

RAILI ALLAS

Supporting Teachers' Professional  
Development through  
Guided Reflection Procedure





**RAILI ALLAS**

Supporting Teachers' Professional  
Development through  
Guided Reflection Procedure



Institute of Education, Faculty of Social Sciences, University of Tartu, Estonia

Dissertation is accepted for the commencement of the Degree of Doctor of Philosophy in Education on May 27, 2020 by the joint Doctoral Committee of the Institute of Education and Institute of Ecology and Earth Sciences for awarding doctoral degrees in education, University of Tartu.

Supervisors: Prof. Äli Leijen, PhD  
Institute of Education, University of Tartu, Estonia

Prof. Auli Toom, PhD  
Centre for University Teaching and Learning, Faculty of  
Educational Sciences, University of Helsinki, Helsinki,  
Finland

Opponent: Prof. Maria Assunção Flores Fernandes, PhD  
Institute of Education, University of Minho, Portugal

Commencement: Digital environment, on August 19, 2020, at 15.00.

This study was partially supported by the Lifelong Learning Programme of the European Union under grant number 526318-LLP-1-2012-1-EE-COMENIUS-CMP, the Estonian Science Foundation under grant number ETF9221, the University of Tartu ASTRA Project PER ASPERA (2014-2020.4.01.16-0027) financed by the European Regional Development Fund.



European Union  
European Social Fund



Investing  
in your future

ISSN 1406-1317  
ISBN 978-9949-03-414-7 (print)  
ISBN 978-9949-03-415-4 (pdf)

Copyright: Raili Allas, 2020

University of Tartu Press  
[www.tyk.ee](http://www.tyk.ee)

## TABLE OF CONTENTS

LIST OF FIGURES .....	7
LIST OF TABLES .....	7
LIST OF ABBREVIATIONS .....	7
LIST OF ORIGINAL PUBLICATIONS .....	8
1. INTRODUCTION.....	10
1.1 Research problem .....	10
1.2 Focus of the research.....	11
2 THEORETICAL BACKGROUND .....	13
2.1 Teacher professional development .....	13
2.1.1 Trajectories of teacher professional development .....	14
2.1.2 Aspects related to supporting teacher professional development .....	16
2.2 Teachers’ practical knowledge .....	19
2.3 Reflection as a way to support the construction of teacher knowledge .....	22
3 RESEARCH METHODOLOGY .....	26
3.1 Research design.....	26
3.2 Research context.....	28
3.2.1 Estonian teacher education .....	28
3.2.2 Overview of the teachers in Estonia .....	30
3.3 Participants .....	31
3.3.1 Student teachers.....	31
3.3.2 In-service teachers .....	33
3.4 Data collection.....	34
3.4.1 Guided reflection procedure .....	35
3.4.2 Semi-structured feedback interviews .....	37
3.4.3 Semi-structured group discussions.....	38
3.5 Data analysis.....	39
3.5.1 Deductive content analysis of meaningful events .....	39
3.5.2 Deductive content analysis of oral and written reflections.....	40
3.5.3 Pearson’s Chi-square Test for Independence to analyse the differences in the types of practical knowledge student teachers expressed in their reflections .....	40
3.5.4 Thematic analysis of participants’ feedback.....	41
3.6 Ethical considerations and the role of the researcher .....	41
4 FINDINGS .....	44
4.1 RQ1: How do teachers at different stages of their professional development perceive the developed guided reflection procedure as a tool for supporting their professional development?.....	44

4.1.1	What are the main advantages of implementing the guided reflection procedure perceived by teachers at different stages of their professional development (I, IV)? .....	44
4.1.2	What are the main challenges of implementing the guided reflection procedure perceived by teachers at different stages of their professional development (I, IV)? .....	46
4.2	RQ2: How do student teachers construct practical knowledge based on their teaching experiences during teaching practice using the developed guided reflection procedure? .....	48
4.2.1	What aspects of practice do student teachers choose for their reflection when implementing the guided reflection procedure (III)?.....	48
4.2.2	What types of practical knowledge do student teachers express when reflecting on the different aspects of their teaching practice (III)?.....	49
4.2.3	What types of practical knowledge do student teachers express when reflecting under different conditions (II)? .....	51
4.2.3.1	Practical knowledge constructed in oral and written reflections .....	51
4.2.3.2	Practical knowledge expressed under different oral reflection conditions .....	52
5	DISCUSSION .....	54
5.1	Methodological reflections .....	54
5.2	Theoretical reflections and the synthesis of the findings .....	56
5.3	Educational implications .....	63
5.4	Limitations and future research .....	65
	SUMMARY IN ESTONIAN .....	68
	APPENDICES .....	76
	REFERENCES .....	79
	ACKNOWLEDGEMENTS .....	87
	PUBLICATIONS .....	89
	CURRICULUM VITAE .....	177
	ELULOOKIRJELDUS.....	179

## LIST OF FIGURES

Figure 1.	Elements and relations of instructional core (cf. Herbart, 1835; Kansanen & Meri, 1999; Toom, 2006)	17
Figure 2.	Guided reflection procedure (Allas et al., 2017; adapted from Husu et al., 2008; Toom et al., 2015)	35

## LIST OF TABLES

Table 1.	Types of practical knowledge (based on Fenstermacher, 1994; Mena et al., 2015; Toom, 2012)	21
Table 2.	Overview of the research questions and the studies	27
Table 3.	Overview of the participating student teachers	32–33
Table 4.	Overview of the participating in-service teachers	34
Table 5.	Content, pedagogical and didactical relations within different meaningful events	49
Table 6.	Types of practical knowledge student teachers communicated in their reflections on meaningful events focusing on content, pedagogical, and didactical relations	50
Table 7.	Types of practical knowledge student teachers communicated in their reflections on empowering and challenging events from practice	50
Table 8.	Types of practical knowledge student teachers communicated in their oral and written reflections	51
Table 9.	Types of practical knowledge student teachers who underwent different oral reflection conditions communicated in their written reflections	53

## LIST OF ABBREVIATIONS

GRP	guided reflection procedure
ECTS	European credit points
CP	credit point
CPD	continuous professional development

## LIST OF ORIGINAL PUBLICATIONS

The dissertation is based on the following original publications, which are referenced in the text by their Roman numbers:

- I Leijen, Ä., Allas, R., Toom., A., Husu, J., Mena Marcos, J.-J., Meijer, P., Knezic, D., Pedaste, M., Krull, E. (2014). Guided reflection for supporting the development of student teachers' practical knowledge. *The European Procedia Social and Behavioral Sciences*, 314–322.
- II Allas, R., Leijen, Ä., & Toom., A. (2017). Supporting the construction of teacher's practical knowledge through different interactive formats of oral reflection and written reflection. *Scandinavian Journal of Educational Research*, 61(5), 600–615
- III Allas, R., Leijen, Ä., & Toom., A. (2020). Guided reflection procedure as a method to facilitate student teachers' perception of their teaching to support the construction of practical knowledge. *Teachers and Teaching: Theory and Practice*. Accepted for publication.
- IV Allas, R., Leijen, Ä., & Toom, A. (2020). Suunatud refleksiooni protseduuri rakendamise peamised kasutegurid ja kitsaskohad õpetajakoolituse üliõpilaste ja õpetajate hinnangul. *Eesti Haridusteaduste Ajakiri*. Accepted for publication.

### The author contributed to the publications as follows:

- For Article I:** participating in the development of methodology, formulating the research questions, conducting the study, collecting the data, analysing and reporting the data, and writing the article in cooperation with other authors.
- For Article II:** participating in the development of methodology, formulating the research questions, conducting the study, collecting the data, analysing and reporting the data, and writing the article as a main author in cooperation with other authors.
- For Article III:** participating in the development of methodology, formulating the research questions, conducting the study, collecting the data, analysing and reporting the data, and writing the article as a main author in cooperation with other authors.
- For article IV:** participating in the development of methodology, formulating the research questions, conducting the study, collecting the data, analysing and reporting the data, and writing the article as a main author in cooperation with other authors.



The studies were funded by the Lifelong Learning Programme of the European Union under grant number 526318-LLP-1-2012-1-EE-COMENIUS-CMP, by the Estonian Science Foundation under grant number ETF9221 and by the University of Tartu ASTRA Project PER ASPERA (2014-2020.4.01.16-0027), financed by the European Regional Development Fund. The original articles are reprinted with the permission of the copyright holders. The doctoral thesis, as a whole, is partly related to the ACTTEA project [grant number 526318-LLP-1-2012-1-EE-COMENIUS-CMP].

# 1. INTRODUCTION

## 1.1 Research problem

We live in a society that is rapidly changing, and this sets expectations for everyone to be able to continuously adapt one's knowledge and skills. Present-day schools and teachers need to prepare children for a future that cannot be predicted (OECD, 2018). This also changes the expectations society has for teachers to fulfil the demands that have been set upon educational systems. Consequentially more emphasis is put on teachers' learning and professional development, as teachers need to manage expanding knowledge fields, new pedagogies, and new responsibilities (OECD, 2015; Toom & Husu, 2018). Educational researchers accentuate that teachers' professional development is the basis for success in educational reforms, school-improvements, and student achievement (e.g. Darling-Hammond et al., 2009; Day, Sammons, Stobart, Kington, & QU, 2007; Opfer & Pedder, 2011). In other words, in order for schools to be able to equip children with knowledge, skills, attitudes, and values necessary to navigate through the uncertainty that the future holds (OECD, 2018), teachers' continuous professional development must be ensured with impactful learning opportunities (Feiman-Nemser, 2001; OECD, 2014).

At the same time, the shortage of teachers is a widely recognised concern across the world (European Commission, 2013; OECD, 2018). On one on hand, the population of teachers is ageing (OECD, 2018). On the other hand, current teachers experience a high workload and significant amount of stress that in turn influences the attractiveness of the teaching profession (OECD, 2019). Similarly, the content of professional development activities provided for teachers to support them in their everyday work are not always in accordance with the needs expressed by teachers, themselves (European Commission, 2015). Additionally, the shortage of teachers has prompted alternative routes to becoming teachers. Therefore, teaching staff is becoming more heterogeneous, which means that teachers who need support are very different in terms of their preparation and, hence, their needs (OECD, 2019). It is evident, that there is an urgency for research that would guide towards better understanding and improvement of supporting teachers' continuous professional development (Bakkenes, Vermunt, & Wubbels 2010; Bressman, Winter, & Efron, 2018; Stevenson, Hedberg, O'Sullivan, & Howe, 2016). Up to the present, more emphasis in educational research related to teacher professional development and teacher learning in connection to this has been placed on student teacher learning and pre-service teacher education (Oosterheert & Vermunt, 2001; Vrikki, Warwick, Vemunt, Mercer, & Van Halem, 2017). In addition, special interest has been taken in novice teachers' induction to schools (European Commission, 2018).

On the other hand, many researchers underline that regardless of all the studies, teacher education does not prepare teachers sufficiently to cope with everyday teaching practices (Grossman, Hammerness, & McDonald, 2009). The discrepancy between theoretical teacher education and teachers' actual practice

in the classrooms has left novice teachers insufficiently prepared for their future work (European Commission, 2013; Grossman et al., 2009; Meijer, 2010). As a result, a considerable number of newly qualified teachers are shown to leave the profession during their first years at work (European Commission, 2013; OECD, 2018).

Therefore, there is an inevitable need to consider how to support teachers' coherently throughout the different stages of their professional development (European Commission, 2015). One of the aspects that is commonly associated with supporting teachers' professional development is teacher's practical knowledge, which refers to the knowledge that *actually* guides teachers' everyday teaching activities (Shulman, 1986) and permits instantaneous adaptation to changing teaching situations (Fenstermacher, 1994). Furthermore, teachers' practical knowledge is acquired throughout different stages of teacher professional development. The construction of practical knowledge mediates the shift from novice teachers to experienced teachers (Berliner, 2004). It is, unambiguously, agreed that reflection is an inalienable part of teacher learning, the construction of knowledge, and continuous teacher development (e.g. Caena, 2011; Toom, 2012). Accordingly, researchers are seeking the most relevant practices to support the development of efficient professionals with well-balanced professional knowledge, reflective skills, and practical capabilities for managing the challenges of their profession (Kansanen et al., 2000; Mena, García, & Tillema, 2012).

This doctoral thesis focuses on supporting teachers at different stages of their professional development. More precisely, this thesis describes how teachers, at different stages of their professional development, perceive the advantages and challenges of a developed guided reflection procedure (Allas, Leijen, & Toom, 2017; adapted from Husu, Toom, & Patrikainen, 2008; Toom, Husu, & Patrikainen, 2015). Additionally, the thesis analyses how the developed procedure supports student teachers in constructing their practical knowledge.

## 1.2 Focus of the research

This doctoral thesis focuses on supporting teachers at different stages of their professional development. The overall aim of the current thesis is to describe how teachers at different stages of their professional development perceive the advantages and challenges of the developed guided reflection procedure. Consequentially, this thesis aims to understand how the developed guided reflection procedure supports

- teachers at different stages of their professional development in their own perception;
- student teachers in constructing teachers' practical knowledge.

Based on the aims of this thesis, the research questions of this doctoral study are the following:

RQ1: How do teachers at different stages of their professional development perceive the developed guided reflection procedure as a tool for supporting their professional development?

- 1.1. What are the main advantages and challenges of implementing the guided reflection procedure perceived by teachers at different stages of their professional development?

RQ2: How do student teachers construct practical knowledge based on their teaching experiences during teaching practice using the developed guided reflection procedure?

- 2.1. What aspects of practice do student teachers choose for their reflection when implementing the guided reflection procedure?
- 2.2. What types of practical knowledge do student teachers express when reflecting on the different aspects of their teaching practice?
- 2.3. What types of practical knowledge do student teachers express when reflecting under different conditions (oral reflection/written reflection; reflecting alone, with a peer student, with a supervisor)?

To answer these research questions, two empirical studies were conducted. The first research question is addressed in Studies I and II, which examined how the guided reflection procedure supports student teachers and teachers. The results of this study are addressed in the following original publications:

- I. Leijen, Ä., Allas, R., Toom, A., Husu, J., Mena Marcos, J.-J., Meijer, P., Knezic, D., Pedaste, M., Krull, E. (2014). Guided reflection for supporting the development of student teachers' practical knowledge. *The European Procedia Social and Behavioral Sciences*, 314–322.
- IV. Allas, R., Leijen, Ä., & Toom, A. (2020). Suunatud refleksiooni protseduuri rakendamise peamised kasutegurid ja kitsaskohad õpetajakoolituse üliõpilaste ja õpetajate hinnangul. *Eesti Haridusteaduste Ajakiri*. Accepted for publication.

The second research question is addressed in Study I, which examined how the guided reflection procedure supports student teachers' construction of practical knowledge. The results of this study are addressed in the following original publications:

- II. Allas, R., Leijen, Ä., & Toom, A. (2017). Supporting the construction of teacher's practical knowledge through different interactive formats of oral reflection and written reflection. *Scandinavian Journal of Educational Research*, 61(5), 600–615.
- III. Allas, R., Leijen, Ä., & Toom, A. (2020). Guided reflection procedure as a method to facilitate student teachers' perceptions of their teaching to support the construction of practical knowledge. *Teachers and teaching: theory and practice*. Accepted for publication.

## 2 THEORETICAL BACKGROUND

The following sections give a theoretical overview of teacher professional development and how to support teachers throughout different stages of their professional development. Additionally, teachers' practical knowledge is described in more detail as practical knowledge is seen as the basis of teacher development. Finally, reflection is considered as the dominant activity for supporting the construction of teachers' practical knowledge. Hence, the overview of reflection and aspects to promote reflection are presented in the end.

### 2.1 Teacher professional development

As social expectations on education, and thereby on teachers' professionalism, are becoming more complex, emphasis is placed on supporting teachers' development since it is seen as the basis for the success in educational reforms, school-improvements, and student achievement (e.g. Darling-Hammond et al., 2009; Day et al., 2007; Opfer & Pedder, 2011). Moreover, considering that teaching is a profession in which the knowledge, standards of work quality, and context are constantly changing (Simons & Ruijters, 2014), teachers' continuous professional development (CPD) is brought into focus. CPD is often defined through its goal of being a learning process that leads to changes in teachers' thinking about their practice, and changes in their practice (Kelchtermans, 2004). It is highlighted that teacher development promotes the actualization, development, and widening of teachers' knowledge, skills, attitudes, and abilities, and connects these to a teacher's actions in the rapidly changing classroom (OECD, 2015; Timperley, 2008). Thus, professional development supports teachers daily coping with everyday challenges, but it is not explained more precisely what and how changes during the development. Hence, the meaning of the term teacher professional development and continuous professional development are not unambiguously clear. In order to overcome this conceptual confusion, Evans (2002) has defined teacher professional development as an internally or externally driven process that can improve the status of the teaching profession and teacher's knowledge, skills, and practice. She distinguishes two fundamental components of teacher professional development, which reflect the changes during the course of development: (1) attitudinal development, as a process through which a teacher's attitude to his/her work changes; (2) functional development, as a process through which teacher's professional performance improves. According to Evans, attitudinal development involves a change in the intellect and motivation of a teacher. Functional development involves a change in the teacher's activities, and the effectiveness of those activities. Moreover, according to Evans, professional development involves (but does not merely consist of) change that can be classified as learning. Evan's definition provides a specific structure for understanding teacher professional development, but she emphasizes the need to

define universally applicable features of the teacher professional development process that would describe how teachers move from one stage to another.

