomenon is the concept of agency, allowing the teachers to shape their development processes (Engeström & Sannino, 2010). These results indicate a balance between scaffolding through a facilitator and becoming autonomous and controlling their learning processes through agency.

The process of creating their own goals indicates the importance of online programmes with a flexible design. Although some teachers preferred clear guidelines, several studies highlighted teachers who emphasised the positive aspect in being able to experiment, without rigid procedures and where mistakes were embraced and seen as part of their oTPD (e.g. Brennan et al., 2018). Enhanced flexibility can balance individual needs with online programmes' contents, thus meeting the diversity between the participants in the same online programmes.

Fifth, the results clarify that activity and relevance were closely connected. Relevant work-related activities were highly valued, which indicates the importance of online programmes' content being tightly designed, capturing the teachers' interests and needs. An online programme capturing these factors would probably facilitate more personalized professional development (Dede et al., 2016). Finding the activity relevant can help participants see the purpose and value of the online program, rather than thinking of the online space as an 'extra' and unnecessary activity (e.g. Hunt-Barron et al., 2015). Relevance is, therefore, tightly connected to motivation and interests that are closely connected to their practice, and our findings are in line with the theory about scaffolding (Rogoff, 1990) and previous research (e.g. Burner & Svendsen, 2020).

Finally, we want to underline the importance of acknowledging participating teachers as educated and knowledgeable in oTPD. Although scaffolding indicates a vertical expert role, teachers are not 'empty boxes' to be filled with new knowledge. Developers and facilitators of the online programmes must consider the teachers enter the activity with knowledge and experiences stemming from their active role and informed by their history and culture. It is also essential that those involved in the activity are aware that contradictions are crucial in all developmental processes. Engeström (2001) proposed that contradictions should not be compared with problems or conflicts: they are the contributors to change and development. By facilitating a shared understanding of the intention with the online program, with flexibility and autonomous participants, scaffolding inside their proximal zone of development, a good experience of oTPD should be the outcome.

4.2. Limitations and further research

Methodological choices lead to limitations in the research process. Examples of choices are the use of synonyms in the search string and the selection of databases. Developing a review protocol like that of systematic reviews could have remedied these challenges. Conducting a scoping review does not include quality assessments of the reviewed studies; still, it would have been interesting to use assessment tools like the Critical Appraisals Skills Programme (CASP) in the process.

Most of the 52 reviewed studies provide 'snapshots' of oTPD and give a broad look into oTPD. While the studies shared some commonalities, they are still unique in their own ways. Such complexity made them sometimes challenging to compare. Getting insight into more long-term results would have provided opportunities to examine whether the studies offered effective conditions for lifelong and sustainable knowledge. Ideally, oTPD not only results in an enhanced outcome for the teachers themselves but also for their students and colleagues.

As presented in the discussion, context and culture affect oTPD, which might have led to two biases in this scoping process. First, the high representation of studies from the United States might have affected the review results. Including languages other than English might have remedied this bias. Another bias that might have influenced this scoping review is us, the researchers. Being aware of our role, context and knowledge during the whole process, we chose to think of our presence as an important contribution to the field. Still, we warmly welcome perspectives from other researchers from other educational, social and cultural contexts to review the same studies. New perspectives will strengthen this important field of oTPD.

Bridging the gap between facilitators and participants is discussed thoroughly in this study. The designers and developers of the online programmes have the main responsibility of balancing the different interests and needs in oTPD. These roles have had limited attention in these reviewed studies. We encourage further research to put these central roles in front. The studies revealed significant gaps in describing the researcher's role and ethical considerations. We find this quite surprising, especially because several studies emphasised researchers tightly connected to the online programmes and oTPD. Because a main finding was how the parts affected each other, this makes it even more important to clarify the researcher's role.

A scoping review maps the existing literature. Still, we have chosen to look forward, using the results as legitimation for suggesting what should be considered when designing and implementing online programmes. OTPD is a complex research area that needs further attention. After a long period with a need for social distancing and online teaching due to Covid-19, it would be interesting to see whether the global pandemic affects oTPD. In this review, we have unpacked the importance of the emotional and affective characteristics of oTPD. It is not unlikely that teachers' internal factors might have changed and become less important for oTPD during this period.

The results from our study can be interesting for governmental investors teacher educators and programme designers engaged in oTPD. The results from the reviewed studies are consistent with other research, giving direction when designing and implementing

online programmes. Central in these processes is the need to conduct good evaluations and to use them to improve the online programmes.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.[1]

References

Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research, 81*(2), 132–169. https://doi.org/10.3102/0034654311404435

Albers, P., Cho, A. R., Shin, J. H., Pang, M. E., Angay-Crowder, T., Odo, D. M., Jung, J. K., Pace, C. L., Sena, M., & Turnbull, S. (2015). Critical spaces for critical times: Global conversations in literacy research as an open professional development and practices resource. *Global Education Review, 2*(3), 46–67. https://ger.mercy.edu/index.php/ger/article/view/126.

* Alimirzaee, H., & Ashraf, H. (2016). On the effect of online peer knowledge sharing on Iranian EFL teachers' professional development. *Theory and Practice in Language Studies, 6*(1), 134–146. https://doi.org/10.17507/tpls.0601.18.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19–32. https://doi.org/10.1080/1364557032000119616

Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education, 27*(1), 10–20. https://doi.org/10.1016/j.tate.2010.08.007

* Azukas, M. E. (2019). Cultivating blended communities of practice to promote personalized learning. *Journal of Online Learning Research, 5*(3), 251–274 https://www.learntechlib.org/primary/p/210640/.

* Beach, P. (2017). Self-directed online learning: A theoretical model for understanding elementary teachers' online learning experiences. *Teaching and Teacher Education, 61*, 60–72. https://doi.org/10.1016/j.tate.2016.10.007.

* Blanchard, M. R., Leprevost, C. E., Tolin, A. D., & Gutierrez, K. S. (2016). Investigating technology-enhanced teacher professional development in rural, high-poverty middle schools. *Educational Researcher, 45*(3), 207–220. https://doi.org/10.3102/0013189X16644602.

Blitz, C. L. (2013). *Can online learning communities achieve the goals of traditional professional learning communities? What the literature says. REL 2013-003.* Regional Educational Laboratory Mid-Atlantic. http://ies.ed.gov/ncee/edlabs/projects/project.asp?ProjectID=368.

* Bostancioglu, A. (2016). Factors affecting English as a foreign language teachers' participation in online communities of practice: The case of Webheads in Action. *International Journal of Languages' Education and Teaching, 4*(3), 20–35. https://doi.org/10.18298/ijlet.1651.

* Bostancioglu, A. (2018). Online communities of practice in the service of teachers' technology professional development: The case of Webheads in Action. *Turkish Online Journal of Educational Technology - TOJET, 17*(2), 97–110.

* Brennan, K., Blum-Smith, S., & Yurkofsky, M. M. (2018). From checklists to heuristics: Designing MOOCs to support teacher learning. *Teachers College Record, 120*(9), 1–48.

Burner, T., & Svendsen, B. (2020). A Vygotskian perspective on teacher professional development. *Education, 141*(1), 11–20.

* Cansoy, R. (2017). Teachers' professional development: The case of WhatsApp. *Journal of Education and Learning, 6*(4), 285–293. https://doi.org/10.5539/jel.v6n4p285.

* Carpenter, D., & Munshower, P. (2019). Broadening borders to build better schools. *International Journal of Educational Management*, 296–314 https://www.emerald.com/insight/content/doi/10.1108/IJEM-09-2018-0296/full/html.

* Cheah, Y. H., Chai, C. S., & Toh, Y. (2019). Traversing the context of professional learning communities: Development and implementation of Technological Pedagogical Content Knowledge of a primary science teacher. *Research in Science & Technological Education, 37*(2), 147–167. https://doi.org/10.1080/02635143.2018.1504765.

* Cheng, S.-L., & Xie, K. (2018). The relations among teacher value beliefs, personal characteristics, and TPACK in intervention and non-intervention settings. *Teaching and Teacher Education, 74*, 98–113. https://doi.org/10.1016/j.tate.2018.04.014.

* Ciampa, K., & Gallagher, T. L. (2015). Blogging to enhance in-service teachers' professional learning and development during collaborative inquiry. *Educational Technology Research & Development, 63*(6), 883–913. https://doi.org/10.1007/s11423-015-9404-7.

* Clary, R. M., Dunne, J. A., Elder, A. D., Saebo, S., Beard, D. J., Wax, C. L., Winter, J., & Tucker, D. L. (2017). Optimizing online content instruction for effective hybrid teacher professional development programs. *Journal of Science Teacher Education, 28*(6), 507–521. https://doi.org/10.1080/1046560X.2017.1379859.

Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Sage Publications.

Dede, C., Eisenkraft, A., Frumin, K., & Hartley, A. (2016). *Teacher learning in the digital age: Online professional development in STEM education.* Harvard Education Press.

* Denoyelles, A., & Raider-Roth, M. (2016). Being an 'agent provocateur': Utilising online spaces for teacher professional development in virtual simulation games. *Technology, Pedagogy and Education, 25*(3), 337–353. https://doi.org/10.1080/1475939X.2015.1049652.

* Dewi, F. (2016). Blended professional development for primary English language teachers: Design and evaluation. *Man in India, 96*(12), 4777–4800.

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research.* Orienta-Konsultit.

Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work, 14*(1), 133–156.

Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review, 5*(1), 1–24.

* Erixon, E.-L. (2016). Learning activities and discourses in mathematics teachers' synchronous oral communication online. *Research in Mathematics Education, 18*(3), 267–282. https://doi.org/10.1080/14794802.2016.1190667.

* Forte, K. S., & Blouin, D. (2016). Fostering transformative learning in an online ESL professional development program for K-12 teachers. *Qualitative Report, 21*(4), 781–797.

* Genlott, A. A., Grönlund, Å., & Viberg, O. (2019). Disseminating digital innovation in school–leading second-order educational change. *Education and Information Technologies, 24*(5), 3021–3039. https://doi.org/10.1007/s10639-019-09908-0.

* Gikandi, J. W., & Morrow, D. (2016). Designing and implementing peer formative feedback within online learning environments. *Technology, Pedagogy and Education, 25*(2), 153–170. https://doi.org/10.1080/1475939X.2015.1058853.

* Graham, L., & Fredenberg, V. (2015). Impact of an open online course on the connectivist behaviours of Alaska teachers. *Australasian Journal of Educational Technology, 31*(2), 140–149. https://doi.org/10.14742/ajet.1476.

* Hall, A. B., & Trespalacios, J. (2019). Personalized professional learning and teacher self-efficacy for integrating technology in K–12 classrooms. *Journal of Digital Learning in Teacher Education, 35*(4), 221–235. https://doi.org/10.1080/21532974.2019.1647579.

Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school.* Routledge.

Hauge, K., & Wan, P. (2019). Teachers' collective professional development in school: A review study. *Cogent Education, 6*(1), 1619223.

* Herro, D., & Quigley, C. (2017). Exploring teachers' perceptions of STEAM teaching through professional development: Implications for teacher educators. *Professional Development in Education, 43*(3), 416–438. https://doi.org/10.1080/19415257.2016.1205507.

* Ho, V.-T., Nakamori, Y., Ho, T.-B., & Lim, C. P. (2016). Blended learning model on hands-on approach for in-service secondary school teachers: Combination of E-learning and face-to-face discussion. *Education and Information Technologies, 21*(1), 185–208. https://doi.org/10.1007/s10639-014-9315-y.

* Hunt-Barron, S., Tracy, K. N., Howell, E., & Kaminski, R. (2015). Obstacles to enhancing professional development with digital tools in rural landscapes. *Journal of Research in Rural Education, 30*(2), 1–14.

* Jiménez, J. E., & O'Shanahan, I. (2016). Effects of web-based training on Spanish pre-service and in-service teacher knowledge and implicit beliefs on learning to read. *Teaching and Teacher Education, 55*, 175–187. https://doi.org/10.1016/j.tate.2016.01.006.

* Jin-Hwa, L., & Kim, H. (2016). Implementation of SMART teaching 3.0: Mobile-based self-directed EFL teacher professional development. *Journal of Asia TEFL, 13*(4), 331–346. https://doi.org/10.18823/asiatefl.2016.13.4.6.331.

* Karam, R., Straus, S. G., Byers, A., Kase, C. A., & Cefalu, M. (2018). The role of online communities of practice in promoting sociotechnical capital among science teachers. *Educational Technology Research & Development, 66*(2), 215–245. https://doi.org/10.1007/s11423-017-9541-2.

* Kim, M. K., Xie, K., & Cheng, S.-L. (2017). Building teacher competency for digital content evaluation. *Teaching and Teacher Education, 66*, 309–324. https://doi.org/10.1016/j.tate.2017.05.006.

Krumsvik, R. J., & Røkenes, F. M. (2019). Hvordan finne kunnskapsfronten? Litteraturreview i masteroppgaven i grunnskolelærerutdannignen. In R. J. Krumsvik (Ed.), *Kvalitativ metode i lærerudanninga* (pp. 96–136). Fagbokforlaget.

Lantz-Andersson, A., Lundin, M., & Selwyn, N. (2018). Twenty years of online teacher communities: A systematic review of formally-organized and informally-developed professional learning groups. *Teaching and Teacher Education, 75*, 302–315. https://doi.org/10.1016/j.tate.2018.07.008

Lay, C. D., Allman, B., Cutri, R. M., & Kimmons, R. (2020). Examining a decade of research in online teacher professional development. *Frontiers in Education*, 1–10. https://doi.org/10.3389/feduc.2020.573129

Lebec, M., & Luft, J. (2007). A mixed methods analysis of learning in online teacher professional development: A case report. *Contemporary Issues in Technology and Teacher Education, 7*(1), 554–574.

* Lee, K., & Brett, C. (2015). Dialogic understanding of teachers' online transformative learning: A qualitative case study of teacher discussions in a graduate-level online course. *Teaching and Teacher Education, 46*, 72–83. https://doi.org/10.1016/j.tate.2014.11.001.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science, 5*(69), 1–9. https://doi.org/10.1186/1748-5908-5-69

* Li, S., Zheng, J., & Zheng, Y. (2019). Towards a new approach to managing teacher

[1] Asterisks indicate the articles included in the final analytical sample.

online learning: Learning communities as activity systems. *The Social Science Journal*, 1–13. https://doi.org/10.1016/j.soscij.2019.04.008.
Lowe, J. S., & Holton, E. F., III (2005). A theory of effective computer-based instruction for adults. *Human Resource Development Review, 4*(2), 159–188.
Macià, M., & García, I. (2016). Informal online communities and networks as a source of teacher professional development: A review. *Teaching and Teacher Education, 55*, 291–307. https://doi.org/10.1016/j.tate.2016.01.021
Major, L., Warwick, P., Rasmussen, I., Ludvigsen, S., & Cook, V. (2018). Classroom dialogue and digital technologies: A scoping review. *Education and Information Technologies, 23*(5), 1995–2028. https://doi.org/10.1007/s10639-019-09902-6
* McCarthy, A., Maor, D., & McConney, A. (2019). Transforming mobile learning and digital pedagogies: An investigation of a customized professional development program for teachers in a hospital school. *Contemporary Issues in Technology and Teacher Education, 19*(3), 498–528.
* McLean, F., Verenikina, I., & Dixon, R. (2015). Bringing it to the teachers: Refining an online learning environment for teachers in isolated settings. *The International Journal of Adult, Community and Professional Learning, 22*(2), 19–32.
* Melton, J., Miller, M., & Brobst, J. (2019). Mentoring the mentors: Hybridizing professional development to support cooperating teachers' mentoring practice in science. *Contemporary Issues in Technology and Teacher Education, 19*(1), 23–44.
* Mentis, M., Holley-Boen, W., Butler, P., Kearney, A., Budd, J., Riley, T., Macarthur, J., Dharan, V., & Bevan-Brown, J. (2016). Mawhai: Webbing a professional identity through networked interprofessional communities of practice. *Teaching and Teacher Education, 60*, 66–75. https://doi.org/10.1016/j.tate.2016.08.008.
* Moen, P., & Walters, K. (2018). Written speech: A barrier to knowledge building in blended learning teacher professional development. *International Journal of Online Pedagogy and Course Design, 8*(4), 38–49. https://doi.org/10.4018/ijopcd.2018100103.
Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2010). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *International Journal of Surgey, 8*(5), 336–341. https://doi.org/10.1016/j.ijsu.2010.02.007
* Nambiar, R. M. K., & Thang, S. M. (2016). Examining Malaysian teachers' online blogs for reflective practices: Towards teacher professional development. *Language and Education, 30*(1), 43–57. https://doi.org/10.1080/09500782.2015.1071386.
Onwuegbuzie, A. J., Leech, N. L., & Collins, K. M. (2012). Qualitative analysis techniques for the review of the literature. *Qualitative Report, 17*(56), 1–28.
* Philipsen, B., Tondeur, J., McKenney, S., & Zhu, C. (2019). Supporting teacher reflection during online professional development: A logic modelling approach. *Technology, Pedagogy and Education, 28*(2), 237–253. https://doi.org/10.1080/1475939X.2019.1602077.
Postholm, M. B. (2003). *" I can't find my grandma on the internet!": A study of project work using ict as a mediating artefact.* Norwegian University of Science and Technology. Ph.D. thesis http://hdl.handle.net/11250/264951.
Postholm, M. B. (2020). The importance of the start-up phase in school-based development for learning and enduring change. *European Journal of Teacher Education*, 1–15. https://doi.org/10.1080/02619768.2020.1793944
* Prestridge, S. (2017). Conceptualising self-generating online teacher professional development. *Technology, Pedagogy and Education, 26*(1), 85–104. https://doi.org/10.1080/1475939X.2016.1167113.
* Prestridge, S., & Tondeur, J. (2015). Exploring elements that support teachers engagement in online professional development. *Education Sciences, 5*(3), 199–219. https://doi.org/10.3390/educsci5030199.
Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context.* Oxford university press.
* del Rosal, K., Ware, P., & Montgomery, N. (2016). Mentoring teachers of English learners in an online community of practice. *International Journal of Computer-Assisted Language Learning and Teaching, 6*(3), 1–17. https://doi.org/10.4018/IJCALLT.2016070101.
* Sanders-Smith, S. C., Smith-Bonahue, T. M., & Soutullo, O. R. (2016). Practicing teachers' responses to case method of instruction in an online graduate course. *Teaching and Teacher Education, 54*, 1–11. https://doi.org/10.1016/j.tate.2015.11.015.
Servage, L. (2008). Critical and transformative practices in professional learning communities. *Teacher Education Quarterly, 35*(1), 63–77. http://www.jstor.org/stable/23479031.
* Stornaiuolo, A. (2016). Teaching in global collaborations: Navigating challenging conversations through cosmopolitan activity. *Teaching and Teacher Education, 59*, 503–513. https://doi.org/10.1016/j.tate.2016.07.001.
* Trust, T., & Horrocks, B. (2017). 'I never feel alone in my classroom': Teacher professional growth within a blended community of practice. *Professional Development in Education, 43*(4), 645–665. https://doi.org/10.1080/19415257.2016.1233507.
* Trust, T., & Horrocks, B. (2019). Six key elements identified in an active and thriving blended community of practice. *TechTrends, 63*(2), 108–115. https://doi.org/10.1007/s11528-018-0265-x.
* Tsiotakis, P., & Jimoyiannis, A. (2016). Critical factors towards analysing teachers' presence in on-line learning communities. *Internet and Higher Education, 28*, 45–58. https://doi.org/10.1016/j.iheduc.2015.09.002.
* Varanasi, R. A., Kizilcec, R. F., & Dell, N. (2019). How Teachers in India reconfigure their work practices around a teacher-oriented technology intervention. *Proceedings of the ACM on Human-Computer Interaction, 3*, 1–21. https://doi.org/10.1145/3359322. CSCW.
Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.
* Wang, A., Yu, S., Wang, M., & Chen, L. (2019). Effects of a visualization-based group awareness tool on in-service teachers' interaction behaviors and performance in a lesson study. *Interactive Learning Environments, 27*(5–6), 670–684. https://doi.org/10.1080/10494820.2019.1610454.
Wittek, L. (2012). *In Læring i og mellom mennesker: En innføring i sosiokulturelle perspektiver (2* (Cappelen Damm Akademisk).
Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry, 17*(2), 89–100.
* Xie, K., Kim, M., Cheng, S.-L., & Luthy, N. (2017). Teacher professional development through digital content evaluation. *Association for Educational Communications & Technology, 65*(4), 1067–1103. https://doi.org/10.1007/s11423-017-9519-0.
* Yurkofsky, M. M., Blum-Smith, S., & Brennan, K. (2019). Expanding outcomes: Exploring varied conceptions of teacher learning in an online professional development experience. *Teaching and Teacher Education, 82*, 1–13. https://doi.org/10.1016/j.tate.2019.03.002.
* Zhang, S., Liu, Q., & Cai, Z. (2019). Exploring primary school teachers' technological pedagogical content knowledge (TPACK) in online collaborative discourse: An epistemic network analysis. *British Journal of Educational Technology, 50*(6), 3437–3455. https://doi.org/10.1111/bjet.12751.
* Zhang, S., Liu, Q., & Wang, Q. (2017). A study of peer coaching in teachers' online professional learning communities. *Universal Access in the Information Society, 16*(2), 337–347. https://doi.org/10.1007/s10209-016-0461-4.
* Zhang, N., Liu, Q., Zhu, J., Wang, Q., & Xie, K. (2019). *Analysis of temporal characteristics of collaborative knowledge construction in teacher workshops.* Technology, Knowledge and Learning. https://doi.org/10.1007/s10758-019-09422-9.