Traditionally, teacher professional development begins with the novice teacher stage in teacher education institutes and evolves through deliberate practice during day-to-day work. With determination and mindfulness, CPD might lead to an expert teacher stage. Based on his empirical research, Berliner (1988) has distinguished features that describe, more precisely, the changes that take place during the process of teacher professional development. More specifically, Berliner has identified the following features: (1) classroom perception, interpretation, and prediction; (2) distinguishing significant events or situations from the whole; (3) the use of routines; (4) responsibility for one's actions, and the resulting emotional connection. These features are mainly related to the functional component of teacher professional development, as defined by Evans (2002), through which teacher's activities, and their effectiveness, improve. However, the feature of responsibility and the resulting emotional connection can be classified under the attitudinal development component, indicating a change in a teacher's role-realization. In this thesis, teacher professional development is considered as a process that results in qualitative changes both in a teacher's daily practice and in taking responsibility for his/her activities.

A similar perspective on teacher professional development has also been utilized in earlier studies on teacher professional development in Estonia. For example, Edgar Krull (see e.g. Krull, 2002) and many of his doctoral students and colleagues (see e.g. Krull, Oras, & Sisask, 2007; Okas, van der Schaaf, Krull, 2014), have built on the research tradition established by Berliner. As it has been highlighted that teacher development should be a dynamic process throughout the different stages of teacher professional development (European Commission, 2015), the following section describes the trajectories of the teacher professional development process, according to Berliner (2004). This overview will enable to better understand what changes take place in moving from one stage of professional development to another, and what support teachers need at these different stages.

### **2.1.1 Trajectories of teacher professional development**

As a part of teacher development, novice teacher must develop domain-specific contextualized knowledge and acquire a specialized set of professional skills, practices, and performance (Berliner, 2004; Simons & Ruijters, 2014). In other words, it can be said that learning to teach is primarily about learning to codify knowledge in order to use it in future events (Berliner, 2001). Student teachers, and many first-year teachers, are typically seen as novice teachers, whose main focus is to learn to identify the typical characteristics of a teaching situation – to learn and label the elements of the task to be performed and the general rules to be followed (Berliner, 2004). With external support, novice teachers gain experiences that they can later use for guiding their teaching. In this beginning stage, novice teachers need opportunities to repeatedly practice teaching, and

external support to master and routinize the skill-like parts of teaching that increase their confidence and efficiency as teachers (Berliner, 1994).

Through growing experience and meaning making of the situations encountered, novice teachers become advanced beginners, who start to build up their practical knowledge. More precisely, teachers learn to use meaningful past events to relate to present experiences. Furthermore, they learn to recognise patterns across different contexts, link these with their knowledge base, and use it to guide their behaviour (Berliner, 2004). Compared to novice teachers, beginners start to take control of their own learning environment, which among other things means giving oneself the opportunity to decide when to deviate from the general norms and rules if the situation requires it (Berliner, 1994). At the same time, the first stages of teacher professional development are devoted to becoming accustomed to the context and essence of teaching, which increases the responsibility teachers take for their actions (Berliner, 1994; 2004). In this stage, teachers need opportunities for deliberate practice to construct their practical knowledge base, which in turn gives teachers a more complex recognition of patterns, and reference point to turn to when making a decision (Berliner, 2004).

It is noted that it takes five to seven years of conscious commitment to become a competent teacher (Berliner, 2004); however, experience does not automatically denote development and competence (Berliner, 2001). Extensive deliberate practice is needed to become accomplished in teaching (Berliner, 2004). More precisely, learning from practical experiences and constructing one's practical knowledge seems to be the basis for competence, which enables to conscious decision making about one's own actions, to setting reasonable goals and choosing sensible means for reaching these as well as to deciding what is important and not (Berliner, 2001; 2004). Through this, a well-structured knowledge base is constructed from which knowledge is easily retrieved in appropriate situations and transferred to similar situations (Berliner, 1994). Additionally, competent teachers have developed automaticity and routinization of everyday repetitive actions that are needed to reach the set goals (Berliner, 2004). This reduces their cognitive load in teaching situations, and allows cognitive resources to be engaged in higher cognitive activities (Berliner, 2001). Accordingly, teachers start to take more responsibility for their actions as they are more in control of the course of their teaching (Berliner, 2004). When the earlier stages of teacher development require support in learning relatively clearly defined skills (Borko, Jacobs, & Koellner, 2010), teachers with more experience need the content of the CPD activities to be closely related to their day-to-day teaching practice (van Veen, Zwart, & Meirink, 2012), which enables them to take initiative in guiding their own professional development (Borko et al., 2010; Desimone, 2009). Moreover, situating the CPD activities in classroom practice, and centring these activities around student learning, creates opportunities to construct knowledge teachers can directly use for guiding their professional practice (Borko et al., 2010; van Veen et al., 2012).

It is estimated that a majority of teachers stay at the competent teaching stage, meaning that they manage teaching situations well, but they do not grasp the real

fluidity or flexibility of teaching. They are, rather, more rational and analytical in making conscious decisions on how to respond to the situations they encounter (Berliner, 2004). The seemingly effortless way of acting, that is guided by the so-called intuition or know-how that enables expert teachers to grasp the situations in a complex matter with the recognition of patterns, predict events more precisely, access relevant knowledge quickly, and apply it to handle the encountered situations (Berliner, 1994; 2004). At the same time, becoming and being an expert teacher is not just a result of extensive teaching experiences. It is a self-chosen characteristic that is closely related to highly motivated learning (Berliner, 2004; Simons & Ruijters, 2014). It must be kept in mind that a teacher's knowledge is, for the most part, contextually bound, which refers to the need to constantly link the new situations teachers encounter to their knowledge base so they are able to excel in those situations in the future (Berliner, 2004). Expert teachers are constantly seeking new information in order to keep their theory of practice accurate, and to be an effective professional in concrete teaching situations. This commitment, to actively shape one's own professionalism, gives expert teachers their autonomy and ensures a high level of knowledge and quality of work execution, which give expert teachers their authority (Simons & Ruijters, 2014). Therefore, learning throughout their career is an important part of being an expert teacher (Berliner, 2001).

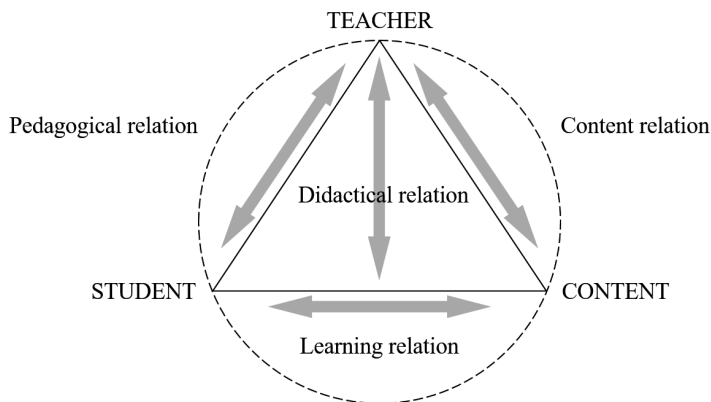
### **2.1.2 Aspects related to supporting teacher professional development**

It is acknowledged that the context in which teachers operate is an equally important factor when talking about their development (Berliner, 2001). As mentioned above, in order for novice teachers to acquire the complex skills of teaching it is important to provide them with opportunities to repeatedly practice concrete aspects of teaching and give lessons with concurrent coaching that supports teachers to learn from these experiences. Additionally, it has been found that participation in reflective discussions fosters student teachers' professional learning by enabling teachers to clarify their professional values and vision about teaching and education in general (Flores, 2020). Similarly, different forms of deliberate practice and coached performance seem to be beneficial activities in later stages of teacher development (Berliner, 2004; Eisenschmidt & Oder, 2018). More precisely, these purposeful discussions enable teachers to think together, to reason, build on ideas, and question the practices which seem to be central in triggering teachers' learning processes and the development of their professional identities (Meirink, Meijer, & Verloop 2007; Vermunt, Vrikki, Warwick, & Mercer, 2017; Vrikki et al., 2017). Similarly, several researchers have highlighted the importance of observing other teachers, and being observed, followed with discussion that enables teachers to establish connections between different teaching approaches and the desired results for students (Timperley, 2008; van Veen et al., 2012). Additionally, it is often disregarded that teacher development is not only about mastering teaching behaviours, but also regards the development



of how teachers see themselves as professionals (Vermunt et al., 2017). This has shown to be important, already, during pre-service teacher education (Poom-Valickis & L fstr m, 2014). At the same time, these methods of supporting teachers' CPD are not used extensively, as experienced teachers have few opportunities to practice and be coached (Berliner, 2001; European Commission, 2015).

During professional development, changes in a teacher's active contribution to forming his/her learning and progress can be observed when the shift from externally supported learning in the novice teacher stage changes to self-controlled learning in the advanced beginner stage, self-monitored learning in competent teacher stage, and self-reinforced learning in expert teacher stage (Berliner, 2001; Biesta, Priestly, & Robinson, 2015). Similarly, progress in a teacher's cognition occurs, representing the expansion of knowledge and beliefs that guide a teacher's professional practice (Calderhead, 1996; Hammerness, Darling-Hammond, & Bransford, 2005). Characteristically to the first stage of teacher development, the main focus is on teachers, themselves. Through deliberate practice and the conscious commitment into improving one's own teaching and the perception of themselves as teachers the attention extends to the subject matter and eventually to student learning (Beijaard, Meijer, & Verloop, 2004; Fuller, 1969). Moreover, several scholars (cf. Herbart, 1835; Kansanen & Meri, 1999; Toom, 2006) emphasize the importance of concentrating on the relationships between teacher, student, and content. The interplay between the elements and relations of teaching situations are illustrated in the instructional core framework shown in figure 1.



**Figure 1.** Elements and relations of instructional core (cf. Herbart, 1835; Kansanen & Meri, 1999; Toom, 2006)

The instructional core describes the context in which teachers operate. The content relation represents the teacher's competences and expertise in discipline-based content knowledge. This relation prevails during the earlier stages of teacher development. The pedagogical relation illustrates the interactive relationship between student and teacher, focusing on the best interest of the student; it is an essential prerequisite for the teaching–studying–learning process. This relation becomes more relevant as teachers gain a general understanding of teaching, and

they have mastered the initial skill-like parts of teaching, which enables their attention to extend from themselves to students. The didactical relation exemplifies the teacher's relationship to student learning, and how a teacher can promote student learning. More precisely, the didactical relation embodies the way a teacher influences student learning as relationship between student and the content. This relation is more characteristic to experienced teachers who have managed to reduce their cognitive load with automaticity and routinization of everyday repetitive actions, which enable them to be engaged in higher-order cognitive activities. In this doctoral thesis, the term *didactics* is based on the European tradition, encompassing the act of teaching, as well as the theory of teaching and learning (Kansanen, 2014). A more detailed discussion on the term *didactics* is presented in the *Article III*. In conclusion, this theoretical framework describes the general knowledge that teachers should hold, develop, and express in practice. Moreover, this knowledge should be constructed during teacher development and kept accurate and up-to-date throughout CPD.

Although researchers have illuminated the process of teacher development (e.g. Beijaard et al., 2004; Berliner, 2004; Fuller, 1969), and highlighted several aspects that contribute to effective professional development (e.g. Borko et al., 2010; Simons & Ruijters, 2014; van Veen et al., 2012), research on CPD has presented rather modest results, and it has not been found to be perceived by teachers as effective as potentially possible (Lieberman & Pointer Mace, 2008; Opfer & Pedder, 2011). On one hand, current CPD activities do not manage to take into account teachers' enormous workload to provide consistent professional activities (Anspal, Leijen, & Löfström, 2019; van Veen et al., 2012), which in turn hinders the attainment of sustainable changes in teachers' classroom actions, as intellectual and pedagogical changes require sufficient time (Desimone, 2009). On the other hand, current CPD activities do not focus deliberately on supporting the construction of teachers' practical knowledge, which is at the centre of teacher professional development (Berliner, 2004). Therefore, more conscious consideration should be placed on the consistent development of teachers' practical knowledge in their everyday classroom context.

In conclusion, teachers' professional development refers to a process that results in qualitative changes, both in a teacher's daily practice and in taking responsibility for his/her activities (Berliner, 2004; Evans, 2002). It begins at the novice teacher stage in teacher education institutes, when the main focus is on developing domain-specific knowledge and acquiring a set of professional skills and practices (Berliner, 2004; Simons & Ruiters, 2014). In this stage, teacher development is mainly initiated from external support, and requires opportunities to repeatedly practice teaching to master and routinize the skill-like parts of teaching (Berliner, 2001). During this stage, the teacher's main focus is on themselves (Beijaard et al., 2004; Fuller, 1969). Through deliberate practice, teachers shift to the beginning teacher stage, and start to construct their practical knowledge by extracting meaningful aspects from practical experiences, using existing knowledge to justify concrete situations and connect these to wider contexts, which leads to the formation of more complex knowledge systems (Berliner, 2004).

With this knowledge, a teacher's attention expands to subject matter and, eventually, to students. The gained knowledge can be used in the future to guide one's decisions and actions (Beijaard et al., 2004; Berliner, 2004). The need for an external trigger to support one's own professional development is slowly replaced by a conscious commitment to becoming accomplished in teaching that manifests in taking control of one's own learning environment, setting reasonable goals, and choosing sensible means for reaching these goals, as well as prioritizing activities (Berliner, 2001; 2004). Once teachers reach the experienced teacher stage, they have developed routinization and automaticity of everyday activities, which enables them to focus on supporting student learning through a complex knowledge system that allows them to deliberately guide their teaching (Beijaard et al., 2004; Berliner, 2004). The ultimate flexibility and fluidity of teaching is achieved at the expert teacher level as a result of highly motivated learning to keep a teacher's theory of practice accurate (Berliner, 2004; Simons & Ruijters, 2014). Derived from this knowledge, it is clear that the construction of teachers' practical knowledge is at the centre of teacher professional development. In the next section, an overview of teachers' practical knowledge will be presented to better understand the essence of the teacher knowledge that should be promoted to support teachers at different stages of their professional development.

## **2.2 Teachers' practical knowledge**

Teachers' practical knowledge is often referred to as knowledge that guides teachers' everyday activities (Shulman, 1986). It is constructed through integrating knowledge acquired from different sources with practical experiences in order to develop a complex knowledge system that can be quickly activated to respond to constantly changing teaching situations (Berliner, 2004; Fenstermacher, 1994; Meijer, 2010). More precisely, it is the knowledge that teachers have about their own teaching, including knowledge about pedagogy, the subject, curriculum; as well as the educational context, goals, and personal values (Grossman et al., 2009; Leinhardt, 1990; Shulman, 1986, 1987; Shulman & Shulman, 2004). A teacher's practical knowledge is used to interpret the situations teachers encounter in their day-to-day work (Leinhardt, 1990; Stader, Colyer, & Berliner, 1990). In other words, teachers compare the current situation to the experiences that they have integrated to their knowledge systems, and, based on the existing knowledge, teachers decide how to react (Stader et al., 1990). On one hand, teachers' practical knowledge is grounded in practice and, thereby, its construction requires constant analysis and deliberation of their own teaching experiences, both successes and failures (Berliner, 2004). On the other hand, it is action-oriented which forms the basis of the behaviour and values that guide teacher practice, ultimately enabling teachers to manage the complexity of their work (Clandinin & Connelly, 1996; Meijer, Verloop, & Beijaard, 1999).

As practical experiences are central in forming teachers' practical knowledge, it is greatly context bound (Berliner, 2004). Additionally, the construction of

teachers' practical knowledge depends on how the practical experiences are perceived and interpreted. Therefore, practical knowledge is person bound and incorporated into a person's life history and how they identify themselves as individuals within their professional role (Berliner, 2004; Clandinin, 2010). Derived from the previous, it is clear that teachers' practical knowledge is not a set of something that can be given to teachers (Clandinin, 2010). It is generally acquired without direct help from others through deliberate practice, and it changes as the environment shifts (Berliner, 2004; Clandinin & Connelly, 1996). Therefore, it cannot be unambiguously determined what teachers' practical knowledge should consist of. What makes it even more complicated to describe the essence of teachers' practical knowledge is the tacit nature of it. As a result, teachers themselves have difficulties in articulating their practical knowledge and sharing it with others (Berliner, 2004; Brown, Collins, & Duguid, 1989; Shulman, 1987).

Since teachers' practical knowledge is expressed in teachers' behaviour – as it guides the way they act in teaching situations (Meijer, 2010) – it can be indirectly observed in the discussions in which teachers explain and give reasons for their actions and decisions (Grimmet & MacKinnon, 1992). More precisely, the types of teachers' practical knowledge can be distinguished to characterize the potentiality to use the knowledge in different situations. Based on the literature review (Fenstermacher, 1994; Mena, García, Clarke, & Barkatsas, 2015; Toom, 2012), a theory-based framework for the types of teachers' practical knowledge has been developed (see table 1).

According to this framework, six types of teachers' practical knowledge can be identified based on the extent these can be transferred to different teaching situations and contexts: recall, appraisal, rule or practical principle, artefact, practical reasoning, and theoretical reasoning. Recall and appraisal belong to narrative knowledge, which aims to understand concrete situations. These types of teachers' practical knowledge are highly context centred. Regarding narrative knowledge, it is important to recognise that a narrative mindset, on its own, is a broad concept (Creswell, 2007) that emphasises the importance of narratives as a way of understanding the phenomena of human experience (Connelly & Clandinin, 1990). Accordingly, narrative might be both a method of the study and the phenomena of the study (Creswell, 2007). In the framework of teacher's practical knowledge, implemented in this doctoral thesis, narrative knowledge refers to the way teachers express what they know through descriptions of their concrete experiences. At the same time, it is important to highlight that not all narratives are descriptive. It is a restrictive approach applied in this framework emphasising the different ways teachers' knowledge is expressed. Rule, or practical principle and artefact, constitute inferential knowledge that focuses on guiding a teacher's activities, which facilitates changes in practice as this type of knowledge is expressed as concrete instructions that can be easily implemented. Thus, the aforementioned types of teachers' practical knowledge can be transfused to similar contexts to develop the so-called toolkit of a teaching repertoire. Practical reasoning and theoretical reasoning form the basis of the reasoned knowledge that supports teachers in constructing theories of action based on their personal

practical experiences, which guides their future decisions and actions. Accordingly, these types of teachers' practical knowledge are the most generalizable, as this knowledge presents conditions for implementing knowledge into practice. All of these six types of knowledge are important and inseparable parts of developing expertise in teaching. As a teacher's practical knowledge is personal and contextual, the narrative knowledge provides context-sensitivity that enables teachers to embed general principles into practice and avoid over-generalization by providing necessary details on how to implement the knowledge. Therefore, teachers, at all stages of their professional development, should be supported in constructing different types of practical knowledge.