Article II

Dille, K. B. (2022). An online teacher professional development programme as a boundary artefact for new school-based mentors. *International Journal of Mentoring and Coaching in Education*, *11*(4), 381-397. https://doi.org/10.1108/IJMCE-11-2021-0105

Article III

Dille, K. B., Sandvik, L. V., Einum, E. (minor revisions). School-based teacher educators experiences of collaboration in teacher education. *Acta Didactica Norden*

This article is awaiting publication and is not included in NTNU Open

Appendices

Appendix I. NSD Approval letter

Meldeskjema / Praksislærer som lærerutdanner – identitet og læringsfellesskap / Vurdering

Vurdering

Referansenummer	Type	Dato
772070	Standard	28.05.2020

Prosjekttittel
Praksislærer som lærerutdanner – identitet og læringsfellesskap

Behandlingsansvarlig institusjon
Norges teknisk-naturvitenskapelige universitet / Fakultet for samfunns- og utdanningsvitenskap (SU) / Institutt for lærerutdanning

Prosjektansvarlig
Karen Birgitte Dille

Prosjektperiode
01.01.2019 - 30.10.2022

Kategorier personopplysninger
Alminnelige

Rettslig grunnlag
Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Behandlingen av personopplysningene kan starte så fremt den gjennomføres som oppgitt i meldeskjemaet. Det rettslige grunnlaget gjelder til 30.10.2022.

Meldeskjema

Kommentar
NSD har vurdert endringene registrert 16.04.2020, 25.05.2020, 27.05.2020 og 28.05.2020.

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 28.05.2020. Behandlingen kan fortsette.

Endringen gjelder at det er lagt til et nytt utvalg (utvalg 2) som vil delta gjennom elektronisk spørreskjema.

OPPFØLGING AV PROSJEKTET
NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Kontaktperson hos NSD: Jørgen Wincentsen

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix II. Information letter about the OTPD programme and consent form

Dette er en invitasjon til alle dere som er nye praksislærere ved grunnskolelærerutdanninga ved Institutt for lærerutdanning (ILU) skoleåret 2019/20. Denne høsten skal vi prøve ut et nytt nettkurs som vi har laget for nye praksislærere. Hensikten med kurset er todelt; vi ønsker å få innblikk i hvordan det er å bli praksislærer, og om et nettkurs kan være et godt verktøy i denne prosessen. Doktorgradsstudien *«Praksislærer som lærerutdanner – identitet i digitalt læringsfellesskap»* følger deltakerne underveis i arbeidet med nettkurset. Prosjektansvarlig er Karen Birgitte Dille, og NTNU er behandlingsansvarlig institusjon.

Underveis i nettkurset skal dere skrive refleksjonslogger og noen vil bli spurt om å delta i gruppeintervju. Full anonymitet skal sikres i alle faser av studien, og selv om refleksjonsloggene leveres med navn og mailadresse, erstatter prosjektansvarlig navn og kontaktopplysninger med en kode som lagres adskilt fra øvrige data. Det er kun prosjektansvarlig som har tilgang til dokumentene. Intervjuene tas opp på lydfil, og de vil oppbevares på et sikkert sted. Det blir ikke mulig å koble navn og lydfiler. Alle navn, kodenøkler og lydfiler slettes når studien avsluttes, senest mai 2022. Opplysninger dere gir, vil bare bli brukt i formålene som kommer fram i dette skrivet. Opplysningene behandles konfidensielt og i samsvar med personregelverket.

Ved å delta i denne studien, har dere flere rettigheter så lenge dere kan identifiseres i datamaterialet. Dere kan få innsyn i hvilke personopplysninger som er registrert om dere, få rettet og/ eller slettet personopplysningene, og få utlevert en kopi av personopplysningene. I tillegg kan dere sende klage til personvernombudet eller Datatilsynet om behandlingen av personvernopplysningene.

Det er frivillig å delta i prosjektet, og dere kan når som helst trekke dere fra studien uten å oppgi årsak. Om dere trekker dere, vil ikke dette ha noen konsekvenser for praksislærer-avtalen dere har med arbeidsgiver og NTNU. Alle innsamlede personopplysninger slettes umiddelbart etter at tilbaketrekkingen er sendt skriftlig til karen.b.dille@ntnu.no. ILU ønsker å betale dere som velger å fullføre kurset, da tilbakemeldingene også er med på å styrke kvaliteten på praksisstudiet. Estimert tid som skal brukes til kurset er 15 timer, med timesatsen på 270 kr. Kriteriet for avlønning er at dere leverer alle refleksjonslogger i løpet av skoleåret, og at dere deltar på erfaringskonferansen i april.

På oppdrag fra NTNU har Norsk senter for forskningsdata AS (NSD) vurdert at behandlingen av personopplysningene i denne studien er i samsvar med personregelverket. Dersom dere har spørsmål til studien, eller ønsker å benytte dere av rettighetene som dere har, kan dere ta kontakt med prosjektansvarlig. Ved behov kan også personvernombudet ved NTNU; thomas.helgesen@ntnu.no eller NSD; personverntjenester@nsd.no/ 55 58 21 17 kontaktes.

Med vennlig hilsen

Trondheim, 01.08.19

Mari Nygård	Karen Birgitte Dille
Instituttleder ILU	Prosjektansvarlig

Samtykkeerklæring for deltakelse i nettkurs for nye praksislærere

Jeg har mottatt og forstått informasjon om studien «praksislærer som lærerutdanner – identitet i digitalt læringsfellesskap», og fått mulighet til å stille spørsmål.

Jeg samtykker i at refleksjonsloggene jeg skriver og eventuelle intervju som blir tatt i løpet av kommende skoleår kan brukes i studien.

Jeg samtykker til at mine opplysninger behandles fram til prosjektet avsluttes, senest mai 2022.

☐ Jeg ønsker å delta
(sett kryss)

Navn: _____

_____ _____
Sted/ dato Signatur

Appendix III. Invitation to startup-seminar for new SBTE

Onsdag 28.08.19 kl. 09.00- 16.00

Sted: Scandic Nidelven

Vi ønsker våre nye praksislærere hjertelig velkommen til en dag som skal gi innsikt og forståelse for hva praksislærerjobben og praksisstudiet handler om. Dagen vil variere mellom arbeid i små grupper og korte forelesninger.

Det vil også bli oppstart av et nettkurs som vi har utviklet for våre nye praksislærere. Tilbakemeldinger fra tidligere praksislærere og ulike studier viser at praksislærere ønsker å tilhøre et læringsfellesskap, og at det ønskes mer kunnskap om praksislærerrollen. Dette er utfordrende å få plass til i et dagskurs. Ettersom flere praksisskoler ved instituttet ligger langt fra campus, og at det er hektiske hverdager i skolen, har vi valgt å lage et nettkurs. Dette skal være et lavterskeltilbud der dere i løpet av skoleåret leser noen tekster individuelt før dere møtes i grupper på nett for å diskutere sentrale tema. Dette vil være de samme gruppene som dere blir delt inn i på starkurset.

Nettkurset er en pilot, og vi har behov for å få tilbakemeldinger på hvordan denne typen kurs fungerer. Ettersom arbeidet kan gå litt ut over praksislærerressursen har vi valgt å gi dere som skriver alle refleksjonslogger og deltar på evalueringsmøtet 15 timer, der timesatsen er 270 kr.

Vi tror dette kommer til å bli en god opplevelse! Før vi møtes på Nidelven, er det viktig å registrere seg på http://digit.ntnu.no/register. (Bruk FEIDE-konto om dere har det). Når dere er pålogget, finner dere mer informasjon om nettkurset. For dere som enten har utfordringer med registrering, eller ikke har hatt tid til å gjøre dette i forkant, er vi til stede på hotellet fra kl. 08. Vi hjelper dere gjerne!

Husk å ta med PC/ nettbrett på startkurset.

Frist for påmelding: tirsdag 20.08.19.

Med vennlig hilsen – og på vegne av praksisseksjonen

Karen Birgitte Dille	Gro Hellesnes
Prosjektansvarlig	Faglig ansvarlig for praksis

Appendix IV. Information letter and consent form survey.

Kjære alle praksislærere

Du har fått dette spørreskjemaet fordi du har vært praksislærer på grunnskolelærerutdanninga (GLU) ved Institutt for Lærerutdanning ved NTNU dette skoleåret. Vi er så heldige som har praksislærere med ulike praksislærererfaringer; det er stor bredde i hvor lenge dere har vært praksislærere, og den samme bredden finner vi også i størrelse på skolen dere arbeider, og den geografiske spredningen på hvor skolen dere jobber er også stor. Dette synes vi er veldig spennende og verdifullt i jobben med å lage ei god lærerutdanning for studentene våre!

Sammen skal vi bruke erfaringene vi gjør oss til å lage ei enda bedre lærerutdanning både for studentene våre, dere som er praksislærere og for oss som jobber med praksisstudiet på campus. Den opprinnelige planen var at vi skulle møtes 23. april for å evaluere praksisåret 2019/20. På grunn av Covid 19 er dette spørreskjemaet plan B. Vi ønsker at erfaringene og stemmene til hver av dere skal bli med inn i praksisarbeidet, og har derfor valgt å lage et spørreskjema. Det tar utgangspunkt i det som skulle være innholdet på evalueringsmøtet. Hovedfokus er opplevelsen og inntrykket dere har av praksislærerrollen, organiseringen av praksis, samarbeidet innad på praksisskolen og mellom dere, praksisskolen og NTNU.

Mens noen av dere var ferdig med praksisperioden før jul, fikk andre en brå avslutning på praksisåret og måtte sende studentene hjem på grunn av stengte skoler. Dere som har hatt førsteårsstudenter fikk en alternativ avslutning på den siste praksisperioden.

Vi tror at den brede erfaringen dere sitter igjen med etter dette skoleåret vil være interessante, både som evaluering av skoleåret, men ikke minst kan vi bruke tilbakemeldingene vi får fra dere i videre planlegging. I denne evalueringen er vi ikke ute etter noe fasitsvar, men inntrykket dere sitter igjen med etter dette året. Dere leverer svarene anonymt, og dere skal være trygge på at svarene behandles på en forsvarlig måte der det ikke skal være mulig å kjenne igjen enkeltpersoner eller praksisskoler.

Karen Birgitte Dille er stipendiat ved instituttet, med en studie som handler om hvordan nye praksislærere opplever sin nye rolle. For å få et bredere fokus i avhandlingen ønsker hun også å bruke dette evalueringsskjemaet som datamateriale. Mer informasjon om studien og samtykke finner du på neste side.

Tusen takk for at du tar deg tid til å gjøre lærerutdanninga vår bedre. Estimert tid på å svare er 20 minutter.

Med vennlig hilsen

Brit D. Lesund, Leder praksisseksjonen

Karen Birgitte Dille, stipendiat

Informasjonsbrev om spørreskjema og doktorgradsstudium

Alle oppfordres til å besvare spørreundersøkelsen, da evaluering av praksisåret er en del av oppgaven med å være praksislærer. Praksisseksjonen vil bruke resultatene inn i evalueringsrapport av skoleåret. I tillegg vil også informasjonen brukes til planlegging av nytt skoleår.

Doktorgradsstudiet *«Praksislærer som lærerutdanner – identitet i digitalt læringsfellesskap»* har fulgt nye praksislæreres arbeid med ett nettkurs dette skoleåret. Prosjektansvarlig er Karen Birgitte Dille, og NTNU er behandlingsansvarlig institusjon. I tillegg til data som er gitt av de nye praksislærerne, ønsker prosjektansvarlig å få en bredere innsikt i hvilke erfaringer alle praksislærere ved GLU har gjort seg dette skoleåret.

Å la besvarelsen bli del av doktorgradsstudiet er frivillig. Her krysser du av i boksen «Jeg ønsker å delta i undersøkelsen» eller «Jeg ønsker ikke å delta i undersøkelsen». Om du samtykker i begynnelsen av undersøkelsen, og ombestemmer deg underveis, kan du skrive i et av de åpne feltene på slutten av undersøkelsen at du ønsker å trekke samtykket. Om du velger å trekke deg, vil ikke dette ha konsekvenser for praksislæreravtalen dere har med arbeidsgiver og NTNU.

Spørreskjemaet er anonymt, og det skal ikke være mulig å koble navn opp mot besvarelser. Alle opplysninger skal behandles konfidensielt og i samsvar med personregelverket. Om du mener behandlingen av personvernopplysninger ikke er tilfredsstillende, er det mulig å sende klage til personvernombudet ved NTNU, thomas.helgesen@ntnu.no, eller NSD, personverntjenester@nsd.no/ 55 58 21 17. På oppdrag fra NTNU har Norsk senter for forskningsdata AS (NSD) vurdert at behandlingen av personopplysningene i denne studien er i samsvar med personregelverket. Dersom dere har spørsmål til studien, eller ønsker å benytte dere av rettighetene som dere har, kan dere ta kontakt med prosjektansvarlig.

Du må velge minst ett svaralternativ.

☐ Ja, jeg samtykker i at svarene mine kan brukes i studien

☐ Nei, jeg samtykker ikke i at svarene mine kan brukes i studien

Trondheim, 28.04.20

Karen Birgitte Dille
Stipendiat

Appendix V. Survey (converted from online version)

Bakgrunnsinformasjon (A)

Du må velge minst ett svaralternativ.

☐ Kvinne ☐ Mann

Antall år du har arbeidet som lærer

[▼]

Sett kryss ved den grunnutdanningen som best beskriver din utdanning

☐ Førskole-/ barnehagelærer ☐ Allmennlærer

☐ Lektor 8-13 ☐ PPU

Hvor mange års utdanning totalt sett har du fra høgskole/ universitet?

[▼]

Jeg har master eller hovedfag

☐ Ja ☐ Nei

Hvilket klassetrinn har du mest undervisning dette skoleåret?

☐ 1. og 2. trinn ☐ 3. og 4. trinn

☐ 5. - 7. trinn ☐ 8.- 10. trinn

☐ Annet

Antall år jeg har vært praksislærer

☐ Ny i år ☐ 2- 5 år ☐ 6 år eller mer

Skolen min tilhører dette partnerskapet:

☐ 11: Saksvik, Sveberg, Fagerhaug, Hommelvik, Halsen, Stokkan og Lånke

☐ 12: Kippermoen, Granmoen, Ranheim, Vikåsen, Charlottenlund, Strindheim, Jakobsli, Brundalen, Lilleby og Dagskolen

☐ 13: Klæbu, Tanem, Sørborgen, Soknedal, Støren, Rennebu, Røros, Hov og Øyer

14: Atlanten, Hårstad, Ila, Åsveien, Nyborg, Stavset, Hallset, Byåsen, Romolslia og Hoeggen

15: Rindal, Sunndal, Surnadal, Rosten, Tonstad, Sjetne, Lade og Rosenborg og Dalgård

16: Otterøy, Namsos, Høknes, Berg, Bispehaugen, Eberg, Singsaker, Åsvang og Rye

17: Sistranda, Fillan, Orkanger, Gjølme, Evjen, Grøtte, Sodin og Skaun

18: Huseby, Kattem, Åsheim, Nypvang, Bratsberg, Breidablikk, Steindal, Nardo, Nidarvoll og Utleira

19: Åsly, Mælan, Stadsbygd, Testmann Minne, Stabbursmoen, Flatåsen, Spogndal, Charlottenlund og Tomassskolen

20: Hovin, Høyeggen, Rosmælen, Brekkåsen, Eid, Flå, Gimse, Lundamo og Gåsbakken

Fra hvilke(t) studieår har du studenter dette skoleåret? (Du kan krysse av flere svaralternativ)

1 2 3 4 Annet

Mottok du førsteårsstudenter på observasjonspraksis?

Ja Nei

Hvor mange praksislærere er det på skolen din dette skoleåret?

Jeg er alene 2-5 Mer enn 6

Jeg har deltatt på nettkurset for nye praksislæree

Jeg er ikke ny praksislærer Ja Nei

Jeg har veilederutdanning (Kryss av for det du synes passer best)

Jeg har ikke studiepoeng i veiledning

7,5 studiepoeng

15 studiepoeng

30 studiepoeng

Mer enn 30 studiepoeng

Jeg ønsker å studere veiledning

Ifølge øvingslæreravtalen skal praksislærere ha godtgjørelse og i tillegg frikjøpt del av stillingen. Hvilket av utsagnene passer best for deg?

Jeg har nedsatt tid hver uke

- Jeg samler opp og får fri en periode
- Jeg får utbetalt i overtid
- Jeg får ikke noe spesielt for å være praksislærer
- Dette har jeg ikke noe kjennskap til

Første del av undersøkelsen er gjennomført. Her har du mulighet til å skrive inn noen kommentarer:

Å være praksislærer (B)

Det er ulike årsaker til at praksislærere ønsker å ha denne jobben. Vi ønsker å få høre hvorfor du ble praksislærer. Du skal vurdere påstandene på en skala der 1 viser at du er helt uenig og 5 er helt enig.

	1	2	3	4	5
Jeg valgte å bli praksislærer først og fremst fordi det har positiv betydning for mine elever					
Jeg hadde lyst til å bli praksislærer					
Jeg valgte å bli praksislærer fordi min rektor/ ledelsen ba meg om det					
Jeg har utdanning som veileder og ønsker å bruke denne kunnskapen					
Å være praksislærer er et viktig arbeid					
Å være praksislærer gir status på skolen min					
Jeg har valgt å bli praksislærer fordi jeg ønsker å bidra til gode lærere i framtiden					
Jeg har valgt å bli praksislærer fordi jeg liker å bidra til studenters forståelse av det å være lærer					

Mulighet til å kommentere med egne ord:

Undervisning på to læringsarenaer (C)

Undervisningen til lærerstudentene foregår på to læringsarenaer: campus og praksisskolene. I denne delen av undersøkelsen ønsker vi at du svarer hvordan du har opplevd sammenhengen mellom undervisningen på de to læringsarenaene dette skoleåret.

Du har mulighet til å vurdere på en skala der 1 viser at du er helt uenig og 5 er helt enig i påstanden. Det kan også hende det dukker opp påstander som du ikke har tenkt over før. Da er det vanskelig å gradere, og du kan krysse av for «Det har jeg ikke tenkt over».