**Table 1.** Types of practical knowledge (based on Fenstermacher, 1994; Mena et al., 2015; Toom, 2012)

Type of practical knowledge	Definition	Example from Study I
Recall	Direct reproduction of what has been experienced, i.e. images from the lesson as recalled from memory.	<i>"I am explaining the tasks from the worksheet and I am showing where to find the necessary information" (S16)</i>
Appraisal	Constitute evaluations or value judgments of the action being recalled.	<i>"In general, everything is running smoothly" (S10)</i>
Rule or practical principle	Methodological strategies student teachers extract from their experiences.	<i>"Children learn through play and active involvement" (S20)</i>
Artefact	Instruments and physical support teachers envisage from what they experienced.	<i>"Next time, I would use shorter sentences" (S13)</i>
Practical reasoning	Teachers' practical arguments for their claims based on their experiences.	<i>"Because I have participated in many group studies, then I know how important the instructions are for a successful group study" (S3)</i>
Theoretical reasoning	Teachers' theory-related arguments for their claims based on their experiences.	<i>"Because I ask questions on different levels, then pupils were able to be quite active while answering the questions" (S1)</i>

Note: S = Student teacher

In conclusion, teachers' practical knowledge indicates knowledge that integrates all the different types of knowledge teachers have about their teaching to their practical experience, which in turn is used to interpret and guide the situations encountered in day-to-day teaching (Fenstermacher, 1994; Meijer, 2010; Shulman, 1986). Therefore, teachers' practical knowledge is, on one hand, grounded in practice depending on the experiences teachers come across and, on the other hand, developed for practice as it constitutes the basis for guiding one's teaching behaviour (Berliner, 2004; Clandinin & Connelly, 1996; Meijer et al., 1999). Derived from the previous, it is clear that every teacher's practical knowledge is unique depending on their knowledge, experiences, and the context of these experiences, as well as their life history; therefore, the exact content of a teacher's practical knowledge cannot be determined (Clandinin, 2010). However, practical knowledge can be indirectly described by the discussions in which teachers explain their actions and decisions (Grimmet & MacKinnon, 1992). More precisely, a theory-based framework for describing types of teachers' practical knowledge has been developed to uncover the otherwise tacit nature of this knowledge (Fenstermacher, 1994; Mena et al., 2015; Toom, 2012). According to this framework, the types of teachers' practical knowledge differ in terms of the ability to transfer the knowledge to various situations including highly context centered narrative knowledge, inferential knowledge that focuses on guiding a teacher's activities in similar situations, and reasoned knowledge, which is the most generalizable in supporting teachers to construct their theories of action. Although these types of teachers' practical knowledge have different roles in supporting a teacher's professional development, all of these are inseparable parts of becoming an expert teacher. Since reflection is emphasised as the basis of teachers' professional development, the following section gives an overview of reflection, and highlights the aspects that have shown to promote reflection.

### **2.3 Reflection as a way to support the construction of teacher knowledge**

Reflection is considered as the dominant activity for supporting the construction of a teacher's practical knowledge (e.g. Berliner, 2004; Cochran-Smith, 2003; Korthagen, 2004). Reflection is defined as a cognitive process, carried out individually or in interaction with others, to construct knowledge based on practical experiences (Dewey, 1933; Korthagen, 2004; Schön, 1983). It is a deliberate and conscious process that aims to develop a deep understanding of current situations through relating teacher actions to previous experiences and existing knowledge in order to be better prepared for future experiences (Clark & Lampert, 1986; Dewey, 1933). Hence, reflection supports profound learning by integrating different types of knowledge and practical experiences and making the constructed knowledge more accessible and applicable in the future (Billing 2007; Moon 2004). Moreover, Flores (2020) emphasises the role of reflective practice as a

mediator for the construction of knowledge instead of a mere adaption or application of theoretical knowledge into practice. Additionally, reflection is essential for becoming aware of the patterns of behaviour, recognitions, judgements, and tacit norms that have been internalized and are often used spontaneously (Schön, 1983). Moreover, this conscious examination of experiences allows to discover different significant aspects of a situation and alternative options available, which in turn promotes greater consciousness in future choices as opposed to routine behaviour (Dewey, 1933; Husu et al., 2008; Rodgers, 2002). Therefore, reflection enables teachers to make the tacit knowledge that guides teaching explicit, and thereby make the knowledge available for changes in a teacher's development.

Although reflection has a great capability for supporting teacher development, teachers need support to benefit from the reflection process (Beijaard, Meijer, Morine-Dershimer, & Tillema, 2005; Kori, Pedaste, Leijen, & Mäeots, 2014; Poom-Valickis & Löfström, 2014; Sarv & Karm, 2013; Shulman & Shulman, 2004). Researchers have emphasised several factors that have proven to enhance reflection: focusing on critical incidents (Husu et al., 2008; Meijer, de Graaf, & Meirink, 2011; Tripp, 1994), the use of teaching videos (Borko, Jacobs, Eiteljorg, & Pittman, 2008; Leijen, Lam, Wildschut, & Simons, 2009; Zhang, Lundeberg, Koehler, & Eberhardt, 2011; Okas et al., 2013; Oras, Liivat, & Krull, 2013), interaction with others (Brennamar, 2004; Leijen, Valtna, Leijen, & Pedaste, 2012; Meijer, Zanting, & Verloop, 2002; Procee, 2006), guiding questions, and stimulated recall interviews (Husu et al., 2008; Korthagen & Vasalos, 2005; Meijer et al., 2002; Sööt & Leijen, 2016). In following, all of the four aforementioned aspects of supporting reflection will be discussed in more detail.

First, several scholars have indicated that the use of critical incidents promotes reflection by focusing reflection on concrete meaningful events (Husu et al., 2008; Meijer et al., 2011; Tripp, 1994). The aim of reflection is to learn from concrete practical experiences and integrate the gained insight into prior knowledge systems, thereby making it accessible in the future. However, learning from practical experience is generally rather automatic and implicit (Berliner, 2004). Therefore, supporting teachers in reflecting on concrete situations that are significant for them, personally, enables the construction of conscious interconnections between their practical knowledge and actual behaviour in pedagogical contexts (Husu et al., 2008). This in turn allows learning to become explicit, and thereby able to be applied to a teacher's actions and decisions (Simons & Ruijters, 2014), ultimately promoting teachers' professional judgement and shaping their identity as professionals (e.g. Huff Sisson, 2016; Husu et al., 2008; Tripp, 1993).

Second, research has shown that lesson videos can be used to support teachers' reflection (Borko et al., 2008). More precisely, lesson videos allow to capture the complexity of teaching and comprehend the general context, and at the same time focus on concrete situations as needed (Zhang et al., 2011). This, in turn, enables the interpretation of situations from different viewpoints, and promotes more profound knowledge construction. Similarly, studies have shown that lesson videos capture the relation between teacher actions and students' behaviour (Okas

et al., 2013). Additionally, studies have shown that experienced teachers benefit the most from reflecting on lesson videos of students who they know and have constructed complex knowledge systems about, as it enables them to read cues from students and use it for perceiving classroom events better (Berliner, 2004). Additionally, lesson videos assist teachers in selecting situations that are meaningful for their personal development (Husu et al., 2008; Toom et al., 2015). These situations might be both empowering or challenging. Furthermore, it has been found that focusing on the positive aspects of practice creates greater willingness to be engaged in reflection (Simons & Ruijters, 2014). At the same time, it is known that experienced teachers are rarely reflective when they do not encounter any difficulties (Berliner, 2004), which in turn might hinder the construction of their practical knowledge.

Third, it has been found that reflection is more beneficial when it occurs in interaction with others (Brennamar, 2004; Procee, 2006). Reflective discussions enable teachers to articulate the thought processes that guided their decisions and behaviours, and also gain another viewpoint from their partner (Meijer et al., 2002). This contributes to a more profound understanding and interpretation of a situation, and thereby a construction of more complex knowledge, which can be used to guide future reactions. During the first stages of teacher development, the supervisor or mentor is considered to be the most important source of information in the reflection process from whom to receive advice, suggestions and evaluation, learn tips and rules-of-thumb, and as a person who can make teacher's tacit practical knowledge explicit by sharing what underlies observable actions (Meijer et al., 2002; Zanting, Verloop, & Vermunt, 2001). In addition, the role of a peer in the reflection process is pointed out in the context of creating a supportive environment and critical feedback that promotes sharing of ideas, discussing different viewpoints and collaborative construction of new ideas about one's own teaching (Danielowich, 2014; Fund, 2010; Lamb & Lane, 2012; Shulman & Shulman, 2004). The role of peers in the reflection process becomes even more important during the later stages of teacher development, enabling collaboration within a professional community as an inseparable part of an expert teaching (Meirink et al., 2007; Simons & Ruijters, 2004).

Fourth, several authors have highlighted the supportive role of guiding questions and stimulated recall interviews in structuring the reflection process (Husu et al., 2008; Korthagen & Vasalos, 2005; Meijer et al., 2002). More precisely, guiding questions facilitate the construction of a teacher's practical knowledge by triggering thinking about concrete practical experiences, decomposing the experience with accompanying reasoning, and creating associations with prior knowledge that lead to developing and transferring alternative strategies to their practical knowledge (Piwovar, Thiel, & Ophardt, 2013). The use of stimulated recall interviews attaches the reflection to concrete practical situations, which is important for supporting the construction of teachers' practical knowledge (Borko et al., 2008). During the earlier stages of teacher development, the use of guiding questions and stimulated recall interviews has been shown to support novice teachers in developing a more profound and diverse understanding of their



own thoughts and actions (Husu et al., 2008; Toom et al., 2015). During the later stages of teacher professional development, the supportive structure provided by the guiding questions and stimulated recall interviews are especially crucial, bearing in mind their excessive workload that limits their resources available for CPD activities (van Veen et al., 2012). Additionally, stimulated recall interviews help to ground reflection in classroom practice, which enhances the perceived value of CPD activities (Borko et al., 2010; van Veen et al., 2012).

In conclusion, reflection is the main way to support the construction of teachers' practical knowledge as it facilitates conscious examination of one's own practical experiences and the integration of these insights and conclusions retrieved from the thinking process to existing knowledge systems (Dewey, 1933; Clark & Lampert, 1986; Korthagen, 2004). Moreover, reflection promotes mindfulness regarding subconscious patterns of behaviour, judgements, and tacit norms, in order to be more in control of one's own reactions and decisions (Schön, 1983). Although reflection is considered as the dominant activity for supporting teacher learning and development, it often needs support to reach its potential benefits (Beijaard et al., 2005; Kori et al., 2014; Shulman & Shulman, 2004). Researchers have highlighted that the use of critical incidents (Husu et al., 2008; Tripp, 1994), lesson videos (Borko et al., 2008; Leijen et al., 2009), interaction with others (Leijen et al., 2012; Meijer et al., 2002), guiding questions, and stimulated recall interviews (Husu et al., 2008; Meijer et al., 2002) promotes more profound reflection, which contributes to teachers' professional development.

## **3 RESEARCH METHODOLOGY**

This section presents an overview of the context of the two studies. More precisely, the research design of the two studies, the context of teacher education, and an overview of the teachers in Estonia are described. Furthermore, the methodological choices implemented in the two studies are explained in detail. Table 1 presents an overview of the research questions, and how these were addressed with the studies along with the samples and used methods.

### **3.1 Research design**

In this section, the rationale of the research design of the studies conducted as a part of this doctoral thesis are described to position the studies in the broader context of the research field. Additionally, the clarification of the research design helps to ground the methodological choices described in the following sections.

This doctoral thesis is influenced by pragmatism (Creswell, 2007). According to the pragmatist worldview, this doctoral thesis focuses on the outcomes of research, and is mainly interested in how to apply the findings to facilitate teachers' professional development through the guided reflection procedure (Patton, 1990). Additionally, the pragmatist approach promotes using different methods of data collection and analysis to best fulfil the aim of the research (Creswell, 2007) that is distinctive to this thesis. More precisely, as characteristic to social science research, this doctoral thesis aims to understand the complex nature of supporting teachers' professional development and the construction of teachers' practical knowledge. The best way to obtain a broad comprehension of complex human behaviour and experience is by using different research strategies that provide various perspectives (Morse, 2003). In this doctoral thesis two different perspectives are examined – teachers' perceptions and teachers' experiences. Furthermore, this doctoral thesis employs a mixed methods design, in which both qualitative and quantitative data analysis techniques are used to answer the research question, culminating in multiple inferences that complement and confirm each other (Tashakkori & Teddlie, 2003). Furthermore, in mixed methods design, a core research strategy is used that is accompanied with supplemental research strategies (Morse, 2003; Tashakkori & Teddlie, 2003). This doctoral thesis utilizes qualitative research as the core research strategy to understand how teachers perceive the implemented guided reflection procedure, and the construction of teachers' practical knowledge. Quantitative research is applied as supplementary strategy to examine the construction of different types of teachers' practical knowledge. Mixing different strategies enables to increase the scope and comprehensiveness of the doctoral thesis (Morse, 2003).

**Table 2.** Overview of the research questions and the studies

Research question	Study	Participants	Data collection instrument	Collected data	Data analysis	Articles
RQ1: How do teachers at different stages of their professional development perceive the developed guided reflection procedure as a tool for supporting their professional development?	Study I	<u>Sample I</u> 21 student teachers from three different teacher education curricula	Semi-structured feedback interviews	Audio recordings of - group interviews (n=6) - individual interviews (n=2) Written interviews (n=3)	<u>Qualitative data analysis</u> Thematic analysis following the methodology of Oliver, Serovich, & Mason (2005)	Article I Article IV
	Study II	<u>Sample II</u> 80 teachers from 52 educational institutions	Semi-structured group discussions	Posters of group discussions (n=15)	<u>Qualitative data analysis</u> Thematic analysis following the methodology of Oliver, Serovich, & Mason (2005)	Article IV
RQ2: How do student teachers construct practical knowledge based on their teaching experiences during teaching practice using the developed guided reflection procedure?	Study I	<u>Sample I</u> 21 student teachers from three different teacher education curricula	Guided reflection procedure	<u>From each participant</u>	<u>Qualitative data analysis</u>	Article II
				Video clips of selected meaningful events (n=2) Audio recording of oral reflections (n=2) Written reflections (n=2)	Deductive content analysis of - meaningful events following the framework of the instructional core (cf. Herbart, 1985; Kansanen & Meri, 1999; Toom, 2006) - oral and written reflections following the framework of the types of teachers' practical knowledge (Fenstermacher, 1994; Mena et al, 2015; Toom, 2012) <u>Quantitative analysis</u> Pearson Chi-square test for independence to analyse the differences in the types of practical knowledge student teachers expressed in their reflections	Article III

In this doctoral thesis, qualitative research design is employed as the core research strategy since it permits a more complex view of teachers' perceptions and construction of practical knowledge. Moreover, qualitative research accepts the subjectivity and multiplicity of reality as seen by the participants in the study (Creswell, 2007), which is particularly important when taking into account the subjective nature of teachers' perceptions and practical knowledge. Following qualitative research strategy, a detailed description of the research context is provided in the following sections and extensive examples of quotes from the participants are presented in the original publications of this doctoral thesis to exhibit the evidence of different perspectives. The quantitative research design is adopted to explain how different aspects of supporting reflection relate to the construction of teachers' practical knowledge. In this way, using mixed methods allows to answer both exploratory and confirmatory research questions in the same study, as indicated by Tashakkori and Teddlie (2003).

## **3.2 Research context**

This section describes the structure of Estonian teacher education, and provides an overview of Estonian teachers, to better understand the context in which Study I and II were conducted, and to enable to make valid judgements about the transferability of the studies.

### **3.2.1 Estonian teacher education**

Estonian teacher education is regulated at the national level with the *Framework requirements for teacher education* (2019), which establish uniform requirements for educating teachers for different educational institutions. The aim of the national requirements is to ensure that all teachers are qualified professionals. According to the requirements, all teachers must have higher education. Nevertheless, depending on the type of educational institution, there are different qualification conditions for becoming a teacher – teachers can be educated at the bachelor's or master's level. For kindergarten teachers and vocational school teachers, the required teacher education content is 180 European credit points (ECTS), and they are educated at the bachelor's level following a three-year curriculum. Primary school teachers and subject teachers are educated at the master's level. More precisely, subject teachers' education begins with a three-year subject area bachelor's program (180 ECTS) that is followed by a two-year teacher education master's program (120 ECTS). Primary school teachers' education is organized as a five-year bachelor's and master's integrated studies (300 ECTS). In the original articles written as a part of this doctoral thesis, the term *class teacher* is used for primary school teachers, indicating a teacher who teaches all the main subjects at basic school from grades 1 to 6. Regardless of the curriculum type, teacher education consists of general studies, the subject matter of speciality, and

studies related to teacher profession. Moreover, teacher professional studies must form at least 60 credit points (1 CP = 26 hours of work), including a minimum of 15 credit points of teaching practice (Framework requirements for teacher education, 2019). Additionally, all teacher education studies end with a final exam, or thesis, that must contain pedagogical research.