	1	2	3	4	5	*
Mitt inntrykk er at det har vært god sammenheng mellom innholdet i undervisningen på campus og praksisperioden						
Mitt inntrykk er at det ble utfordrende å gjennomføre oppgavene studentene hadde med fra fagene på campus (f.eks arbeidskrav, innleveringsoppgaver)						
Mitt inntrykk er at studentene fikk bruk for det de har lært på campus i praksisperioden						
Mitt inntrykk er at studentene kunne ta med seg det de lærte i praksis inn i fagene på campus						
Mitt inntrykk er at rekkefølgen og progresjonen i undervisningen og praksisperioden var godt tilpasset hverandre						

*Det har jeg ikke tenkt over

Å være praksisskole (D)

Praksisskolene organiserer praksisstudier på ulike måter. I denne delen av undersøkelsen håper vi du kan gi et inntrykk av hvordan din skole arbeider med det å være praksisskole.

Også i denne delen av undersøkelsen skal du vurdere på en skala der 1 viser at du er helt uenig og 5 er helt enig i påstanden. Også her kan du krysse av for «Det har jeg ikke tenkt over».

Mitt inntrykk er at....

	1	2	3	4	5	*
... studentene oppleves som en ressurs på denne skolen						
...vi lærer mye av å være praksisskole						
... det å være praksisskole er et kollektivt ansvar hos oss						
... ledelsen på skolen min følger opp arbeidet mitt som praksislærer på en god måte						
... årsplanen for praksis ved min skole fungerer godt						
... arbeidsmiljøet ved praksisskolen virker motiverende for studentene						
... lærerne ved skolen min er gode rollemodeller for studentene						
... praksislærerne ved skolen min har tilstrekkelig kompetanse til å veilede lærerstudenter						
... studenten får delta i faglige samtaler med ansatte på skolen						
... studentene sitter sammen med de ansatte i matpausene						
... praksislærere og koordinator ved min skole har nyttige samarbeidsmøter						
... ansatte på skolen snakker sammen om "Hva det vil si å være en praksisskole».						

*Det har jeg ikke tenkt over

Hvor mange ganger har praksislærerne og koordinator på din skole møttes for å diskutere praksis dette skoleåret?

- ☐ Ingen
- ☐ 1-2 ganger
- ☐ 3-4 ganger
- ☐ 5 ganger eller mer

Underveis i praksisperioden (E)

Praksisstudiet skal være et trepartssamarbeid mellom studenter, praksislærere/praksisskole og campus. I denne delen av undersøkelsen ønsker vi at du svarer på utsagn som er knyttet til selve praksisperioden. Dere som har hatt flere grupper må velge en av gruppene når dere svarer på utsagnene under. Vi setter pris på om dere kan skrive litt i det åpne feltet dersom praksisperiodene/ praksisgruppene har vært svært ulike.

I denne delen av undersøkelsen skal du vurdere på en skala der 1 viser at du er helt uenig, mens 5 viser at du er helt enig i påstanden. Også her kan du krysse av for «*Det har jeg ikke tenkt over*».

	1	2	3	4	5	*
Studentene bestemte tema i veiledningssamtalene						
Vi kom fram til tema for veiledningssamtalene i fellesskap						
Studenten fikk god anledning til å reflektere over det de gjorde og opplevde i praksis						
Vi brukte praksiskontrakten aktivt						
Jeg lærte av veiledningssamtalene våre						
Studentene fikk observere meg mens jeg underviste						
I veiledningssamtalene var studentene opptatt av spørsmål om faget de underviste i						
Emneplanen for praksis var sentral i veiledningssamtalene						
Studentene var opptatt av elevers sosiale relasjoner i veiledningssamtalene						
Vi brukte ulike fagdidaktiske teorier i veiledningssamtalene						
Vi brukte ulike pedagogiske teorier i veiledningssamtalene						
Felles planlegging var sentralt i veiledningssamtalene						
Tilbakemelding på studentenes mestring av timen var sentralt i veiledningssamtalene						
Når tiden var knapp prioriterte jeg førveiledning i stedet for etterveiledning						
Det er viktig at studentene utarbeider planleggingsdokumenter før undervisningen						
Jeg gjennomførte før- og etterveiledning, med utgangspunkt i planleggingsdokumenter						
Loggen er først og fremst er et redskap for studentenes egenutvikling						
Studentenes logg var sentralt tema i veiledningssamtalene						
Jeg synes det er viktig at studentene skriver logg hver dag						
Studentene og jeg brukte mye tid på å lage gode planleggingsdokument sammen						
Studentene observerte andre lærere						

*Det har jeg ikke tenkt over

Fikk du kopi av forrige års sluttvurdering fra studentene

☐ Ingen ☐ Noen

☐ Alle ☐ Hadde 1. årsstudenter

Hadde gruppen utarbeidet en praksiskontrakt da de kom til første praksisperiode?

☐ Ja ☐ Nei

Hvem brukte TeamSite/Teams aktivt i praksisperioden? (Du kan krysse av flere svaralternativer).

☐ Oppfølgingslærer ☐ Praksislærer ☐ Studenter

☐ Praksiskoordinator ☐ Ingen

Hvordan kommuniserte du med studentene gjennom praksisperioden? (Du kan krysse av flere svaralternativer).

☐ TeamSite ☐ E-post ☐ Google Drive

☐ Tekstmeldinger på mobil ☐ Annet

Mulighet til å kommentere med egne ord:

Å vurdere studentene (F)

I praksisstudiene er det to vurderingsordninger som har ulike prosedyrer. For det første skal studentene vurderes ut fra emnebeskrivelsen om de består/ikke består praksisstudiet for gjeldende studieår. I tillegg skal de også vurderes til om de er skikket for yrket.

Noen av dere har hatt flere studentgrupper, og disse kan ha vært svært ulike på mange måter. Dere får velge en av gruppene når dere svarer på utsagnene. Vi setter pris på om dere skriver om dette i det åpne feltet under.

Her kommer noen utsagn som du skal vurdere ut fra erfaringene du har hatt dette skoleåret. 1 viser at du er helt uenig i påstanden, mens 5 viser at du er helt enig i påstanden. Også her kan du krysse av for *«Det har jeg ikke tenkt over».*

	1	2	3	4	5	*
Jeg har stått ganske alene når det gjelder vurderingen av lærerstudenter						
Det var enkelt å legge til rette for å nå målene i emnebeskrivelsen						
Studentene mestret oppgavene de skulle utføre i praksisstudiene						
Skolen min har lagt mye arbeid i hvordan studentene skal vurderes						
Oppfølgingslærer og jeg samarbeidet om vurdering av studentene						
Jeg syntes det var utfordrende å vurdere studenter til bestått – ikke bestått						
Jeg har kjennskap til forskriften om skikkethetsvurdering						
NTNU har tatt hensyn til våre bekymringsmeldinger om studenter.						
Jeg er godt kjent med emneplanen for praksis						

Jeg synes at jeg hadde de nødvendige kunnskaper og ferdigheter for å vurdere lærerstudentene							

*Det har jeg ikke tenkt over

Gjennomførte du individuelle midtveissamtaler med studentene?

☐ Alle ☐ Noen ☐ Ingen

Gjennomførte du individuelle sluttsamtaler med studentene?

☐ Alle ☐ Noen ☐ Ingen

Mulighet til å kommentere med egne ord:

Samarbeidet med NTNU (G)

Praksisstudiene skal være et «symmetrisk samarbeid» mellom NTNU og praksisskolene. Mange tiltak er gjennomført de siste årene. Fremdeles har dette samarbeidet har stort potensiale, og i denne delen av undersøkelsen er vi interesserte i å høre din erfaring fra dette skoleåret.

Noen av dere har hatt flere praksisgrupper, og forholdt dere til flere oppfølgingslærere. Dere får velge hvilken praksisperiode dere fokuserer på i denne delen av undersøkelsen. Vi setter pris på om dere kommenterer dette i det åpne feltet til slutt.

Også i denne delen av undersøkelsen skal du vurdere på en skala der 1 viser at du er helt uenig og 5 er helt enige i påstanden. Også her kan du krysse av for «*Det har jeg ikke tenkt over tidligere*».

	1	2	3	4	5	*
Lærerutdanningen samarbeider godt med praksisskolene slik at studentene får gode praksisperioder						
Koordinator har betydning for arbeidet mitt med praksisstudiet						
NTNU forbereder studentenes praksisopphold på en god måte						
Jeg har kjennskap til hva studentene lærer på campus						
Oppfølgingslærer bidrar til økt læring i praksisperiodene for studentene dette skoleåret						
Oppfølgingslærer og jeg har samarbeidet godt dette skoleåret						
Oppfølgingslærer observerte undervisningen til studentene						
Jeg har planlagt praksisperiodene sammen med ansatte i lærerutdanningen						
Jeg ønsker mer kjennskap til hva studentene lærer på campus						

*Det har jeg ikke tenkt over

Oppfølgingslærer gjennomførte eget gruppemøte med studentene under praksisoppfølgingen

☐ Ja ☐ Nei ☐ Vet ikke

Oppfølgingslærer gjennomførte møter møte med hver enkelt student under praksisoppfølgingen

☐ Ja ☑ Nei ☐ Vet ikke

Alt i alt - hvordan synes du det har gått? (H)

Vi setter stor pris på at du har tatt deg tid til å besvare spørsmålene og på denne måten gitt oss mulighet til å få et innblikk i hvordan du har opplevd dette året som praksislærer ved NTNU.

Først skal du vurdere på en skala der 1 viser at du er helt uenig og 5 er helt enig i påstanden.

	1	2	3	4	5
Jeg er trygg på at lærerstudentene har lært mye av meg					
Jeg er sikker på at jeg har de nødvendige ferdighetene for å undervise lærerstudenter					
Jeg er trygg på at min kunnskap om undervisning er tilstrekkelig til at studentene får god undervisning					
Lærerstudenter som jeg har i praksis lærte mye av å være sammen med meg og mine elever					
Praksisstudiene er en integrert og fullverdig del av lærerutdanningen					

Om du tenker det er noe annet vi bør vite, både med tanke på studentenes læring, men også for at praksislærere skal være fornøyd med rollen som lærerutdanner, ønsker vi å stille noen spørsmål som gir mulighet til å skrive litt mer utfyllende.