However, teacher education curricula vary in the way the different parts are divided throughout the whole studies. In subject teachers' preparation, the first three years are dedicated solely to subject studies, followed by pedagogical studies at the master's level, and teaching practice at the end of studies. Regarding the structure of the studies, subject teachers' education has historically focused more on subject and methodology studies, with less emphasis on general pedagogical studies, making their education more subject-related content oriented (Leijen & Pedaste, 2018). At the same time, kindergarten teachers', vocational school teachers', and primary school teachers' preparation follows an integrated structure in which subject area studies and professional studies take place concurrently accompanied with teaching practice. Therefore, their education is more practice oriented. Regardless of the structure of the teacher education curriculum, teaching practice is carried out at the practice schools and kindergartens of the universities. These schools and kindergartens are the university's partners in educating future teachers, and they share common values regarding supporting children's teaching and learning, and supporting student teachers' professional development. Moreover, student teachers' practice is supervised by experienced teachers who are regularly offered in-service teacher education programs at the universities.

Furthermore, Estonian teacher education is guided by professional standards for teachers that describe teacher's work, knowledge, skills, and values that are necessary for effective teaching. Pre-service teacher education curricula are designed in line with these standards to ensure that student teachers are prepared for their future work (Pedaste, Leijen, Poom-Valickis, & Eisenschmidt, 2019). In relation to adopting new professional standards in 2013, teacher education has undergone significant changes as universities became the legal bodies in awarding occupational qualifications. At the University of Tartu, which is the context of this doctoral thesis, great emphasis was placed on better connecting the theoretical studies acquired at the university to teachers' practical work in the classrooms. More precisely, teachers' core pedagogical studies were rearranged into four core courses that integrated thirteen important topics of teachers' professional standards. Furthermore, the volume of practice increased from 15 ECTS to at least 24 ECTS, which was divided across the whole studies starting from the beginning of teacher education studies in every teacher education curriculum. The aim of the changes was to better prepare student teachers for their future work as teachers by distinctly associating university courses with practical experiences. Additionally, significant attention was paid to curriculum coherence which promotes the integration of different types of knowledge and practical experiences to better prepare student teachers for their future work as teachers (Hammerness, 2006).

### 3.2.2 Overview of the teachers in Estonia

In Estonia, teachers' qualification requirements are stated by government regulations. According to these regulations, all primary and secondary education teachers must have a master's degree, or corresponding qualification, and a teacher qualification. In kindergarten, all teachers must have a bachelor's degree and pedagogical competencies. In the academic year 2018/2019 there were 25,400 teachers in Estonia, including nearly 8,000 kindergarten teachers, 2,000 vocational school teachers, and a little over 15,000 general education teachers. According to the national statistics agency ([www.haridussilm.ee](http://www.haridussilm.ee)), approximately 75% of teachers had the necessary qualifications, with the highest percentage of qualified teachers in kindergartens (85%) and lowest percentage in vocational schools (54%). To support teachers' professional development, requirements are also specified for teachers in-service training. Initially, all teachers were required to pass at least 160 hours of in-service training within every five years. Since 2016, the system has changed, and educational institutions can decide together with teachers the concrete extent of the needed in-service training, and how the training courses are divided over a period of time. The in-service trainings are usually free of charge for teachers – these are funded by schools who receive finances from the state and local government and by different foundations who receive funding from the European Social Fund.

Additionally, teachers' professional competencies are described in the teachers' professional standards that were first introduced in mid-1990s. Initially, teachers had to apply for an attestation to receive a teacher qualification. This system focused more on evaluating teachers' outcomes rather than supporting their CPD (Leijen & Pedaste, 2018). Furthermore, teachers' qualifications were mostly evaluated based on their work outside the classroom (e.g. presentations at conferences, development of teaching materials at regional levels, leading teachers' workshops, participating in organizing national educational conferences). In 2013, new professional standards for teachers were introduced. The new system is designed to support teachers' self-evaluation and CPD. Therefore, these standards describe work-related obligatory competences, including competences related to the planning of learning and teaching activities, development of the learning environment, supporting learning and development, reflection and professional self-development, counselling parents and students, and developmental, creative, and research activities (Leijen & Pedaste, 2018). However, the professional standards have not succeeded in guiding teachers' CPD at schools and kindergartens as expected, although these are perceived to define the competences of all teachers (Pedaste et al., 2019).

An average Estonian teacher is a 49-year-old woman (OECD, 2019). In the academic year 2018/2019, there were only 3,077 male teachers in Estonia, out of whom nearly three-quarters worked at general education schools. According to national statistics, nearly half of Estonian teachers are aged 50 and above, and teachers under the age of 30 form only nearly 10% of all the teachers at educational institutions. Additionally, Estonian teachers have relatively long work

experience (OECD, 2019). This, in turn, means that many of Estonian teachers were educated during a time when teacher education was more subject-oriented and their autonomy in the classroom was relatively low (Leijen & Pedaste, 2018). At the same time, Estonian teachers actively take part in in-service training (OECD, 2019). They also have more autonomy in the classroom, as present national curricula emphasises more general competencies and grants more freedom to teachers on how, and what, to teach (National curriculum for basic schools, 2018; National curriculum for preschool child care institutions, 2011; National curriculum for secondary schools, 2018). Studies show that their beliefs have changed towards student-centred views over the years (e.g. Aus, Jõgi, Poom-Valickis, Eisenschmidt, & Kikas, 2017; Lepik, Elvisto, Oder, & Talts, 2013; Poom-Valickis et al., 2014). At the same time, studies have shown that although teachers perceive that national curricula allows professional autonomy (e.g. Erss et al., 2014; Mikser, Veisson, Tuul, Õun, & Kööp, 2020), the freedom is perceived to be restricted by national tests that determine the teaching focus and instructional methods (Erss et al., 2014; Mikser, Kärner, & Krull, 2016). Meanwhile, this restriction of professional autonomy is not perceived by kindergarten teachers (Mikser et al., 2020), who perceive that the freedom given by the national curriculum also supports the integration of theoretical approaches in their everyday teaching practice (Ugaste, Tuul, Mikser, Neudorf, & Jürimäe, 2016). At the same time, although the autonomy is appreciated, it is not always taken (Tuul, Mikser, Neudorf, & Ugaste, 2015). Therefore, Estonian teachers' self-efficacy is lower than OECD average, and their actual teaching in classrooms seems to be more traditional and less focused on supporting students' learning skills; although, it is shown to be slowly changing (e.g. OECD, 2014; 2019; Uibu, Padrik, & Tenjes, 2016).

### **3.3 Participants**

This doctoral thesis consists of two studies that were carried out with student teachers (Study I) and in-service teachers (Study II). A detailed description of the participants is provided in the following sections.

#### **3.3.1 Student teachers**

Study I was carried out with student teachers from one institute at an Estonian university. The sample was selected following the criterion sampling principles of Patton (1990). Since the guided reflection procedure implemented in this study was designed for the teaching practice context, the criterion for selecting the participants was student teachers' participation in teaching practice during the time of the study. Altogether, 28 student teachers met the criterion. The participants followed three different teacher education curricula – seven student teachers followed the kindergarten teacher curriculum, eight student teachers followed the

teacher of several subjects in basic school (from here on *subject teacher*) curriculum, and six student teachers followed the primary school teacher curriculum. During the period of Study I, student teachers following the kindergarten teacher curriculum carried out their final teaching practice, and they had previous teaching practice experience. Student teachers following the subject teacher curriculum were undergoing their first teaching practice with no previous experience. Student teachers following the primary school teacher curriculum were carrying out their main teaching practice with an age group, and, similarly to the kindergarten teacher curriculum group, they had previous teaching practice experience. For the subject teacher and primary school teacher curriculum group, the guided reflection procedure was incorporated into their regular teaching practice activities as one compulsory assignment. For student teachers, following the kindergarten teacher curriculum, the guided reflection procedure was an optional practice assignment alongside with all the compulsory assignments. For all student teachers, participation in the study was voluntary, and each participant signed an informed consent form, confirming the permission to use the practice assignment materials for research purposes. To ensure participants' confidentiality, codes were given to each student teacher (S1 to S21).

In total, 21 student teachers participated in the study. Seven student teachers following the kindergarten teacher curriculum chose not to carry out the guided reflection procedure. All participants were female with an average age of 25. The demography of participants represented the student teacher population in these three teacher education curricula well. During the study, there were no male student teachers carrying out teaching practice, but the average percentage of male student teachers is 1% for the kindergarten teacher curriculum, 7% for the subject teacher curriculum, and 2% for the primary school teacher curriculum. A more detailed description of the participants is presented in table 3.

**Table 3.** Overview of the participating student teachers

Participant	Teacher education curriculum	Age (years)	Previous teaching practice (ECTS) <sup>a</sup>	Oral reflection condition <sup>b</sup>
S1	primary school teacher	25	15	with peer
S2	primary school teacher	25	15	with supervisor
S3	primary school teacher	24	15	with peer
S4	primary school teacher	23	15	alone
S5	primary school teacher	24	15	with peer
S6	primary school teacher	24	15	with peer
S7	subject teacher	22	0	alone
S8	subject teacher	23	0	alone
S9	subject teacher	24	0	with supervisor



**Table 3.** (continued)

Participant	Teacher education curriculum	Age (years)	Previous teaching practice (ECTS) <sup>a</sup>	Oral reflection condition <sup>b</sup>
S10	subject teacher	23	0	alone
S11	subject teacher	23	0	with supervisor
S12	subject teacher	23	0	with supervisor
S13	subject teacher	25	0	with supervisor
S14	subject teacher	25	0	with supervisor
S15	kindergarten teacher	49	9	alone
S16	kindergarten teacher	21	9	with peer
S17	kindergarten teacher	22	9	with peer
S18	kindergarten teacher	22	9	with supervisor
S19	kindergarten teacher	30	9	alone
S20	kindergarten teacher	24	9	alone
S21	kindergarten teacher	22	9	alone

Notes: <sup>a</sup> based on the curriculum requirements

<sup>b</sup> according to the second phase of the guided reflection procedure (for more information see 3.4.1. *Guided reflection procedure*)

### 3.3.2 In-service teachers

Study II was carried out with in-service teachers in one institute at an Estonian university. The sample was selected following Patton's (1990) criterion sampling principles. Since participation in Study II required teachers to carry out the guided reflection procedure and to give feedback on their experience, the criterion for selecting the sample was participation in an in-service teacher training course that aimed to support the professional development of teaching practice supervisors in schools and kindergartens. For teachers, the participation in this course was voluntary and free of charge.

The guided reflection procedure and the group discussion on the experience with carrying out the guided reflection procedure were compulsory parts of the in-service course. The course consisted of three training days. Teachers carried out the guided reflection procedure as an individual assignment in-between the training days. The feedback group discussions on the experience were held on the last training day. The participants were informed that their feedback would be used for research purposes in a generalised manner. None of the teachers were against participation, and all the groups submitted their discussion notes

During the data collection, five groups were undergoing the in-service teacher training course. The number of participants in different groups was more or less

similar, varying from 17 teachers to 25 teachers. Altogether, 92 teachers participated in the course, but 12 teachers did not attend the final training day. Therefore, the study was conducted among 80 Estonian teachers. The sample comprised of 78 female teachers and two male teachers. The average age of participants was 45.0 years (SD=11.3). The demography of participants is close to representing the teacher population in Estonia, as the percentage of male teachers at general education schools is 14 and nearly half of all the teachers are older than 50 years.

All in all, the participants worked in 54 educational institutions, in different levels of education: kindergartens, schools, a hobby school, and a vocational school. Nearly half of the participants were kindergarten teachers (n=38), and a little under half of them were school teachers (n=31). More precisely, 21 participants were subject teachers, seven were primary school teachers, two were vocational school teachers, and one was a hobby school teacher. Additionally, 6 members of kindergarten administration and 4 members of school administration participated in this study. More detailed description of the participants is presented in table 4.

**Table 4.** Overview of the participating in-service teachers

Level of education	Number of educational institutions	Number of participants		Age (years)	
		Female	Male	M	SD
Early childhood education	32	44	–	43.0	12.0
Lower and upper secondary education	20	32	1	47.9	10.2
Extracurricular education	1	–	1	42.0	–
Vocational education	1	2	–	41.5	0.7
Total	54	78	2	45.0	11.3

*Notes.* M – mean age  
SD – standard deviation

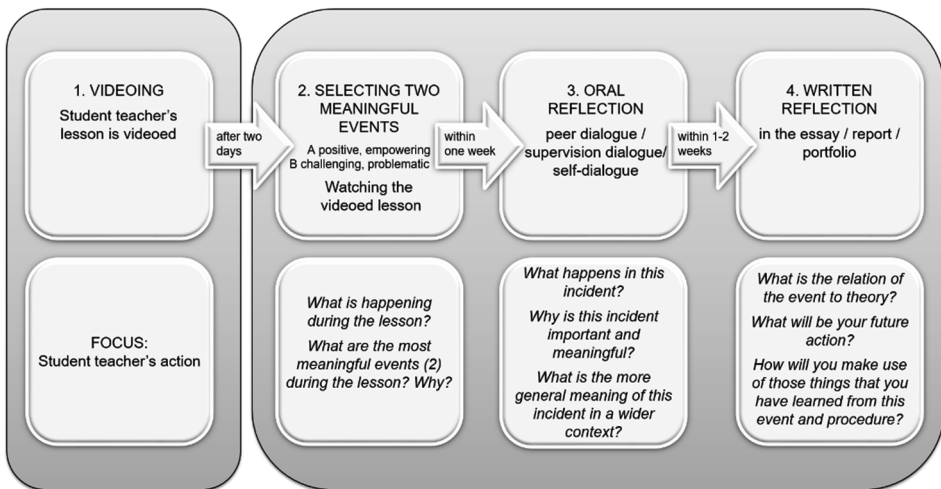
### 3.4 Data collection

This doctoral thesis is composed of two studies that were designed to complement and support each other in describing how the developed guided reflection procedure supports teachers' and their construction of knowledge at different stages in their professional development. In Study I, data from the student teachers was collected in spring, 2013. In study II, data from in-service teachers was collected in autumn, 2016. In both studies, the guided reflection procedure was used. Additionally, semi-structured interviews were carried out in Study I, and group discussions in Study II. Altogether, video recordings of meaningful events, audio recordings of oral reflections, written reflections, and feedback on the experiences

with implementing the guided reflection procedure were collected from the participants. A detailed description of the data collection methods is provided in the following sections.

### 3.4.1 Guided reflection procedure

In both studies, participants carried out the guided reflection procedure that was introduced to the participants by the researcher and provided with a detailed instruction. In Study I, student teachers carried out the guided reflection procedure by themselves. and video recordings of meaningful events, audio recordings of oral reflections, and written reflections were collected from them. In Study II, teachers had the option to carry out the guided reflection procedure by themselves or to support their student teacher, novice colleague, or experienced colleague. In this study, no data was collected from in-service teachers as a part of carrying out the guided reflection procedure. The experience of implementing the guided reflection procedure was used later to collect feedback on how the guided reflection procedure supported teachers' learning. The structure of the guided reflection procedure is presented in figure 2.



**Figure 2.** Guided reflection procedure (Allas et al., 2017; adapted from Husu et al., 2008; Toom et al., 2015)

The guided reflection procedure aims to support teachers' learning from their practical experiences, and the construction of teachers' practical knowledge. Moreover, different assistance is incorporated into this procedure to enhance teacher learning. Firstly, teachers use video recording of their real teaching situations accompanied with stimulated recall interview to guide them from describing their practice to uncovering the reasoning that underlies their actions (Meijer et al., 2002; Patrikainen & Toom, 2004). Secondly, teachers are guided to choose two meaningful events to focus their reflection on to enhance conscious learning from

concrete practical experiences (Husu et al., 2008). Unlike several other reflection models (e.g. Gibbs, 1988; Johns, 2000; Korthagen & Vasalos, 2005), this procedure promotes learning from both challenging and empowering aspects of practice. Thirdly, two sets of guiding questions were implemented to encourage deeper reflection and awareness of the overall context, and the thought process, that regulates decisions in the teaching situation. Moreover, the focus of the guiding questions moves from interpreting the concrete situation in the oral reflection phase to considering the meaning of the situation in a wider context and, finally, to analysing the possibilities for changing teacher's actions in the written reflection phase (see e.g. Husu et al., 2008). Fourthly, the reflection process is divided over a longer period of time to support the shift from action to knowledge (Husu, 2003). The integration of these four supportive measures into one reflection procedure is an exceptional contribution to the field of reflection. The detailed structure of the guided reflection procedure is described below.

The guided reflection procedure has four consecutive phases. During the first phase, each participant had one of his/her lessons filmed. The instructions of this phase emphasise that the lesson video recorded at this stage would only be used as a source for personal learning and, therefore, participants are encouraged to choose a lesson that would correspond to the aims that they, themselves, have set for their own teaching. Thus, all participants had complete independence in selecting the lesson and the time to carry out the filming. This phase had one formal requirement related to filming. Prior to filming, participants had to collect the informed consent of all the parents of children involved in the lesson chosen to be recorded.

During the second phase, each participant looked through the video recording of the lesson and chose meaningful events for further reflection. The term 'meaningful event' represents 'critical incidents,' as defined in the theoretical framework, embodying seemingly ordinary events encountered in everyday practice that are identified as significant based on personal interpretation (e.g. Husu et al., 2008; Tripp, 1993). As the relevance of selected events are particularly reliant on individual analysis, and the situations encountered might be both empowering or challenging, the term 'meaningful' is used instead of 'critical.' The instructions of this phase guided participants to choose two meaningful events: 1) one aspect from the lesson that participants were satisfied with and 2) one aspect from the lesson they would like to improve. Participants were solely responsible for selecting the meaningful events. Furthermore, they had the autonomy to determine the focus, content and significance of the chosen situations as well as the length and the participants that were involved in this event. At the end of this phase, the researcher collected the video clips of two meaningful events from the student teachers (in Study I). Altogether, 76 minutes of video material was collected from participants in Study I, with the length of meaningful events varying from 14 seconds to 15 minutes and 13 seconds.