Hvordan har du egentlig hatt det som praksislærer dette året

Hvordan har du opplevd samarbeidet/ kommunikasjonen med NTNU? Er det noe du har opplevd som positivt? Har du noen forslag til utvikling?

Åpent felt til å skrive ned ulike tiltak som kan være relevant i arbeidet med å bedre praksisstudiet i grunnskolelærerutdanninga ved NTNU: (kom gjerne med forslag på tema til praksismøter etc)

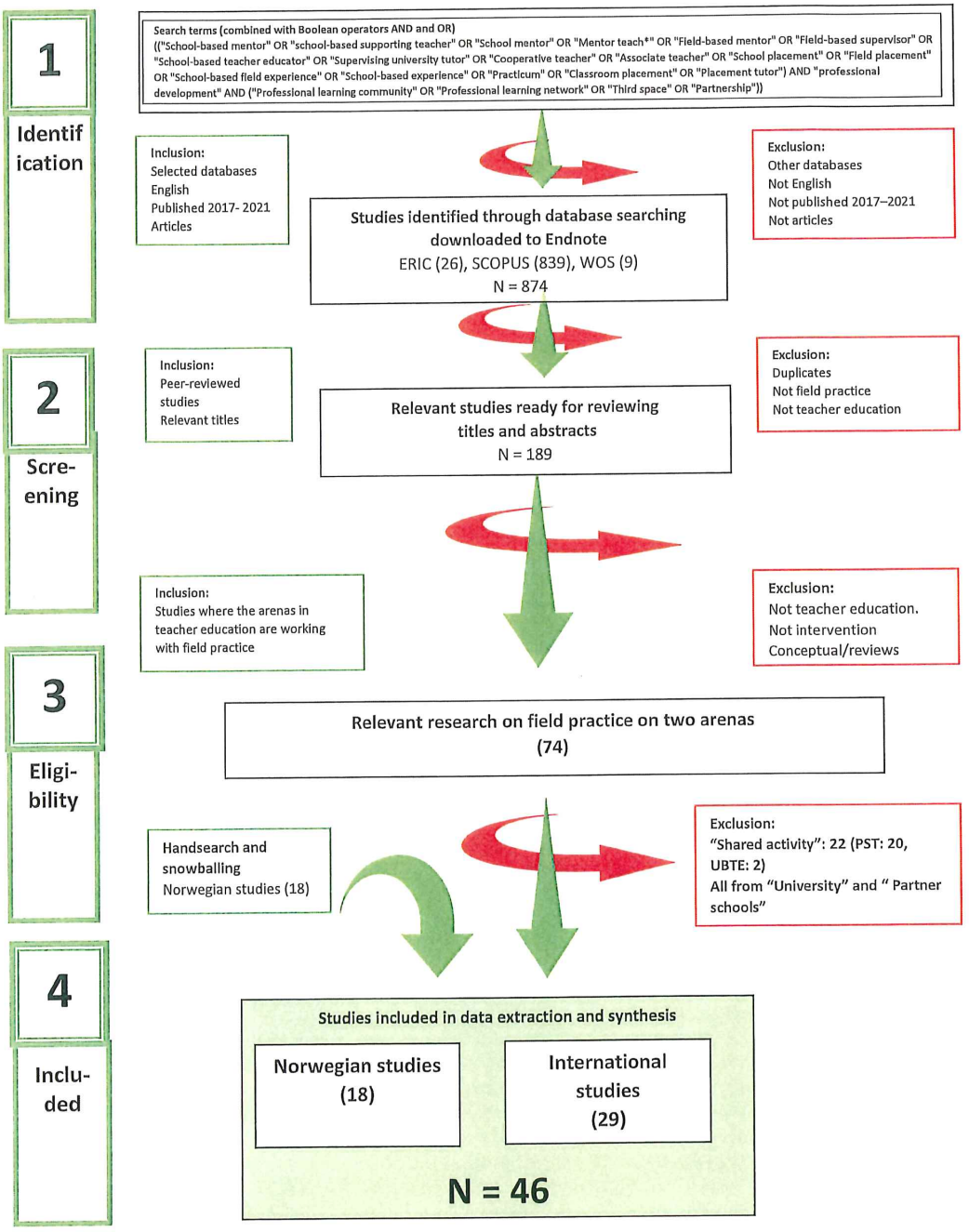
Takk for hjelpen! Om du har noen flere kommentarer eller ønsker svar på spørsmål, kan du skrive en mail til praksis@ilu.ntnu.no. En annen mulighet er å kontakte faglig leder for partnerskapet du tilhører.

Appendix VI. Reflective diaries in the OTPD programme

Reflection logs	Questions
After the face-to-face seminar	Hensikten med denne første loggen er for at vi som arbeider med praksis ved NTNU ønsker innblikk i våre nye praksislæreres tanker og mål i oppstarten av studieåret. På denne måten kan vi få muligheter til å gjøre dette startkurset enda bedre for framtidige praksislærere. Loggene vil også bli brukt i en studie om praksislæreres opplevelser av det å være praksislærer og læring i digitalt fellesskap. At dere er ærlige og skriver litt utfyllende vil styrke kvaliteten, både på hvordan vi organiserer praksisstudiet, nettkurset og studien. I den første loggen vil det være naturlig at du skriver om målene du har satt deg for praksislærerjobben. Hva gleder du deg mest til? Hva tror du blir mest utfordrende? Kom gjerne med eksempler. Selv om loggen leveres med navn og mailadresse, skal dere være trygge på at det som skrives blir anonymisert og ikke kan knyttes til enkeltpersoner. Ansvarlig for PhD-studien har gitt hver deltaker egne koder, og tekstene som leveres lagres i et annet dokument uten navn, og kan ikke spores tilbake til enkeltpersoner.
Module 1	Hvordan synes du at du har kommet i gang med praksislærerjobben? Nå er det tid for refleksjonslogg igjen. Med fare for at vi gjentar oss selv, så er hensikten med denne loggen for det første at du selv gjennom skrivinga skal få reflektere over hvilke opplevelser du har hatt så langt i året som praksislærer. Kanskje har du allerede hatt studenter, eller kommer studentene først om noen måneder? Vi ønsker fortsatt at du er ærlige og skriver utfyllende, da dette vil hjelpe oss i prosessen vår for å styrke praksisstudiet. I denne loggen er det naturlig å fokusere på hvor du er i praksislærerprosessen. Hvilke tanker har du om jobben som du så vidt er i gang med? Hva tenker du vil være naturlig å jobbe med framover? Føler du at du er i en prosess? På hvilken måte kan du beskrive denne prosessen? Husk å levere loggen med navn og mailadresse! Dette er for at ansvarlig for phd-studien skal kunne se hvem som leverer. Dere skal være trygge på at det som skrives blir anonymisert og ikke kan knyttes til enkeltpersoner. Ansvarlig for phd-studien har gitt hver deltaker egne koder, og tekstene som leveres lagres i et annet dokument uten navn, og kan ikke spores tilbake til enkeltpersoner.
Module 2	Da er to moduler unnagjort, og vi er sånn omtrent halvveis i praksisåret. Denne modulen skal ha gitt deg muligheter for å få god kunnskap og kjennskap til hvorfor og hvordan ulike verktøy kan brukes i praksisstudiet. Nå er det tid for refleksjonslogg igjen. Nok en gang vil vi si at hensikten med denne loggen for det første er at du får reflektere over opplevelsene du har hatt så langt i året som praksislærer. Hvordan har møtet med studentene vært? Eventuelt: hvordan er det å gå så lenge å vente på at det kommer studenter? Er det noe du har erfart som kan beskrives som milepæler i de første månedene som praksislærer? Også i denne loggen ønsker vi at du fokuserer p hvordan du opplever å være praksislærer. Hvilke tanker har du om den nye jobben? Hva ønsker tenker du vil være naturlig å jobbe med framover? Føler du at du er i en prosess, i tilfelle hvilken? Vi ønsker fortsatt at du er ærlig og skriver utfyllende, da dette vil hjelpe oss i prosessen vår for å styrke praksisstudiet. Husk å levere loggen med navn og mailadresse! Dette er for at ansvarlig for PhD-studien skal kunne se hvem som leverer. Dere kan være trygge på at det som skrives blir anonymisert og ikke kan knyttes til enkeltpersoner. Ansvarlig for PhD-studien har gitt hver deltaker egne koder, og tekstene som leveres lagres i et annet dokument uten navn, og kan ikke spores tilbake til enkeltpersoner.
Module 3	I tredje modul har du fått bedre kjennskap til veiledning og vurdering, og det er tid for refleksjonslogg igjen. Nok en gang vil vi si at hensikten med denne loggen for det første er at du får reflektere over opplevelsene du har hatt så langt i året som praksislærer. Hvordan har arbeidet med vurdering og veiledning vært? Kanskje du står midt i en praksisperiode, og får håndtert både teori fra denne modulen samtidig som du har studenter i praksis? Eller kanskje er du ferdig med praksisperiodene, og bruker det du har lært i denne modulen til å se tilbake til hvordan praksisperiodene i høst var? Også i denne loggen ønsker vi at du fokuserer på hvordan du opplever å være praksislærer. Hvilke tanker har du om den nye jobben? Hva tenker du vil være naturlig å jobbe med framover? Føler du at du er i en prosess, i tilfelle hvilken? Vi ønsker fortsatt at du er ærlig og skriver utfyllende, da dette vil hjelpe oss i prosessen vår for å styrke praksisstudiet. Husk å levere loggen med navn og mailadresse! Dette er for at ansvarlig for PhD-studien skal kunne se hvem som leverer. Dere kan være trygge på at det som skrives blir anonymisert og ikke kan knyttes til enkeltpersoner. Ansvarlig for PhD-studien har gitt hver deltaker egne koder, og tekstene som leveres lagres i et annet dokument uten navn, og kan ikke spores tilbake til enkeltpersoner.