During the third phase, participants carried out oral reflections on the chosen meaningful events. The aim of this phase is to examine the selected situations from different perspectives and to draw possible connections between the different aspects to understand the meaningful events more thoroughly. Instructions of this

phase provided participants with a set of guiding questions that directed this thinking process (see appendix 1). Additionally, participants had the possibility to ask for assistance with carrying out the oral reflection procedure. In Study I, student teachers decided whether they wanted to carry out the oral reflection alone, with a peer student, or with their teaching practice supervisor. In Study II, in-service teachers either carried out the oral reflection with their colleague, or supported their student teacher, novice colleague or experienced colleague in carrying out their oral reflection. The role of the bystander was used to set the guiding questions as a general framework for addressing the meaningful events, and to elaborate on these questions when required to establish more concrete connections with the chosen experiences. In Study I, student teachers recorded their oral reflections; the researcher collected the recordings at the end of this phase. Altogether, nearly 6 hours of oral reflection recordings were collected from the participants in Study I, varying from 4 minutes and 13 seconds to 24 minutes. On average, oral reflections on two meaningful events took 11 minutes.

During the fourth phase, participants looked back at the chosen meaningful events once again by writing a reflection. The aim of this phase was to connect concrete experiences with theoretical knowledge and to draw conclusions for the future. Similarly to the previous phase, the instructions provided participants with a set of guiding questions that mediated the process of raising their consciousness (see appendix 2). In Study I, the researcher collected the student teachers' written reflections. In Study II, the in-service teachers who carried out the guided reflection procedure in the role of a supporter had a feedback conversation with their teacher after the written reflection stage to gain more insight into the perceived usefulness of this reflection procedure. Altogether, 41 pages of written reflections were collected from the participants in Study I. On average, written reflections on the two meaningful events were two pages long (line spacing 1.5).

In Study I, the researcher assisted student teachers with the assembling of parents' informed consent and with organizing the filming, if necessary. Additionally, researchers sent email reminders to student teachers at the beginning of each phase with corresponding instructions. In Study II, participants independently carried out the guided reflection procedure without any additional assistance.

### **3.4.2 Semi-structured feedback interviews**

In Study I, semi-structured interviews were carried out to collect data about student teachers' experiences with the guided reflection procedure. The interview structure and questions are presented in appendix 3. The aim of the interview was to gain insight into how the participants perceived the advantages and challenges of carrying out the guided reflection procedure. Additionally, suggestions for improving the procedure further were collected. All the interviews took place after participants had completed the whole procedure and submitted all the data. Depending on the student teachers' ability to participate in giving feedback,

interviews were carried out in three different ways: as group interviews, individual interviews, and written interviews. Face-to-face interviews were audio recorded with the agreement of participants. As the research aimed to collect socially shared views, the group interviews were the preferred method to carry out the interviews and the other options were adopted only when the participants were unable to participate in the expected format. Altogether, 17 student teachers participated in a group interview with 2–4 student teachers, two gave their feedback in an individual interview, and three student teachers submitted their feedback in writing. Regardless, the opinions of participants were relatively similar. The only major distinction between the interviews was the length – in-person interviews were longer as the answers given in writing were shorter and more concrete. On average, the transcripts of feedback interviews in groups of four were 12 pages (line spacing 1.5) long, in groups of three eight pages, for interviews carried out with two participants the transcripts were 5 pages long, and for individual interviews the transcripts were 3.5 pages long, whereas the written interviews were on average 1.8 pages.

### **3.4.3 Semi-structured group discussions**

In Study II, semi-structured group discussions were carried out to collect data about teachers' experiences with the guided reflection procedure. The aim of the group discussions was to reveal what the perceived advantages and challenges of the guided reflection procedure were in the teachers' opinions. The data collection took place during the final day of the in-service teacher training course as a two-stage process. Firstly, small discussion groups were formed, in which personal experiences were shared. More precisely, the discussions focused on the following questions: (1) what are the advantages and challenges of the four stages of the guided reflection procedure; (2) what would you change in this guided reflection procedure; how would you develop it further? Small groups were organized according to the condition that participants carried out the guided reflection procedure: (1) by themselves, (2) by supporting a student teacher, (3) by supporting a novice colleague, or (4) by supporting an experienced colleague. In this study, the particular stage of teachers' professional development was determined by the length of their teaching experience. Student teachers were attending pre-service teacher education. Novice teachers were teachers who had had in-service teaching experience up to three years. Experienced teachers were teachers who had been teaching for more than 10 years. Although participants had complete liberty to choose how they wanted to carry out the guided reflection procedure, all the different conditions were represented. Moreover, the division between the different conditions was fairly equal – none of the small groups were notably different in size than others. Each group summed up their discussion in the form of a poster highlighting the main viewpoints. Therewith, groups presented both the experiences that were shared across the group as well as the contrasting opinions if necessary.

Secondly, small group views were summarized with a general discussion during which each group presented their poster. Concurrently with the small group presentation, researchers made additional notes to their research log to specify the groups' viewpoints and experiences that were communicated verbally, but not presented on the posters. Eventually, all the groups submitted their posters for data analysis purposes.

### **3.5 Data analysis**

In both studies, a qualitative approach was utilized along with the mixed methods approach in Study I. Qualitative analysis was applied in Study I and Study II for meaningful events, oral and written reflections, and participants' feedback. More precisely, in Study I deductive content analysis and thematic analysis was used to interpret the data collected from participants. In Study II thematic analysis was used to analyse the data. Additionally, Pearson's Chi-square Test of Independence was used in Study I to compare the types of practical knowledge student teachers expressed in their reflections. Thereby, a mixed methods research design was utilized in Study I. The mixed methods approach was used to compare the types of practical knowledge expressed in student teachers' oral and written reflections. The data analysis procedure and methods are described in detail below.

#### **3.5.1 Deductive content analysis of meaningful events**

All the meaningful events collected from the student teachers in Study I were analysed following the deductive qualitative content analysis procedure specified by Mayring (2000). Deductive analysis was selected instead of inductive analysis to be able to describe the empirical data from a theoretical viewpoint. More precisely, the elements and relations of the instructional core (cf. Herbart, 1985; Kansanen & Meri, 1999; Toom, 2006) were used to analyse the meaningful events allowing the comparison of empirical data to the natural stages of teacher development proposed by educational researchers. The initial analysis revealed that all the meaningful events chosen by student teachers focused on the relations between the elements of the instructional core. Since none of the meaningful events emphasised only the perspective of teacher, pupil, or content, all the meaningful events were analysed based on the pedagogical, didactical and content relations of the instructional core. The analysis of the events was first carried out by one researcher and then discussed with another researcher to ensure the validity of data interpretation (*investigator triangulation*) (Denzin, 1970).

### **3.5.2 Deductive content analysis of oral and written reflections**

Prior to the analysis, all the audio recordings of the oral reflections collected from student teachers in Study I were transcribed verbatim (Oliver, Serovich, & Mason, 2005). Oral and written reflections collected from student teachers in Study I were analysed following the deductive content analysis procedure (Mayring, 2000) according to the types of practical knowledge (Fenstermacher, 1994; Mena et al, 2015; Toom, 2012). In this pre-defined coding scheme, six types of practical knowledge were distinguished: recall, appraisal, rule or practical principle, artefact, practical reasoning, and theoretical reasoning.

As a first step of data analysis, written reflections were divided into units of thoughts following a consensual validity method (Eisner, 2011) by two researchers. In this analysis, a 'unit of thought' refers to the smallest piece of information which carries an independent meaning. Thereby, a 'unit of thought' can be one sentence long or include several sentences that hold the same meaningful thought (Berg, 2001). Second, each unit of thought in written reflections was discussed and analysed according to the types of practical knowledge by two researchers. Third, all the coded units were re-analysed by one researcher to ensure the consistency of analysis. If necessary the coded units were discussed again with the second researcher to reach an agreement regarding the type of practical knowledge each unit represented. Fourth, the transcripts of the oral reflections were divided into units of thoughts, and a type of practical knowledge was appointed to each unit by one researcher. Finally, all the units in oral and written reflections were re-analysed by one researcher to ensure consistency within the analysed types of practical knowledge. Altogether, 1,075 units of thought, expressing types of practical knowledge, were coded from oral and written reflections. To assess the reliability of coding, Cohen's kappa coefficient was calculated based on 107 randomly chosen units of thought (approximately 10%) from reflection data analysed by the second researcher. The agreement between the two researchers' coding decisions was 0.84, indicating high coherence (Viera & Garrett, 2005).

### **3.5.3 Pearson's Chi-square Test for Independence to analyse the differences in the types of practical knowledge student teachers expressed in their reflections**

To compare the types of practical knowledge student teachers expressed in their oral and written reflections collected in Study I, Pearson's Chi-square Test of Independence was used as the types of practical knowledge are in a nominal scale. Furthermore, the implementation of Pearson's chi-square test required that: 1) expected frequencies should be greater than 5, and 2) the standardised residual must be bigger than 1.96 or smaller than -1.96 (Howell, 2006). The data set used for this analysis consisted of 1,075 units of thought from 21 student teachers. Therefore, the number of units of thought used in the analysis enabled to carry



out the Pearson's Chi-square test, and the requirements for using Pearson's Chi-square test were met.

### **3.5.4 Thematic analysis of participants' feedback**

Inductive thematic analysis was chosen for analysing participants' feedback to allow the findings to emerge from the data without any restraints from theoretical frameworks as highlighted by Thomas (2006). Since Study I and Study II examined the implementation of the guided reflection procedure with the corresponding samples in the concrete context for the first time, the research interest was examining the participants' genuine notions without influence from other studies. This aim is well reached with the inductive approach. In order to prepare the data for data analysis, the audio recordings of the student teachers' feedback interviews collected in Study I were fully transcribed according to the methodology of Oliver and colleagues (2005). Next, the student teachers' feedback collected in Study I, and in-service teachers' feedback collected in Study II, were analysed following a thematic analysis (Ryan & Bernard, 2003) method. Thematic analysis is an inductive analysis method that begins with a careful reading of raw data and open coding of data to identify possible themes and subthemes emerging from the data. In this thesis, the themes were identified based on the repetition. Topics that reoccurred across participants in relation to the advantages and challenges of implementing the guided reflection procedure were identified as subthemes and themes. Consequentially, the identified themes and subthemes were organized under wider categories. The themes and subthemes that had similar meaning were categorized under general keywords. Finally, all data was re-analysed based on the developed wider categories. The analysis of the two data sets were performed separately following the same procedure. Additionally, in Study I, the initial data analysis was carried out by one researcher. The developed themes and categories were discussed in each stage with another researcher to ensure the validity of data interpretation (*investigator triangulation*) (Denzin, 1970). Similarly, the identification of subthemes and themes, and grouping these together under wider categories, was done by two researchers in Study II. Furthermore, during the initial analysis of feedback collected from in-service teachers, it became evident that participants who carried out the guided reflection procedure by themselves were experienced teachers; therefore, their feedback was analysed together with the data collected from the participants who carried out the guided reflection by supporting their experienced colleague.

### **3.6 Ethical considerations and the role of the researcher**

This thesis takes into account the values, principles, and good practices of research integrity as determined in the Estonian Code of Conduct for Research Integrity (2017) and in The European Code of Conduct for Research Integrity

(ALLEA, 2017), to ensure the acceptability and reliability of the study, as well as the credibility of the results. In the following section, the main procedures and actions carried out by the researcher, in light of the ethical considerations, are described in more detail.

One of the key ethical principles that guided the researcher's actions when conducting the studies was related to participants, and to the protection of their rights. The second ethical principle that was central to carrying out the studies was the transparency of data collection. In light of these ethical principles, the researcher first asked for permission to carry out Study I from the program managers of the three curricula. After obtaining their permission, student teachers were contacted personally by the researcher and given a detailed description of the aims of the research, the data collection methods, the data to be collected from them, how the data would be used, stored and their confidentiality guaranteed, as well as of their right not to participate in the study and to withdraw their consent whenever needed. Informed consent was collected from all the participants. Similarly, in Study II the researcher gave the teachers sufficient information about the aim of the study, the research method, and about their right not to participate in the study before they carried out the guided reflection procedure. Their informed consent was re-assured before the semi-structured group interviews. Additionally, informed consent was collected from all the parents of the students who were related to carrying out the guided reflection procedure in Study I and II. With these aforementioned steps, the researcher aimed to ensure that participation was informed and voluntary, the process of the study transparent, and that the participants were handled with respect and care.

In order to inconvenience the participants as little as possible, the researcher provided participants with detailed instructions on the different stages of the guided reflection procedure and informed consent forms for parents. Additionally, the contact information of the researcher was given to participants for potential support. Furthermore, the researcher offered student teachers in Study I the opportunity to ask for assistance with collecting the informed consent from the parents as well as with carrying out the filming of the selected lesson as the first stage of the guided reflection procedure. With these supportive measurements, the researcher aimed to increase the added burdens that might have occurred with agreeing to participate in the study.

The third ethical principle that was considered with utmost attention was related to the storage of the collected data and the confidentiality of the participants. All the data and research materials are electronic and stored on a separate external hard drive in order to ensure that these have not ended up in the hands of a third party. Additionally, all the information about the participants is given without compromising their confidentiality, as the codes are used to refer to concrete participants instead of their names. As a consequence, individual participants are not able to be identified when reporting the results. With the previous steps the researcher ensured the principles of privacy and data protection.

The fourth ethical principle that was carefully attended to was related to the accurate and honest interpretation of the research results, which is especially

relevant taking into account the qualitative nature of the studies. In order to become aware of the possible influences that the researcher might have had in the research process, and the minor alterations that were implemented during the data collection and analysis, the researcher kept a researcher log. Although the researcher had personal contact with every participant during the study, she had no previous information about them or contact with them before or after the study. Similarly, the researcher had no evaluative role with respect to the participants. Therefore, it was possible to minimize the researcher's bias when analysing and interpreting the data. At the same time, the personal contact that was established during the study, contributed to the interviews. More precisely, the researcher perceived that the brief acquaintanceship was sufficient for the participants to express their real thoughts and provide feedback without being concerned about pleasing the researcher. The conscious consideration of researcher's role increased the subjectivity of data interpretation.

## 4 FINDINGS

The doctoral thesis aimed to describe how the developed guided reflection procedure supports teachers at different stages of their professional development. Two empirical studies were carried out to meet the aforementioned aim. In the following sections, an overview of the main findings of the studies will be provided according to the research questions. The first research question focused on teachers' perceptions of implementing the guided reflection procedure. Therefore, the analysis of participants' feedback will be used to answer this question. The second research question focused on the practical knowledge student teachers constructed when implementing the procedure. Accordingly, the analysis of their practical knowledge, expressed in their oral and written reflections, will be used to answer the question. Additionally, Roman numbers referring to original publications that this thesis is based on are added to the research questions to indicate the articles in which the findings are presented in more detail.

### **4.1 RQ1: How do teachers at different stages of their professional development perceive the developed guided reflection procedure as a tool for supporting their professional development?**

Student teachers' feedback, collected in Study I as well as in-service teachers' feedback collected in Study II on carrying out the guided reflection, was analysed to describe how the developed guided reflection procedure supports teachers at different stages of their professional development through their own perception. The student teachers' and novice teachers' feedback collected in Study II is presented through the lens of teachers who supported their novice colleague in carrying out the guided reflection procedure. The perceived advantages and challenges of carrying out the guided reflection procedure were analysed to highlight what the principles and main elements are of a guided reflection procedure that supports teachers in reflecting on their practice to enhance their CPD. In the following section, the perceived advantages and challenges are described separately to emphasise the two angles, and to better structure the results.

#### **4.1.1 What are the main advantages of implementing the guided reflection procedure perceived by teachers at different stages of their professional development (I, IV)?**

First, the main strengths and benefits of carrying out the guided reflection procedure were explored in detail. In the following sections, the main advantages highlighted by the participants are described. The findings are structured following

the frequencies of occurrence – the advantages that were expressed by teachers more frequently are presented first.

*Bystanders' viewpoint.* Teachers at different stages of their professional development appreciated the opportunity to see oneself from stand by. All the experienced teachers' groups from Study II emphasised that the video recording of their teaching enabled them to understand themselves as a teacher, and to see their action in real teaching situations. Similarly, student teachers in Study I valued the opportunity to see oneself in the role of a teacher, which allowed them to become aware of the aspects about themselves, or students, that they had not noticed. Moreover, both groups brought out that the video helped them to see their strengths and recognise the aspects that could be developed further. Therefore, the overall experience of observing one's own teaching was perceived as positive. The same notion was expressed by teachers who supported their student teachers or novice teachers in carrying out the guided reflection procedure in Study II. Additionally, the opportunity to see what children were *actually* doing was pointed out by student teacher in Study I. This view was also expressed by teachers in Study II who guided the reflection of student teachers and novice teachers.

*Support from partner.* Collaboration with others was emphasised by teachers at different stages of their professional development. The majority of experienced teachers in Study II described the advantages of carrying out the oral reflection with a colleague. More precisely, they valued the colleague's perspective, which enabled them to see the situation from a different viewpoint. The observed teachers were grateful for positive feedback as well as constructive suggestions. Similarly, student teachers in Study I highlighted the advantage of reflecting with another person, which contributed to more profound reflection. Likewise, teachers who represented the novice teachers' opinions in Study II stressed the benefits of reflective discussion. At the same time, teachers who supported their student teachers in carrying out the guided reflection procedure in Study II did not emphasise their supportive role.

*Changes in practice.* Almost all the experienced teachers in Study II mentioned the changes in their practice that were engendered by the guided reflection procedure. More precisely, they explained that the video, as well as the discussion with their colleagues and the written reflection, supported them in identifying the aspects that could be changed, and gave them ideas on how to make changes in their practice. Similarly, student teachers in Study I emphasised that the insight they got from the video recording immediately helped facilitate changes in their practice. Furthermore, they valued the prolonged reflection that facilitated the transmission of the changes in knowledge to changes in practice. At the same time, participants who carried out the guided reflection procedure, with a student teacher or novice teacher in Study II, did not highlight the changes in practice.

*Depth of reflection.* Almost all the teachers who supported their student teacher or novice colleague in Study II indicated that the guided reflection procedure resulted in more profound reflection. On one hand, they brought out that the video recording helped teachers to see what was going on during their teaching and,

therefore, select concrete situations for reflection according to their personal aims. Furthermore, teachers found that the video recording helped student teachers and novice teachers take more responsibility for their practice and reflection process. On the other hand, they emphasised that repeated reflection helped student teachers and novice teachers think more thoroughly about the selected events and allowed for the understandings of what was learnt from the experience to set. Similarly, student teachers in Study I highlighted that the different stages of the guided reflection procedure contributed to a more profound reflection of the meaningful events. Furthermore, they appreciated the students' point of view that the guiding questions led them to think of. Congruously to the feedback in Study II, student teachers in Study I pointed out the advantages of prolonged reflection that supported the settling of new ideas and conceptions.

*Self-empowerment.* Most of the experienced teachers in Study II emphasised the empowering aspect of carrying out the guided reflection procedure. More precisely, they explained that the selection of meaningful events guided them to focus on the positive aspects of their teaching and the reflective discussion with a colleague was also seen as inspiring. Similarly, student teachers in Study I indicated that the possibility to see the recorded lesson helped them to overcome the initial feeling of insecurity that followed the practical experience. Like teachers in Study II, student teachers in Study I highlighted the possibility to notice one's own positive characteristics, which increased their self-confidence. This opinion coincides with feedback from teachers who carried out the guided reflection procedure with a student teacher in Study II. At the same time, only one group who supported novice teacher reflection on Study II brought out the same observation.

In conclusion, teachers at different stages of their professional development perceived the advantages of implementing the guided reflection procedure the same, in general. Teachers highly emphasised the bystanders' viewpoint of themselves and children that was facilitated by the video recording exercise. Similarly, they valued the partner's role in reflection process, which allowed them to gain another perspective for their teaching and receive feedback and suggestions. Furthermore, teachers with less experience highlighted that the procedure promoted more profound reflection. Altogether, teachers perceived that the guided reflection procedure resulted in self-empowerment and changes in everyday practice, which is the main aim of CPD activities.

#### **4.1.2 What are the main challenges of implementing the guided reflection procedure perceived by teachers at different stages of their professional development (I, IV)?**

Second, the main challenges of carrying out the guided reflection procedure was analysed in detail. Although, in general, student teachers in Study I as well as teachers in Study II found the guided reflection procedure to be supportive – they expressed their willingness to repeat this procedure – they elucidated some

difficulties they encountered when carrying out the guided reflection procedure. In the following sections, the main challenges highlighted by the participants are described. The findings are structured following the frequencies of occurrence – the challenges that were expressed by teachers more frequently are presented first.

*Uncertainties regarding the theoretical knowledge.* All the student teachers in Study I, and experienced teachers in Study II, expressed that to at least some extent they struggled with associating the selected meaningful events to theoretical knowledge in the written reflection phase. Both groups brought out that they did not know where to find the specific theoretical knowledge needed to give reason to their meaningful events. Furthermore, experienced teachers in Study II also emphasised uncertainties regarding the validity of their theoretical knowledge, as many of the theories have changed and new theories have been introduced. At the same time, teachers who carried out the guided reflection procedure with a student teacher or novice teacher in Study II, rather, indicated that the procedure supported linking theoretical knowledge to practical experiences.

*Difficulties with finding time.* Most of the teachers in Study II, who carried out the guided reflection procedure under different conditions, brought out the issue with a restrictive time limit, indicating the difficulties with finding a suitable time for the different phases of the guided reflection procedure. At the same time, they recognised the benefits of the procedure, and emphasised the need to ‘just take time for it’ by planning consciously. At the same time, student teachers in Study I, generally, did not find it to be a challenge to find time for the different stages of the guided reflection procedure.

*Understanding the questions.* Several groups of teachers in Study II, who carried out the guided reflection procedure with student teachers or novice teachers, highlighted that it was difficult to understand the guiding question. At the same time, most of the student teachers in Study I found the instructions to be clear, and they valued the focus of the questions. Additionally, they emphasised the supervisor’s supportive role in giving the questions in a more comprehensible form. The challenge of understanding the questions was not expressed by experienced teachers in Study II.

*Specific feedback from student teachers following the subject teachers’ curriculum.* Student teachers, following the subject teachers’ curriculum in Study I, formed a unique group whose feedback differed substantially from other participants. Their peculiarity might be related to the context in which the data was collected from this group. More precisely, this group of student teachers was conducting their very first teaching practice. Thus, their main focus was concentrated on gaining an experience of teaching, in general. Additionally, no practical experiences followed the implementation of this procedure, making it impossible to improve one’s teaching as a result of carrying out the procedure. In this context, they perceived the experience of carrying out the guided reflection procedure differently than other student teachers. Specifically, these student teachers did not find the procedure to be beneficial for their current practice; however, they pointed out that the procedure could be more valuable in the future during the final teaching practice. Student teachers perceived the external feedback received

from their supervisor to be the most important. Furthermore, they appreciated the supervisor's support in analysing the self-related emotions and thoughts that were not addressed in the guided reflection procedure.

In conclusion, the main difficulty that most of the teachers with different experiences encountered was related to uncertainties with their theoretical knowledge, and using theoretical knowledge to interpret their practical experiences. Similarly, struggles with finding time to carry out the guided reflection procedure were emphasised by many teachers; although, they perceived the benefits of implementing the procedure to outweigh the initial obstacles. Additionally, some group-specific feedback was received indicating that teachers with less experience need more support in comprehending the reflection procedure, in general, and teachers with very little previous practice experience do not perceive the procedure as beneficial as teachers who have had more opportunities to practice teaching.

## **4.2 RQ2: How do student teachers construct practical knowledge based on their teaching experiences during teaching practice using the developed guided reflection procedure?**

Student teachers' meaningful events, and oral and written reflections collected in Study I were analysed to understand how the developed guided reflection procedure supported student teachers' construction of practical knowledge. More precisely, the meaningful events student teachers selected, based on the video recording of their teaching practice, were analysed to describe how the guided reflection procedure facilitated student teachers' perceptions of their practice. The meaningful events determined the context in which they constructed their practical knowledge. Additionally, the student teachers' oral and written reflections were analysed to describe the types of knowledge student teachers expressed when reflecting on different aspects of their practice under different conditions (oral reflection/written reflection; reflecting alone, with a peer student, with a supervisor).

### **4.2.1 What aspects of practice do student teachers choose for their reflection when implementing the guided reflection procedure (III)?**

Student teachers' meaningful events were analysed according to the instructional core (cf. Herbart, 1985; Kansanen & Meri, 1999; Toom, 2006), which describes the context in which teachers practice and, therefore, construct knowledge. The analysis of the meaningful events revealed that student teachers focused on all the different relations presented in the instructional core: three meaningful events were related to the content relation, 12 to the pedagogical relation and 27 to the didactical relation (see table 5). Furthermore, most of the meaningful events involved students – teacher relationships.



**Table 5.** Content, pedagogical and didactical relations within different meaningful events

Type of meaningful event	Relation in the event		
	Content N	Pedagogical N	Didactical N
<i>empowering</i>	–	10	11
<i>challenging</i>	3	2	16
<b>Total</b>	3	12	27

When analysing empowering and challenging events separately, empowering events concentrated nearly equally to pedagogical and didactical relations. More precisely, the empowering events centring around pedagogical relationships emphasised being successful in maintaining children’s interest and motivation by giving positive feedback and maintaining children’s attention by using guiding questions or instructional support. The empowering events targeting didactical relations were connected to guiding children’s learning during the activity or to induce the use of a concrete method.

Challenging events, on the other hand, were mostly focused on the didactical relation. At the same time, challenging events were more diverse in representing all three relations. As can be concluded, all the meaningful events focusing on the content relation were interpreted by student teachers as challenging. These revealed the student teachers’ feelings of inadequacy with answering children’s questions about the subject matter, or giving incorrect feedback to a child’s answer related to a subject matter. The challenging events concentrated on the pedagogical relation emphasized the student teachers’ difficulties with classroom or group management, or with noticing and communicating with individual children. Finally, challenging events targeting the didactical relation were related to difficulties with giving instructions, and with a lack of consistency when supporting children during an activity.

#### **4.2.2 What types of practical knowledge do student teachers express when reflecting on the different aspects of their teaching practice (III)?**

Student teachers’ meaningful events were analysed according to the types of practical knowledge (Fenstermacher, 1994; Mena et al, 2015; Toom, 2012) that describe the quality of teacher knowledge in terms of being able to transfer the constructed knowledge in different teaching situations. First, the types of practical knowledge student teachers constructed when reflecting on content, pedagogical, and didactical relations were examined. The results revealed that student teachers expressed all the different types of practical knowledge (see table 6). Within each relation, student teachers most brought out practical reasoning and rules and practical principles. On the contrary, theoretical reasoning and artefacts were the least frequently communicated types of knowledge in relation to all the meaningful events.

**Table 6.** Types of practical knowledge student teachers communicated in their reflections on meaningful events focusing on content, pedagogical, and didactical relations

Type of relation	Type of practical knowledge						Total N (%)
	Recall N (%)	Appraisal N (%)	Rule or practical principle N (%)	Artefact N (%)	Practical reasoning N (%)	Theoretical reasoning N (%)	
Content	11 (17)	5 (8)	20 (31)	6 (10)	22 (34)	–	64 (100)
Pedagogical	56 (18)	34 (11)	76 (25)	35 (11)	96 (31)	13 (4)	310 (100)
Didactical	133 (19)	104 (15)	166 (24)	51 (7)	208 (30)	39 (5)	701 (100)
Total	200 (19)	143 (13)	262 (24)	92 (9)	326 (30)	52 (5)	1,075 (100)

Additionally, a chi-square test was used to analyse, in more detail, the differences in the types of practical knowledge student teachers presented when reflecting on different meaningful events in terms of the three relations. The chi-square test revealed no statistically significant difference ( $p > 0.05$ ) among the types of practical knowledge student teachers presented when reflecting on the different types of meaningful events.

Second, the types of practical knowledge student teachers expressed in their oral and written reflections, when reflecting on empowering and challenging aspects of their practice, were examined. The results confirmed that, similarly to the reflections regarding different relations, reflecting on empowering and challenging events resulted in the construction of all the different types of practical knowledge (see table 7).

**Table 7.** Types of practical knowledge student teachers communicated in their reflections on empowering and challenging events from practice

		Types of practical knowledge						Total
		Recall	Appraisal	Rule or practical principle	Artefact	Practical reasoning	Theoretical reasoning	
Empowering event	Frequency (%)	102 (21)	88 (18)	106 (21)	27 (5)	140 (28)	34 (7)	497 (100)
	SR	1.0	2.7	-1.4	-2.4	-0.9	2.0	
Challenging event	Frequency (%)	98 (17)	55 (10)	156 (27)	65 (11)	186 (32)	18 (3)	578 (100)
	SR	-0.9	-2.5	1.3	2.2	0.8	-1.9	
Total	Frequency (%)	200 (19)	143 (13)	262 (24)	92 (9)	326 (30)	52 (5)	1,075 (100)

Moreover, a chi-square test was used to analyse whether there were any statistically significant differences in the types of practical knowledge student teachers communicated when reflecting on empowering and challenging events. The result affirmed that the types of practical knowledge student teachers expressed in their reflections differed significantly related to the type of meaningful event ( $\chi^2=38.5$ ,  $p<0.01$ ,  $df=5$ ). The chi-square statistic exceeded the critical value of the degrees of freedom ( $\chi^2=15.1$ ) (Howell, 2006), and none of the expected frequencies were less than five. More precisely, when reflecting on empowering events, student teachers expressed more appraisals (SR=2.7) and theoretical reasoning (SR=2.0) and less artefacts (SR=-2.4), compared to reflecting on challenging events.

### 4.2.3 What types of practical knowledge do student teachers express when reflecting under different conditions (II)?

#### 4.2.3.1 Practical knowledge constructed in oral and written reflections

As a part of carrying out the guided reflection procedure, the student teacher reflected on the selected meaningful events twice – first in verbal form and second in written form. Student teachers’ oral and written reflections were analysed to discover whether there were any differences in the types of practical knowledge student teachers expressed in each reflection. Chi-square analysis revealed that oral and written reflections were significantly different in terms of the practical knowledge types student teachers communicated as part of these reflection processes ( $\chi^2=93.9$ ,  $p<0.01$ ,  $df=5$ ). The chi-square statistic exceeded the critical value for degrees of freedom ( $\chi^2=16,8$ ) (Howell, 2006) and none of the expected frequencies were less than five. More precisely, oral and written reflections differed significantly by every type of practical knowledge communicated in the reflections (see table 8).

**Table 8.** Types of practical knowledge student teachers communicated in their oral and written reflections

		Types of practical knowledge						Total
		Recall	Appraisal	Rule or practical principle	Arte-fact	Practical reasoning	Theoretical reasoning	
WR	Frequency (%)	59 (14)	39 (9)	143 (33)	54 (12)	102 (23)	39 (9)	436 (100)
	SR	-3.4	-3.5	<b>5.1</b>	<b>4.1</b>	-4.3	<b>5.2</b>	
OR	Frequency (%)	135 (22)	101 (16)	118 (19)	33 (5)	222 (36)	12 (2)	621 (100)
	SR	<b>3.4</b>	<b>3.5</b>	-5.1	-4.1	<b>4.3</b>	-5.2	
Total	Frequency (%)	194 (18)	140 (13)	261 (25)	87 (8)	324 (31)	51 (5)	1057 (100)

WR = written reflection  
 OR = oral reflection  
 SR = standardized residual

In their oral reflections, student teachers expressed more frequently recalls (SR=3.4), appraisals (SR= 3.5), and practical reasoning (SR=3.4) than in their written reflections. At the same time, student teachers communicated a higher number of examples of rules or practical principles (SR=5.1), artefacts (SR=4.1), and theoretical reasoning (SR=5.2) in their written reflections compared to their oral reflections.

#### 4.2.3.2 Practical knowledge expressed under different oral reflection conditions

During the oral reflection stage of the guided reflection procedure, student teachers were able to choose whether they wanted to carry out the oral reflection procedure alone as a self-reflection, with a peer student, or with the support from their practice supervisor. Altogether eight student teachers chose to reflect alone, six with a peer student, and eight carried out the oral reflection with a supervisor (in table 2 student teachers oral reflection conditions are presented for each participant). Student teachers' reflections were analysed to examine the differences in the types of practical knowledge that were expressed in their reflections when carrying out the oral reflections in different conditions. First, the types of practical knowledge student teachers communicated in their oral reflections were compared. The chi-square test indicated no statistically significant difference in the types of practical knowledge student teachers expressed in their oral reflections across different oral reflection conditions ( $p>0.05$ ).

Second, student teachers written reflections were compared in terms of the types of practical knowledge student teachers presented across different oral reflection conditions. Chi-square test results revealed that the three groups (self-reflection, peer reflection, and supervisor reflection) differed significantly in the types of practical knowledge expressed in the written reflections ( $\chi^2=28.8$ ,  $p<0.01$ ,  $df=10$ ) (see Table 9). The chi-square statistic exceeded the critical value of the degrees of freedom ( $\chi^2=25.2$ ) (Howell, 2006) and none of the expected frequencies were less than five.

More precisely, student teachers who carried out the oral reflection alone communicated in their written reflections more frequently appraisals (SR=4.3) and less often rules or practical principles (SR=-2.4) compared to participants who underwent peer or supervisor reflection. Furthermore, student teachers who carried out the oral reflection with the support from a peer or a supervisor, presented less appraisals (respectively SR=-2.3 and SR=-2.7) in their written reflections than would have been expected.

**Table 9.** Types of practical knowledge student teachers who underwent different oral reflection conditions communicated in their written reflections

		Type of practical knowledge						Total
		Recall	Appraisal	Rule or practical principle	Artefact	Practical reasoning	Theoretical reasoning	
Self-reflection	Frequency (%)	26 (12)	33 (15)	62 (28)	24 (11)	56 (25)	24 (11)	225 (100)
	SR	-1.2	<b>4.3</b>	<b>-2.4</b>	-1.1	0.8	1.3	
Peer reflection	Frequency (%)	17 (15)	4 (4)	42 (38)	13 (12)	29 (26)	7 (6)	112 (100)
	SR	0.6	<b>-2.3</b>	1.2	-0.3	0.7	-1.2	
Supervisor reflection	Frequency (%)	16 (16)	2 (2)	39 (39)	17 (17)	17 (17)	8 (8)	99 (100)
	SR	0.9	<b>-2.7</b>	1.6	1.6	-1.7	-0.3	
Total	Frequency (%)	59 (14)	39 (9)	143 (33)	54 (12)	102 (23)	39 (9)	436 (100)

In conclusion, the results from Study I and Study II indicate that teachers at different stages of their professional development found the guided reflection procedure to be supportive. Moreover, the opportunity to take a bystander's view on one's own teaching and collaboration with a partner was highlighted by teachers in relation to personal development and becoming more aware of oneself as a teacher. These findings are in accordance with the meaningful events student teachers selected for their reflections, focusing on different aspects of their practice. As a result, teachers perceived that the guided reflection procedure supported them in making changes to their teaching, and in being engaged in more profound reflection. Teachers' perceptions are in line with the analysis carried out with student teachers' reflections, describing the expression of different types of practical knowledge. Moreover, the results show more frequent presentation of practical knowledge that can be transfer to different situations more easily when the guided reflection procedure was carried out with someone else. Furthermore, the findings revealed that reflecting on empowering aspects of practice resulted in more frequent presentation of appraisals and theoretical reasoning and less frequent presentation of artefacts compared to reflecting on challenging events. At the same time, teachers expressed uncertainties regarding their theoretical knowledge and relating this to their meaningful events. These findings conform the types of practical knowledge student teachers expressed in their reflection, where relatively few theoretical reasonings were presented.