Module 4	Nå er siste modul gjennomført, og selv om det fortsatt er vinter, så er praksisåret snart overstått. Denne modulen skal ha gitt deg muligheter for å få bedre kunnskap og kjennskap til hvordan ulike teorier kan belyse praksisstudiet, og betydningen av at hele praksisskolen skal ta ansvar for at studentene skal få gode praksisperioder. Også i denne loggen ønsker vi at du reflekterer over hvordan du opplever praksislærerjobben. Hvilke tanker har du rundt arbeidet du har hatt dette skoleåret? Hva tenker du vil være naturlig å jobbe med framover? Føler du at du er i en prosess, i tilfelle hvilken? Vi ønsker fortsatt at du er ærlig og skriver utfyllende, da dette vil hjelpe oss i prosessen vår for å styrke praksisstudiet. Husk å levere loggen med navn og mailadresse! Dette er for at ansvarlig for PhD-studien skal kunne se hvem som leverer. Dere kan være trygge på at det som skrives blir anonymisert og ikke kan knyttes til enkeltpersoner. Ansvarlig for PhD-studien har gitt hver deltaker egne koder, og tekstene som leveres lagres i et annet dokument uten navn, og kan ikke spores tilbake til enkeltpersoner.
Evaluation of the OTPD program	Gratulerer! Ditt første år som praksislærer er gjennomført! I denne siste loggen ønsker vi at du reflekterer over året som en helhet. Hva synes du har vært bra i året som har gått, og hva skulle du ønske kunne vært annerledes? Har du opplevd noen milepæler som du ønsker å trekke fram? I denne loggen kan det også være naturlig å tenke framover. Dersom du skal være praksislærer neste år, hvilke tanker har du om det? Vi ønsker også å vite hva du synes om dette kurset. Hva har fungert bra, og hva kan gjøres bedre til neste års nye praksislærere? At du er ærlig og skriver utfyllende er spesielt viktig i denne loggen, da dette vil hjelpe oss i prosessen vår for ås tyrke praksisstudiet. Husk å levere loggen med navn og mailadresse! Dette er for at ansvarlig for PhD-studien skal kunne se hvem som leverer. Dere kan være trygge på at det som skrives blir anonymisert og ikke kan knyttes til enkeltpersoner. Ansvarlig for PhD-studien har gitt hver deltaker egne koder, og tekstene som leveres lagres i et annet dokument uten navn, og kan ikke spores tilbake til enkeltpersoner.
The extra log	**Kjære alle nettkursdeltakere!** Håper dere er godt i gang med skoleåret – og mens mange av dere har hatt studenter, venter fortsatt en del av dere på at de skal komme. Mange har levert logger etter modul 1 – supert! Med fare for å gjenta meg selv, har dette stor betydning for kvalitetsutviklinga for praksisstudiet ved ILU. I tillegg er det avgjørende for at jeg skal få nok data til å kunne gjennomføre doktorgradsavhandlingen min. I forbindelse med jobben jeg holder på med, får jeg mulighet til å delta på konferanse i Marrakech i januar. Her skal jeg presentere en poster der jeg viser data fra hvordan lærere opplever å arbeide online. Dette gleder jeg meg veldig til. Mange lærere tar etter- og videreutdanning online, men jeg finner ikke så mange studier om dette. Har bare en utfordring: jeg må ha data for å kunne lage denne posteren. Noe har jeg fått gjennom intervjuene som er gjort, og litt blir sagt i loggene som er levert. Men jeg ser at det ikke er nok til å kunne reise sørover og presentere. Har dere mulighet til å svare på disse spørsmålene: 1. Hva tenkte du i oppstarten av dette kurset? 2. Nå er to moduler åpnet for arbeid. Hvordan fungerer a. Individuell jobbing b. Samarbeid/ diskusjoner i kollokviegruppa 3. Har dere lært noe i prosessen så langt? Stort og smått. Det er viktig at dere er ærlige når dere svarer. Her finnes det ikke noe fasitsvar, det er deres opplevelse så langt jeg er ute etter. Jeg sletter mail og anonymiserer med en gang dere sender inn. Ta gjerne kontakt om dere har noen spørsmål eller utfordringer i arbeidet med nettkurset. På forhånd takk. **Frist for innsending: 8. november.** 22.10.19 Mvh Karen Birgitte

Appendix VII. The scoping process



Appendix VIII. The corpus of the 46 studies being included in the scoping review in chapter 2

International studies

Aderibigbe, S., Gray, D. S., & Colucci-Gray, L. (2018). Understanding the nature of mentoring experiences between teachers and student teachers. *International Journal of Mentoring and Coaching in Education*, *7*(1), 54-71. https://doi.org/10.1108/IJMCE-04-2017-0028

Becker, E. S., Waldis, M., & Staub, F. C. (2019). Advancing student teachers' learning in the teaching practicum through Content-Focused Coaching: A field experiment [Article]. *Teaching and Teacher Education*, *83*, 12-26. https://doi.org/10.1016/j.tate.2019.03.007

Berg, M. H., & Rickels, D. A. (2018). Mentoring for mentors: The music mentor plus program. *Journal of Music Teacher Education*, *27*(2), 39-51. https://doi.org/10.1177/1057083717720634

Betlem, E., Clary, D., & Jones, M. (2019). Mentoring the Mentor: Professional development through a school-university partnership. *Asia-Pacific Journal of Teacher Education*, *47*(4), 327-346. https://doi.org/10.1080/1359866X.2018.1504280

Campbell, T., McKenna, T. J., Fazio, X., Hetherington-Coy, A., & Pierce, P. (2019). Negotiating coherent science teacher professional learning experiences across a university and partner school settings. *Journal of Science Teacher Education*, *30*(2), 179-199. https://doi.org/10.1080/1046560x.2018.1547033

Chilton, H., & McCracken, W. (2017). New technology, changing pedagogies? Exploring the concept of remote teaching placement supervision. *Higher Education Pedagogies*, *2*(1), 116-130. https://doi.org/10.1080/23752696.2017.1366276

Denton, D. W., & Heiney-Smith, J. (2020). Characteristics of an effective development program for mentors of preservice teachers. *Educational Studies*, *46*(3), 337-351. https://doi.org/10.1080/03055698.2019.1584854

Grimmett, H., Forgasz, R., Williams, J., & White, S. (2018). Reimagining the role of mentor teachers in professional experience: Moving to I as fellow teacher educator. *Asia-Pacific Journal of Teacher Education*, *46*(4), 340-353. https://doi.org/10.1080/1359866X.2018.1437391

Gruber, H. (2019). Lesson study with music: a new way to expand the dialogic space of learning and teaching. *International Journal for Lesson and Learning Studies*, *8*(4), 272-289. https://doi.org/10.1108/IJLLS-03-2019-0019

Holland, E. (2018). Mentoring communities of practice: what's in it for the mentor? *International Journal of Mentoring and Coaching in Education*, *7*(2), 110-126. https://doi.org/10.1108/IJMCE-04-2017-0034

Jackson, A., & Burch, J. (2019). New directions for teacher education: Investigating school/university partnership in an increasingly school-based context. *Professional Development in Education*, *45*(1), 138-150. https://doi.org/10.1080/19415257.2018.1449002

Kiviniemi, U., Tynjälä, P., Heikkinen, H. L. T., & Martin, A. (2021). Running a hybrid: Mingling in-service and pre-service teachers in peer-mentoring groups. *European Journal of Teacher Education*, *44*(4), 555-571. https://doi.org/10.1080/02619768.2020.1766442

Lammert, C., DeWalt, L. M., & Wetzel, M. M. (2020). "Becoming" a mentor between reflective and evaluative discourses: A case study of identity development. *Teaching and Teacher Education*, *96*, 1-10. https://doi.org/10.1016/j.tate.2020.103179

Land, C. L. (2018). Examples of c/critical coaching: An analysis of conversation between cooperating and preservice teachers. *Journal of Teacher Education*, *69*(5), 493-507. https://doi.org/10.1177/0022487118761347

Langdon, F. J. (2017). Learning to mentor: Unravelling routine practice to develop adaptive mentoring expertise. *Teacher Development*, *21*(4), 528-546. https://doi.org/10.1080/13664530.2016.1267036

Lloyd, G. M., Rice, C. L., & McCloskey, A. V. (2020). Opportunities for professional learning about mathematics instruction: The role of joint work in student-teaching triads. *Journal of Mathematics Teacher Education*, *23*(5), 499-525. https://doi.org/10.1007/s10857-019-09439-y

Margevica-Grinberga, I., & Odiņa, I. (2021). Mentoring for school-based teacher education. *Cypriot Journal of Educational Sciences*, *16*(5), 2389-2401. https://doi.org/10.18844/cjes.v16i5.6348

Marsh, B. (2021). Developing a project within a school-university partnership: Factors that influence effective partnership working. *Research Papers in Education*, *36*(2), 233-256. https://doi.org/10.1080/02671522.2019.1646794

Molitor, S., Parker, L., & Vetter, D. (2018). Mentoring for all: Building knowledge and community. *Journal of Professional Capital and Community*, *3*(4), 242-255. https://doi.org/10.1108/JPCC-12-2017-0035

Näykki, P., Kontturi, H., Seppänen, V., Impiö, N., & Järvelä, S. (2021). Teachers as learners–a qualitative exploration of pre-service and in-service teachers' continuous learning community OpenDigi. *Journal of Education for Teaching*, *47*(4), 495-512. https://doi.org/10.1080/02607476.2021.1904777

Palazzolo, A., Shahbazi, S., & Salinitri, G. (2019). Working towards change: The impact of mentor development on associate teachers and faculty advisors. *Interchange*, *50*(3), 321-337. https://doi.org/10.1007/s10780-019-09365-1

Parker, A. K., Zenkov, K., & Glaser, H. (2021). Preparing school-based teacher educators: Mentor teachers' perceptions of mentoring and mentor training. *Peabody Journal of Education*, *96*(1), 65-75. https://doi.org/10.1080/0161956X.2021.1877027

Richmond, G., Dershimer, R. C., Ferreira, M., Maylone, N., Kubitskey, B., & Meriweather, A. (2017). Developing and sustaining an educative mentoring model of STEM teacher professional development through collaborative partnership. *Mentoring and Tutoring: Partnership in Learning*, *25*(1), 5-26. https://doi.org/10.1080/13611267.2017.1308097

Sewell, A., Cody, T.-L., Weir, K., & Hansen, S. (2018). Innovations at the boundary: An exploratory case study of a New Zealand school-university partnership in initial teacher education. *Asia-Pacific Journal of Teacher Education*, *46*(4), 321-339. https://doi.org/10.1080/1359866X.2017.1402294

Sewell, A., Hansen, S., & Weir, K. (2017). Enhancing the capabilities of associate teachers in the practicum: A New Zealand case study. *New Zealand Journal of Educational Studies*, *52*(1), 21-39. https://doi.org/10.1007/s40841-017-0078-z

Trevethan, H., & Sandretto, S. (2017). Repositioning mentoring as educative: Examining missed opportunities for professional learning. *Teaching and Teacher Education*, *68*, 127-133. https://doi.org/10.1016/j.tate.2017.08.012

Waters, S., Pellegrino, A., Hensley, M., & Kenna, J. (2021). Forming school and university partnerships to learn and teach with primary sources. *Journal of Social Studies Education Research*, *12*(3), 47-78. https://www.learntechlib.org/p/219965/.