## 5 DISCUSSION

This doctoral thesis focused on supporting teachers at different stages of their professional development through the implementation of a guided reflection procedure. Teachers' own perceptions of their experiences with implementing the guided reflection procedure were considered together with the meaningful events and reflections student teachers created as a part of the procedure. This enabled to describe the potential support on teachers at different stages of their professional development. In the following section, methodological choices are reflected upon with theoretical reflections and a synthesis of the findings. Additionally, educational implications of the current study and suggestions for further research are addressed.

### 5.1 Methodological reflections

This section presents a discussion about the trustworthiness of the conducted research in light of the methodological choices of the studies. This doctoral study is grounded in pragmatism (Creswell, 2007), emphasising the subjectivity of reality based on the participants' perceptions. The guided reflection procedure implemented in this study allowed the participants to choose meaningful events that were significant for them, personally, and to construct knowledge based on these situations in relation to their existing knowledge systems, highlighting the subjective nature of their experiences. Moreover, this thesis follows mixed methods approach (Tashakkori & Teddlie, 2003), bringing together qualitative and quantitative data analysis to develop a more profound understanding of supporting teachers at different stages of their professional development with the guided reflection procedure. Feedback interviews allowed the participants to voice their opinions and viewpoints on their experiences. At the same time, the statistical analysis of participants' reflections made it possible to examine more thoroughly the practical knowledge that was presented during the implementation of the guided reflection procedure. The methodological triangulation (Teddlie & Tashakkori, 2009) that allowed the combination of different findings provided more extensive knowledge that complimented each other and increased the trustworthiness of the studies and the conclusions made based on these. The trustworthiness of a mixed-methods study expresses the accuracy of the findings (Creswell, 2007), and it can be determined by four main criteria: credibility, transferability, dependability, and conformability (Lincoln & Cuba, 1986). Next, the methodological choices made to increase the trustworthiness of the studies carried out as a part of this doctoral thesis will be discussed.

The credibility refers to a harmony between the data collected from the participants and the interpretations made based on this data (Given, 2008). First, researcher triangulation and referential adequacy was used to increase the credibility of the study (Tashakkori & Teddlie, 2003). More precisely, the

analysis of meaningful events and types of practical knowledge were carried out in close collaboration between the two researchers to reduce the potential of single person biases. Furthermore, all the relations of meaningful events and types of practical knowledge were described in detail and discussed within a group of researchers. All the less characteristics meaningful events and types of practical knowledge were discussed until a consensus of the analysis was found. Thereafter, the data was reanalysed to ensure the data analysis correspondence to the data analysis framework. Similarly, all the themes and categories of interview data were discussed throughout the different stages by two researchers. Additionally, triangulation in data collection was implemented to ensure the credibility of results (Creswell, 2007). More precisely, student teachers presented their reflections created as a part of their experience and provided their feedback on their experiences. Therefore, different techniques were applied to increase the credibility of the conducted research.

Transferability refers to the possibility to implement the results in other contexts and situations (Given, 2008). Furthermore, mixed methods research can be evaluated based on the inference transparency, indicating a clear and detailed description of the methodology and based on the inference transferability indicating to the degree to which the conclusions can be applied to other contexts (Tashakkori & Teddlie, 2003). In this thesis, the inference transparency is established with the detailed descriptions of all stages of study, which exhibit the quality of data as well as the integrity of the process of meaning making. Providing thick descriptive data is considered to be one of the main techniques to ensure the formulation of grounded judgements on the transferability of research results from one specific context to another (Lincoln & Cuba, 1986). Additionally, extensive examples from the research materials are presented in the original articles to illustrate how the results are grounded in the data. The profound overview of the methodological choices allows the reader to make informed decisions on the transferability of the conclusions.

Dependability addresses the replicability of the research (Given, 2008; Teddlie & Tashakkori, 2009). The main technique to ensure the dependability of research is to carrying out external audits examining the process of research (Lincoln & Cuba, 1986). Additionally, the dependability recognises that the context of the research is constantly changing, on account of which it is necessary to track the possible alteration of the research process made due to the changing context (Given, 2008). In this thesis adequate and relevant methodological information has been provided to enable the replicability of the studies. Additionally, a researcher log was implemented to record all the possible methodological alterations made during the research process, and discussions have been provided to acknowledge the potential impact of the implemented adjustments. Therefore, this thesis has taken into consideration the main techniques to ensure the dependability of the conducted research.

Confirmability is related to the interpretations made based on the data, and to the need to ensure that the provided interpretations are grounded in data (Given, 2008). Therefore, one of the main techniques to ensure the confirmability of the

research is by careful examination of the data and interpretations made (Lincoln & Guba, 1986) to diminish the possibility of a researcher's bias (Tashakkori & Teddlie, 2003). In this thesis, the researcher log was applied to ensure the confirmability of the study by taking notes on the inference logic, providing the opportunity to analyse the accuracy of the interpretations and conclusions.

Moreover, in both studies, participants carried out the guided reflection procedure. The implementation of this procedure enabled the execution of data collection in real situations, in turn increasing the relevance of the participation. The participants were able to examine more closely their everyday context. Additionally, the procedure enabled to address concrete aspects of practice that the participants themselves found significant. Similarly, participants' reflections were supported by the video recordings of their own lessons, grounding the meaning making in practice instead of facilitating abstract discussions of one's own experiences. The aforementioned aspects increased the quality of data and transferability of conclusions as the real-life situations have more potential to be similar to other contexts than the artificial ones.

Finally, semi-structured interviews were used to collect data about the participants' experiences. The use of semi-structured interviews allowed participants to elaborate on their opinions and express thoughts that might not have been concretely formulated in the questions (Gratton & Jones, 2014). The aforementioned use of a researcher log allowed special attention in assuring the similarity of the data collection context and instructions. However, it must be kept in mind that the experiences participants presented were situated in the past, and the context might be difficult to recall afterwards. To address this limitation, all participants independently answered preliminary feedback questions at the end of the guided reflection procedure, which supported them in summarizing their experience. Interviews created opportunities to expand these ideas, and shift to more profound analysis. Additionally, the context of group interviews enabled the presentation of socially shared opinions in light of which, participants were able to interpret their experiences.

## **5.2 Theoretical reflections and the synthesis of the findings**

The current doctoral thesis aimed to understand how the developed guided reflection procedure supports teachers at different stages of their professional development. More precisely, the thesis aimed to describe how the developed guided reflection procedure supported teachers at different stages of their professional development in their own perception and student teachers in constructing teachers' practical knowledge. In the following sections, the importance of this thesis at the national and international level is discussed in detail. Additionally, the main results are reflected in light of the main theoretical frameworks related to this doctoral thesis – teacher professional development, teacher's practical knowledge, and reflection. Through the synthesis of the findings and theoretical knowledge, conclusions are formulated to highlight the contribution



of the thesis to the growing body of work examining teachers' practical knowledge in connection to supporting teachers at different stages of their professional development.

The studies carried out as a part of this doctoral thesis date back to 2013, when teacher education underwent a major reform to improve the preparation of student teachers. With this reform, a great emphasis was placed on the integration of theoretical and practical knowledge, and on the coherence of the curriculum (including collaboration between teacher educators and practice supervisors) to better prepare student teachers for their future work (Pedaste et al., 2019). In relation to this reform, more attention was paid on supporting student teachers in constructing their personal practical knowledge through reflection. Herewith, student teachers were given a more active role in ensuring their professional development. Furthermore, a conscious effort was made for developing student teachers' reflection, as it is recognised as the main way to support the construction of practical knowledge (e.g. Berliner, 2004; Cochran-Smith, 2003; Korthagen, 2004). The guided reflection procedure implemented in this doctoral thesis was one of the first methodologies used to support the changes conceptualised in the reform and to give student teachers greater responsibility in constructing their knowledge. Therefore, the results of this thesis offer a valuable insight into how to support student teachers' reflection.

Additionally, significant changes took place in the roles of teacher educators and practice supervisors, whose role shifted from being an expert to becoming an enactor and supporter. The principles that the guided reflection procedure is built on represent the ways to enact the new expectations on supporting student teachers' professional development. Therefore, Study II, which was carried out with mentor teachers, raised practice supervisors' awareness of the new ways to support student teachers through personal experience with implementing the guided reflection procedure, which contributes to the coherence of teacher education.

A cross-sectional study on the student teachers' perception of curriculum coherence between 2014 and 2018 (Malva & Leijen, 2020) reveals that student teachers perceive to have many opportunities to reflect on their experiences and their perceived coherence between the theoretical studies and practical experiences has increased. These results indicate the potential value of the developed guided reflection procedure. At the same time, the results show that the perceived coherence between the theoretical studies is lower. These results highlight the need to have commonly shared understandings on how to support student teachers. Therewith, mutual understanding is needed on how to support student teachers' reflection that has also been highlighted by Sarv and Karm (2013). Thus, these results indicate the significance of this doctoral thesis. Although Study I was carried out in 2013 and there have been rapid changes in teacher education, getting used to the changes takes time as demonstrated by Malva and Leijen (2020). Despite all that is done in supporting teachers' professional development, there is a need for shared understanding on how to support teachers' reflection. This thesis highlights the main principles of what can be done to support teachers, and the shared awareness could contribute to the coherence of teacher education.

Even though this doctoral thesis has a significant value in better understanding and improving to the national context of teacher education, it has the potential to contribute to the international context. The concerns related to supporting teacher at different stages of their professional development and the need to better support teachers' reflection are not specific to Estonian context, but rather recognised across the world. Additionally, the general approach to teacher professional development, teacher's practical knowledge, and reflection is not context specific. Although the question of transferability of qualitative study must be bared in mind, the results of this thesis can be positioned in a wider theoretical context. Next, the main results of this thesis are discussed in light of the existing theoretical knowledge highlighting the unique contribution of the thesis to the theory.

Firstly, this thesis provides a new insight into the developmental trajectories of teacher development, which is carefully explained by Berliner (2004). The questions of supporting teachers' professional development relate to the widely recognised concern that newly qualified teachers feel insufficiently prepared for their everyday work and leave their profession early after encountering difficulties when comprehending the complexity of teaching (e.g. European Commission, 2013; Grossman et al., 2009; OECD, 2018). As a result, there is an increasing shortage of teachers (e.g. OECD, 2018). When taking a more theoretical stance, the situation is complicated by the paradox that teaching is a complex activity that requires simultaneous consideration of multiple aspects and quick access to well-integrated knowledge systems (Berliner, 2004; Festermacher, 1994). At the same time, it is developmentally characteristic to beginning teachers to have particular focuses on concrete aspects of teaching (Bejaard et al., 2004; Fuller, 1969). Therefore, it is difficult to feel sufficiently prepared for classroom situations when the ability to notice key variables is limited. Nevertheless, the findings of this study indicate that with appropriate support there is a potential to extend the focus of teachers' attention already during the very beginning stages of their professional development.

Although all the participants in Study I were student teachers who are considered novice teachers (Berliner, 2004), the findings revealed that they chose to focus on different aspects of their practice. Moreover, the majority of the chosen events emphasized the teacher-student relationship and the teacher's role in supporting student learning. At the same time, according to the general theoretical framework, these are the aspects of teaching that are more commonly characteristic to more experienced teachers (Beijaard et al., 2004; Berliner, 2004; Fuller, 1969). Previous studies have shown that novice teachers are more focused on the subject that they are learning to teach (e.g. Okas et al., 2013). Therefore, it can be concluded that the possibility to see real-life teaching situations in peaceful setting enables teachers to comprehend the general context of their practical experiences, as well as to focus on singular aspects and capture the different viewpoints as needed. This possibility contributes to the more complex development of teacher consciousness as referred to by several authors in relation to the benefits of teaching videos (e.g. Borko et al., 2010; Hatch & Grossman, 2009; Zhang et al., 2011). These findings are also in accordance with participants perceptions in

Study I and II, which highlighted the opportunity to observe situations from a bystander's viewpoint as one of the main advantages of implementing the guided reflection procedure. Therefore, these findings contribute to the theory of teacher professional development by highlighting the possibility of promoting development, using lesson videos as a basis for reflection and knowledge construction.

At the same time, it is notable that both teachers with less experience, as well as teachers with more experience, reported to benefit from the bystander's viewpoint that was provided by the use of the lesson video. Interestingly, teachers with more teaching experience emphasised the opportunity to see oneself as a teacher in a real-life situation, which is more characteristic focus of novice and beginning teachers according to the theoretical framework (Beijaard et al., 2004; Fuller, 1969). However, these findings contribute to the existing theory by highlighting the importance of the instructional core through different stages of teacher professional development, specifying the context in which teachers operate (cf. Herbart, 1835; Kansanen & Meri, 1999; Toom, 2006). Although the trajectories of teacher development can be generally represented by the shifts in a teacher's focus from oneself to the subject matter, and ultimately to student learning (Beijaard et al., 2004; Fuller, 1969), it must be kept in mind that the context of teaching is constantly changing (Simons & Ruijters, 2014). This in turn creates the necessity to persistently position oneself within a dynamic environment in order to be an efficient professional (Berliner, 2004). The possibility to observe one's own teaching practice from a bystander's viewpoint promotes teacher professional development by allowing less experienced teachers' focus to develop. At the same time, it reintroduces more experienced teachers back to the core elements of teaching, which is necessary for the formation of oneself as a teacher – an aspect of professional development that is often neglected when concentrating on mastering teaching behaviours (Vermunt et al., 2017). Additionally, previous studies have shown that experienced teachers have difficulties with establishing goals for themselves as teachers as they focus more on students' development (e.g. Okas et al., 2013; Salo, Uibu, Ugaste, & Rasku-Puttonen, 2019). Therefore, it can be concluded that the use of lesson videos counterbalances a teacher's professional development, enabling teachers to improve different elements of a teaching situation.

Secondly, this thesis contributes to understanding how different experiences shape teacher development. Educational researchers emphasise that extensive deliberate practice is necessary to become accomplished in teaching, and reflection is the core process through which knowledge is extracted from practical experiences and complex knowledge systems created (Berliner, 2004; Korthagen, 2004). As the knowledge constructed based on practical experiences is contextually bound, it is important to understand the potential influence of different practical experiences on teacher development. When talking about reflection, in light of supporting teacher development, the focus is mainly on the mistakes, failures, or aspects of practice that need improvement. Although it is acknowledged that reflecting on positive aspects of practice promotes greater willingness to actively contribute to meaning making of one's own experiences (Simons &

Ruiters, 2014), there are not any widely used reflection models or guidelines that support this. The guided reflection model implemented in this doctoral study encouraged teachers to reflect on their empowering aspects of practice alongside the challenging ones. The findings indicate the benefits of reflecting on the empowering events based on the analysis of student teachers' reflections, as well as on the teachers' feedback that is an important addition to the prevalent approach to supporting reflection.

The analysis of student teachers' reflections revealed that different types of practical knowledge can be associated with reflecting on empowering and challenging aspects of practice. More precisely, reflecting on challenging events of teaching, which is the most common focus of different reflection assignments, leads student teachers to finding solutions to the situations they encounter. At the same time, when focusing on the empowering aspects of their experiences, student teachers construct more theoretical explanations to the events they come across. Being aware of one's own theory of practice, keeping it accurate, and grounding the decisions and actions in this knowledge, gives teachers their authority (Simons & Ruijters, 2014), which is an inevitable part of being a professional. Moreover, providing justifications for practical experiences contributes to the construction of more generalizable knowledge, which has the possibility to be easily accessed in different situations (Fenstermacher, 1994; Mena et al., 2015; Toom, 2012). Therefore, creating opportunities to reflect on the empowering aspects of practice promotes the construction of teachers' practical knowledge, which strengthens the flexibility and fluidity of teaching with the utmost consciousness.

The findings derived from the analysis of student teachers' reflections coincide with teachers' feedback in Study I and II, explicating the benefits of reflecting on the empowering aspects of teaching experiences. More precisely, participants from both studies emphasised the self-empowering aspect of focusing on the positive elements of practice. Furthermore, noticing one's own strengths as teacher was perceived to improve their self-confidence. These findings are substantial, because teachers often tend to avoid reflection as it is seen as being critical about oneself instead of as a basis of professional development. The benefits lie in the construction of teachers' practical knowledge, which guide teaching behaviour in the future as indicated above. Additionally, becoming aware of one's own strengths as a teacher contributes to the formation of teacher identity, which does not always receive sufficient attention in relation to teacher development as noted above (Simons & Ruiters, 2014). Besides, researchers have underlined that experienced teachers do not reflect upon the events that meet their expectations. As experienced teachers' everyday practice runs rather smoothly, they appear to be less reflective about their performance (Berliner, 2004). However, all the unexamined experiences lose their potential for growth and development (Dewey, 1933). Additionally, as the context of teaching is constantly changing, teachers need to have a reflective mindset towards one's own teaching to become an expert. Therefore, it can be concluded that reflecting on empowering events of practice contributes

to the formation of reflection skills, which in turn is the basis for professional development.