Wetzel, M. M., Svrcek, N. S., LeeKeenan, K., & Daly-Lesch, A. (2019). Coaching through the hard parts: Addressing tensions in teaching with one preservice teacher learning to teach literacy in a fifth-grade classroom. *Teaching and Teacher Education*, *82*, 43-54. https://doi.org/10.1016/j.tate.2019.02.006

White, S. (2019). Once were teachers? Australian teacher education policy and shifting boundaries for teacher educators [Article]. *European Journal of Teacher Education*, *42*(4), 447-458. https://doi.org/10.1080/02619768.2019.1628214

Norwegian studies

Amdal, I. I., & Mastad, L. B. T. (2022). Forståelsen av lærerutdannerrollen blant skolebaserte lærerutdannere i Norge. *Acta Didactica Norden*, *16*(1), 1-23. https://doi.org/10.5617/adno.9154

Fauskanger, J., Hanssen, B., & Helgevold, N. (2019). Fra ensomme svaler til fugler i flokk– skolebaserte praksisplaner som redskap i utvikling av felles forståelse i praksisskolen. *Nordisk tidsskrift for utdanning og praksis*, *13*(1), 133-146. https://doi.org/10.23865/up.v13.1940

Helgevold, N., & Munthe, E. (2016). Veiledning på elevens vilkår. In A. L. Østern & G. Engvik (Eds.), *Veiledningspraksiser i bevegelse i skole og utdanning* (pp. 81-99). Fagbokforlaget.

Hvalby, M., & Thortveit, J. (2022). Det er en fremmed tanke å skulle ha studentene for seg selv. *Nordisk tidsskrift i veiledningspedagogikk*, *7*(1), 1-14. https://doi.org/10.15845/ntvp.v7i1.3465

Høynes, S.-M., Klemp, T., & Nilssen, V. L. (2018). Mentoring prospective mathematics teachers as conductors of whole class dialogues-Using video as a tool. *Teaching and Teacher Education*. https://doi.org/10.1016/j.tate.2018.10.014

Jakhelln, R., & Postholm, M. B. (2022). University–school collaboration as an arena for community-building in teacher education. *Educational Research*, 1-16. https://doi.org/10.1080/00131881.2022.2071750

Klemp, T., & Nedberg, A. (2016). Å studere elevers læring gjennom en fokuselev. *Nordisk tidsskrift for utdanning og praksis*, *10*(2), 23-43. https://hdl.handle.net/11250/2652952.

Klemp, T., & Nilssen, V. (2016). Skriving i et digitalt triadisk refleksjonsfellesskap i lærerutdanninga. *Acta Didactica Norge*, *10*(2), 347-365. https://doi.org/10.5617/adno.2484

Klemp, T., & Nilssen, V. (2017). Positionings in an immature triad in teacher education. *European Journal of Teacher Education*, *40*(2), 257-270. https://doi.org/10.1080/02619768.2017.1282456

Lindboe, I. M., & Kaarby, K. M. E. (2019). Praksisperioder som læringsfellesskap. In K. E. Thorsen & S. Michelet (Eds.), *Teoretiske og praktiske kunnskaper i lærerkvalifisering – sammenhenger og spenninger* (pp. 197-213). Universitetsforlaget.

Mathisen, P., & Bjørndal, C. (2016). Tablets as a digital tool in supervision of student teachers' practical training. *Nordic Journal of Digital Literacy*, *11*(4), 227-247. https://doi.org/10.18261/issn.1891-943x-2016-04-02

Morud, E. B., & Engvik, G. (2019). Skolebasert videreutdanning for praksislærere. Utvikling i praksisveiledningen og i skolehverdagen gjennom bruk av «Lesson Study»? En case fra praksislærerutdanningen ved én av NTNUs universitetsskoler. *Paideia*(18), 38-49. https://tidsskrift.dk/Paideia/article/view/125513

Olsen, R. (2020). Posisjonering i kunnskapsrelasjoner: En kasusstudie om FoU-veiledning i grunnskolelærerutdanningen. *Nordisk tidsskrift for utdanning og praksis*, *14*(3), 17-38. https://doi.org/10.23865/up.v14.2213

Olsen, R. (2021). Flerstemmighet i veiledningssamtaler? *Nordisk tidsskrift i veiledningspedagogikk*, *6*(1), 1-16. https://doi.org/10.15845/ntvp.v6i1.3070

Pettersen, M., & Lejonberg, E. (2022). Elevrespons i praksisveiledning. *Nordisk tidsskrift i veiledningspedagogikk*, *7*(1), 1-17. https://doi.org/10.15845/ntvp.v7i1.3336

Steele, A., & Danielsen, A. (2014). Action learning in tripartite teacher student partnership: Dialog seminar, a tool for integration of research and development in teacher education. In A. L. Østern (Ed.), *NAFOL year book 2014. Once a teacher - always a teacher?* (pp. 155-173). Fagbokforlaget.

Steele, A. R. (2017). An alternative collaborative supervision practice between university-based teachers and school-based teachers. *Issues in Educational Research*, *27*(3), 582-599. https://www.proquest.com/docview/2393116333/fulltextPDF/E8904D4D8EEA423DPQ/1?accountid=12870

Appendix IX. CASP Qualitative checklist

Section A: are the results of the study valid?

1. Was there a clear statement of the aims of the research?

Yes No Can´t tell

HINT: Consider • what was the goal of the research • why it was thought important • its relevance

2. Is a qualitative methodology appropriate?

Yes No Can´t tell

HINT: Consider • If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants • Is qualitative research the right methodology for addressing the research goal

3. Was the research design appropriate to address the aims of the research?

Yes No Can´t tell

HINT: Consider • if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)

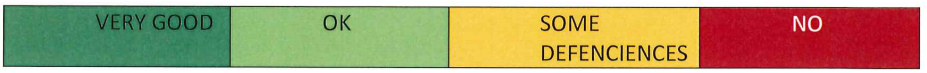
4. **Was the recruitment strategy appropriate to the aims of the research?**

Yes No Can´t tell

HINT: Consider • If the researcher has explained how the participants were selected • If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study • If there are any discussions around recruitment (e.g. why some people chose not to take part)

5. Was the data collected in a way that addressed the research issue?

Yes No Can´t tell



HINT: Consider • If the setting for the data collection was justified • If it is clear how data were collected (e.g. focus group, semi-structured interview etc.) • If the researcher has justified the methods chosen • If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews are conducted, or did they use a topic guide) • If methods were modified during the study. If so, has the researcher explained how and why • If the form of data is clear (e.g. tape recordings, video material, notes etc.) • If the researcher has discussed saturation of data

6. **Has the relationship between researcher and participants been adequately considered?**

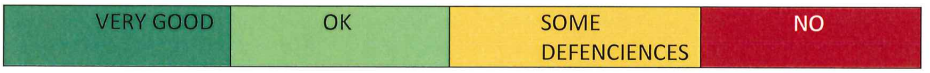
Yes No Can´t tell

HINT: Consider • If the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location • How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

Section B: what are the results?

7. **Have ethical issues been taken into consideration?**

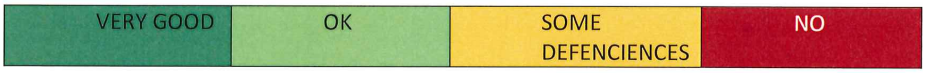
Yes No Can´t tell



HINT: Consider • If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained • If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study) • If approval has been sought from the ethics committee

8. **Was the data analysis sufficiently rigorous?**

Yes No Can´t tell

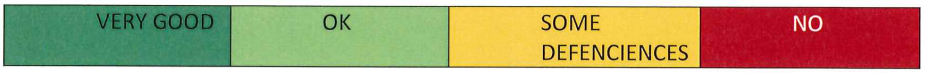


HINT: Consider • If there is an in-depth description of the analysis process • If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data • Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process • If sufficient data are presented to support the findings • To what extent contradictory data are taken into account • Whether the

researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

9. Is there a clear statement of findings?

Yes No Can´t tell

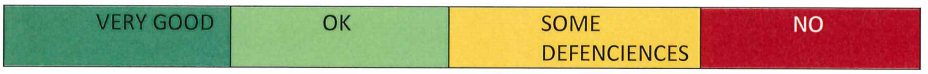


HINT: Consider whether • If the findings are explicit • If there is adequate discussion of the evidence both for and against the researcher's arguments • If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst) • If the findings are discussed in relation to the original research question

Section C: Will the results help locally?

10. How valuable is the research?

Yes No Can´t tell



HINT: Consider • If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant researchbased literature • If they identify new areas where research is necessary • If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

ISBN 978-82-326-7312-4 (printed ver.)
ISBN 978-82-326-7311-7 (electronic ver.)
ISSN 1503-8181 (printed ver.)
ISSN 2703-8084 (online ver.)

NTNU

Norwegian University of
Science and Technology