Thirdly, the findings of this study revealed notable insight into teachers' theoretical knowledge and their ability to use the existing knowledge to make meaning of their experiences and (re)form their teaching behaviour. Although the analysis of student teachers' reflections unveiled that theoretical knowledge was more often expressed in relation to empowering aspects of practice, the uncertainties regarding the integration of practical experiences and theoretical knowledge was the most emphasised difficulty of implementing the guided reflection procedure. Moreover, the procedure guided teachers to think about the connections to their theoretical knowledge twice – both in the oral reflection stage and in the written reflection stage. Nevertheless, teachers with different experiences articulated the struggles they had with associating the selected meaningful events to theoretical knowledge. Even though teachers at different stages of their professional development expressed their concerns from a slightly different viewpoint – novice and beginning teachers worried about the lack of knowledge that would be specific enough to relate exactly to the meaningful events, experienced teacher hesitated in the accuracy of their existing knowledge – their feedback uncovered two issues. Firstly, the findings indicate that teachers have a theory of practice, but they are insecure when using it. This might, in turn, suggest that they do not have enough experience with interpreting theoretical knowledge. Teachers expressed some kind of reference or fear of “getting it wrong” in their feedback, instead of seeing theoretical knowledge as an opportunity to provide multiple explanations for their experiences. Secondly, all teachers expressed the feeling of lacking some kind of knowledge, but they did not take any actions for bridging this gap. This finding indicates the scarcity of teachers' effective information retrieval skills. At the same time, it must be emphasised, once again, that the high level of knowledge contributes to the quality of teachers' work, resulting in teacher authority, which is an important characteristic of every professional (Simons & Ruijters, 2014). Therefore, conscious and deliberate effort is needed for finding effective supportive measures to guide teachers' activation and construction of theoretical knowledge in the reflection process. La Velle and Flores (2018) have discussed the importance and difficulties of teachers' acquisition, mobilisation, utilisation of theoretical knowledge, and emphasised the importance of implementing policies that would promote collaborative and research-based designs for teachers at different stages of their professional learning.

Fourthly, the findings of this thesis expanded previous knowledge on the partner's role in the reflection process. Several scholars have advocated that reflection benefits from interaction with others, which enables one to voice their own thoughts in a concrete form and gain another perspective from a bystander viewpoint (Brennamar, 2004; Leijen et al, 2012; Meijer et al., 2002; Procee, 2006). Furthermore, during the earlier stages of teacher professional development, external support is related to mediating the decoding of the complexity of teaching and creating a comfortable environment for introspection (Fund, 2010; Meijer et al., 2002; Shulman & Shulman, 2004). Whereas during the later stages,

it centres around connecting different teaching approaches and the desired results for students (Timperley, 2008; van Veen et al., 2012). Similarly, the analysis of student teachers' reflections revealed that the discussion in the oral reflection phase contributed to being less evaluative about the chosen practical experiences. Interestingly, the supportive function did not emerge during the oral reflection phase. These findings supplement the field of reflection that indicate that time is needed to internalize external support in order to employ the bystander's viewpoints into the service of professional development. This in turn illustrates the need for continuous reflection – time to (re)think about the same experiences several times to settle the insights and connections into an existing knowledge system.

The benefits of reflection held in dialogue with a supportive other that emerged from the analysis of student teachers' reflection are in accordance with teachers' self-reported advantages of implementing the guided reflection procedure. More precisely, teachers at different stages of their professional development valued the opportunity to hear a partner's perspective, receive empowering feedback, and receive constructive suggestions. The participants perceived the external support as a trigger for more profound reflection that, in turn, lead to changes in everyday practice. Additionally, collaboration in the reflection procedure was also distinguished by student teachers as a support that made the unfamiliar form of reflection more comprehensible. These findings indicate the teachers' reflection, and thereby their professional development, benefits from collaboration with others at every stage of their professional development. Moreover, experienced teachers were even more vigorous and concrete in expressing the benefits of collaboration between the colleagues in the reflection process than teachers with less experience. At the same time, different collaborative methods that encourage the reflection that takes place in interaction between colleagues are not implemented enough in CPD activities. Therefore, these findings indicate to one possible method that can be implemented to support the collaboration between teachers at different stages of their professional development.

In conclusion, the findings of this doctoral thesis propose a unique method to support teachers at different stages of their professional development. Furthermore, this thesis presents a guided reflection procedure that has met the needs of teachers with various experiences. For novice and beginning teachers, the complementary aspects of implementing the guided reflection procedure relate to the construction of knowledge, and the comprehension of teaching in general. Whereas, more experienced teachers adopted the changes related to refining their actual work in the classroom that were initiated from implementing the procedure. Therefore, the findings indicate that the guided reflection procedure enables a support that corresponds to the characteristic developmental needs of teachers as outlined by several scholars (e.g. Berliner, 2004). At the same time, the procedure has shown to promote moving beyond the expected developmental trajectories. More precisely, the findings suggest that the guided reflection procedure encourages novice and beginning teachers to exceed the developmental expectations, thus accelerating their professional development. Conversely, experienced teachers

are invited to move back to the beginning and focus on the fundamental aspects of growing into becoming a teacher. Accordingly, this doctoral thesis results in introducing a method that has demonstrated its appropriateness for supporting teachers dynamically throughout the different stages of their professional development as highlighted by several scholars and policy makers (e.g. European Commission, 2015).

### **5.3 Educational implications**

In the following section, education implications and recommendations are proposed to improve the support provided for teachers at different stages of their professional development.

Previous studies have shown that reflection assignments implemented in pre-service teacher education are not as efficient as potentially possible, and one of the main problems is the descriptive nature of student teachers' reflections (Mena et al., 2002). As a result, reflection assignments have failed to overcome the gap between theory and practice, as well as supporting student teachers in constructing their own practical knowledge. The findings of this study indicate five main aspects that should receive more attention in order to promote student teachers' professional development through reflection assignments.

- (1) Student teachers should be provided with opportunities to observe video recordings of one's own teaching. The findings of this study indicated that the possibility to see the teaching situation in video supported student teachers in noticing different aspects of their practice, including events related to students and their learning that is more characteristic of teachers with more experience. That said, the findings also indicated that the benefits of one's own lesson videos do not manifest in isolation without previous or following teaching to associate the experience with. Therefore, lesson videos should be used in a context that enables the implementation of what was learned based on the video recordings.
- (2) Student teachers should be encouraged to focus on the empowering aspects of practice. Most reflection assignments implemented in the teaching practice context focus on identifying areas that could be improved to enhance one's own practice. The findings of this study indicate that reflecting on empowering aspects of practice facilitates the construction of knowledge that can be transferred to different teaching situations. Additionally, reflecting on the empowering aspects of practice appeared to give student teachers self-confidence in their new professional role.
- (3) Reflection assignments should promote collaboration between peer students and reflective dialogues with teaching practice supervisors. The findings of this study indicate that student teachers' reflections benefit from reflecting with somebody. Furthermore, the influence of reflective dialogue appears in the following reflections. Therefore, student teachers should be encouraged to reflect on the same events several times to internalise the new information obtained from initial reflections.

- (4) Student teachers should be guided to consistently integrate practical experiences to theoretical knowledge to acquire the confidence and skills necessary to develop one's own theory of practice. The findings of this study indicate that the student teachers have theoretical knowledge, but they lack experiences on how to integrate different types of knowledge to interpret their practical experiences. Furthermore, student teachers need to be supported in developing an inquiry mindset to actively search for connections between theory and practice.
- (5) Student teachers should be encouraged to repeatedly reflect on their meaningful events to construct knowledge that would help to guide their decisions and actions in future events. The results of this study indicate that student teachers expressed in their written reflections more frequently those types of practical knowledge that are transferred to different situations compared to knowledge expressed in their oral reflections. Therefore, continuous reflection is needed to support the settling and internalizing of knowledge.

Additionally, there is an emerging focus on supporting teachers' CPD to better prepare teachers for the constantly changing conditions and the uncertainties that the future brings (Darling-Hammond et al. 2009; Day et al. 2007; Opfer and Pedder, 2011). Nevertheless, currently offered developmental activities do not always meet the needs expressed by teachers, themselves (European Commission, 2015). The findings of this study propose four main aspects that should receive more attention to design activities that support teachers' professional development.

- (1) Teachers at different stages of their career should be guided to reflect on their own teaching videos. The findings of this study indicate that the opportunity to observe one's own teaching enabled teachers to view themselves as a teacher, which was perceived as empowering. More precisely, lesson videos permitted teachers to notice their own strengths as a teacher, which they are not that accustomed to focus on. Additionally, lesson videos grounded the reflection to everyday classroom situations, which led to changes in teaching practice, which was perceived as beneficial in terms of supporting one's own professional development.
- (2) Teachers' CPD activities should be found in collaboration between colleagues. The findings of this study revealed that the reflective discussion with a supportive peer was one of the main aspects that teachers valued in this implemented guided reflection procedure. Moreover, they appreciated the opportunity to share ideas, gain another perspective, and receive relevant feedback and suggestions. Furthermore, the possibility to choose the aspects of practice to focus on during these discussions gave teachers more confidence to share their lesson videos with colleagues.
- (3) Teachers should be encouraged to actively construct their theory of action by integrating their theoretical knowledge with everyday classroom practice. The high level of knowledge is an important part of teacher authority, and



as professionals, teachers need to keep their theory of action accurate by constantly searching for new information. The findings of this study indicated that teachers are not confident about their knowledge and lack knowledge on how to effectively search for new information. This, in turn, influences teachers' sense of authority as well as autonomy.

- (4) Teachers should be provided with enough time for CPD activities. The findings of this study indicate that a professional development activity that is perceived by teachers as relevant and beneficial includes activities that require time investment. At the same time, teachers often experience a high workload, and thereby it is difficult to find time for more extensive professional development activities.

In conclusion, this study proposes several implications on how to support teachers at different stages of their profession through one guided reflection procedure. The findings of this study suggest that it is possible to customize a single method to meet the needs of teachers with different experiences to provide consistent support for professional development throughout the different stages of professional development.

## **5.4 Limitations and future research**

Although this doctoral thesis offered a valuable insight into supporting teachers at different stages of their professional development, there are some limitations that should be considered when interpreting the results. In the following sections the limitations of the study are discussed. Additionally, suggestions for further research in the field of teacher professional development are presented.

This doctoral thesis addressed and answered the challenges related to supporting teachers at different stages of their professional development, starting from the novice teacher phase and reaching to experienced teachers. The data collected in Study II expressed teachers' opinions about implementing the guided reflection procedure. The data does not allow to describe, in detail, the practical knowledge that teachers constructed during the implementation of this guided reflection procedure, nor analyse the events that they identified as meaningful. Although it is important that teachers, themselves, perceive the value of CPD activities, it would be beneficial to understand further how their perception is expressed in practice. Furthermore, a more detailed analysis of teachers' reflections and chosen meaningful events would provide more detailed information on how to improve the procedure even further to meet the needs of teachers at different stages of their professional development. Therefore, it would be enlightening to examine more thoroughly teachers experiences during the implementation of the guided reflection procedure by analysing their reflection and meaningful events.

Additionally, teachers in Study II were participating in a teacher training course during the data collection. This might influence their perception of the guided

reflection procedure. More precisely, it might be speculated that these teachers were more aware of the role of reflection in teacher professional development, as well as more willing to partake in professional development activity. This peculiarity must be kept in mind when interpreting the results of this study. Furthermore, it would be beneficial to repeat the study with teachers with various experiences with reflection. The diversity of sample might unveil some aspects of implementing the guided reflection procedure that did not emerge from this study.

Similarly, in Study II, the particular stage of participants professional development was determined by the length of their teaching experience. At the same time, it is solidly understood that the experience on its own does not assure professional development (Berliner, 2004; Simons & Ruijter, 2014). Although the participants were attending an in-service teacher training course that was addressed for mentor teachers, no professional requirements were set for participants. Therefore, it would be beneficial to design a study that would examine more closely the professional stage of teachers and their experiences with the developed guided reflection procedure.

In relation to the participants, an additional limitation is related to the disproportion of male teachers. Although the percentage of male teachers (and student teachers) in Estonia is relatively low, the samples of Study I and II did not reach the national average. At the same time, recent studies (OECD, 2019) have shown that due to their small proportion, male teachers perceive their role and work differently, and it is expected that this difference would possibly affect how male participants might have perceived the guided reflection procedure.

Furthermore, it must be emphasised that the participants in Study I did not include upper-secondary school subject teachers. While multiple subject teachers in basic school have similar preparation regarding the structure of their studies, they focus on learning and teaching several different subjects. Upper-secondary school subject teachers, on the other hand, focus on a specific subject, which may contribute to their self-confidence in teaching. Although this doctoral thesis did not aim to compare different curriculum groups, it is important to acknowledge that this might have an effect on the results.

This study aimed to describe how to support teachers at different stages of their professional development. To address this question, different participants were involved in two studies. Although the studies enabled understanding how different teachers perceive the guided reflection procedure, it would be beneficial to examine more thoroughly how the perception and needs might change during teacher professional development. The current studies did not consider how this procedure would be perceived when implemented several times. Therefore, it would be beneficial to repeat the study with the same participants over a longer period of time to provide a longitudinal insight into supporting teachers' professional development.

One of the main findings of this study was related to external support in the reflection process. The findings were mainly based on teachers' own perceptions, but were also evident in the analysis of student teachers' reflections. Therefore,

it would be interesting to examine more closely the reflective dialogues to identify the aspects resulting in more thorough reflections.

Finally, this study revealed that teachers struggle with connecting theoretical knowledge with practical experiences and further guidance is needed to overcome this challenge. Therefore, additional research would be needed to identify which methods would be the most suitable for supporting the integration of different types of knowledge.

## SUMMARY IN ESTONIAN

### Õpetaja professionaalse arengu toetamine suunatud refleksiooni protseduuri kaudu

#### SISSEJUHATUS

Tänapäeva kiiresti muutuv maailm seab aina kõrgemad ootused õpetaja teadmiste ja oskustele, et valmistada lapsi ette tuleviku jaoks, mida on praegusel hetkel raske ette ennustada (OECD, 2018). Seega pööratakse aina suuremat tähelepanu õpetaja professionaalse arengu toetamisele, kuna seda peetakse edukate haridusreformide aluseks (Darling-Hammond et al. 2009; Day et al. 2007; Opfer & Pedder, 2011). Teisisõnu võib öelda, et selleks, et tagada lastele tuleviku ühiskonnas hakkama saamiseks vajalikud teadmised, oskused, hoiakud ja väärtused, on vaja toetada õpetajate järjepidevat professionaalset arengut, luues neile tähenduslikke õppimisvõimalusi (Feiman-Nemser, 2001; OECD, 2014; 2018). Samal ajal on kujunemas aina suuremaks probleemiks õpetajate puudus (Euroopa Komisjon, 2013; OECD, 2018). Ühelt poolt on murekohaks õpetajaskonna vananemine ja õpetajate suur töökoormus (OECD, 2018; 2019). Teiselt poolt näitavad uurimused, et praegune õpetajakoolitus ei valmista noori õpetajaid nende igapäevatööks piisavalt hästi ette, mistõttu paljud neist loobuvad õpetajaametist juba esimeste aastate jooksul (Grossman et al., 2009; Meijer, 2010; OECD, 2018). Õpetajate puudus on avanud mitmeid alternatiivseid võimalusi õpetajaks hakkamiseks, mistõttu muutub õpetajaskond aina heterogeensemaks. See aga tähendab, et õpetajate toetamisel tuleb arvestada väga erineva ettevalmistuse ja vajadustega õpetajatega (OECD, 2019). Seega on vaja leida tõhusad meetodid, kuidas toetada erinevatel professionaalse arengu etappidel olevaid õpetajaid (Euroopa Komisjon, 2015). Õpetajate toetamise kontekstis räägitakse sageli õpetaja praktilise teadmise loomise toetamisest. Õpetaja praktiline teadmine viitab teadmisele, mis juhib õpetaja igapäevaseid otsuseid ja tegevust (Shulman, 1986) ning võimaldab õpetajal kohaneda pidevalt muutuvate oludega (Fenstermacher, 1994). Seega on praktilise teadmise pidev loomine õpetaja professionaalse arengu lahutamatu osa (Berliner, 2004). Üheks peamiseks viisiks, mis toetab õpetaja praktilise teadmise loomist, on refleksioon (Korthagen, 2004; Toom, 2012). Refleksioon viitab mõtlemisprotsessile, mis aitab kaasa oma kogemuse mõtestamisele (Dewey, 1933; Schön, 1983). Niisiis otsivad teadlased viise, kuidas refleksiooni kaudu õpetajaid toetada (Kansanen et al., 2000; Mena et al., 2012).

#### TÖÖ EESMÄRK JA UURIMISKÜSIMUSED

Käesolev doktoritöö keskendub õpetajate toetamisele refleksiooni kaudu. Täpsemalt on töö üldine eesmärk kirjeldada, kuidas toetab väljatöötatud suunatud refleksiooni protseduur erinevatel professionaalse arengu etappidel olevaid õpetajaid.

Seega on töö eesmärgiks saada aru, kuidas toetab väljatöötatud suunatud refleksiooni protseduur

- erinevatel professionaalse arengu etappidel olevaid õpetajaid nende enda hinnangul;
- õpetajakoolituse üliõpilase praktilise teadmise loomist.
- 

Lähtuvalt doktoritöö eesmärkidest püstitati kaks uurimisküsimust:

1. Kuidas tajuvad erinevatel professionaalse arengu etappidel olevad õpetajad väljatöötatud suunatud refleksiooni protseduuri kui enda toetamise viisi?
  - 1.1. Mis on väljatöötatud suunatud refleksiooni protseduuri rakendamise peamised kasutegurid ja kitsaskohad erineval professionaalse arengu etapil olevate õpetajate hinnangul?
  2. Kuidas toetab väljatöötatud suunatud refleksiooni protseduur õpetajakoolituse üliõpilaste praktilise teadmise loomist õpetamispraktika raames?
    - 2.1. Milliseid praktika olukordi valivad õpetajakoolituse üliõpilased väljatöötatud suunatud refleksiooni protseduuri rakendamisel reflekteerimiseks?
    - 2.2. Millist tüüpi praktilist teadmist toovad õpetajakoolituse üliõpilased välja oma õpetamispraktika erinevate olukordade üle reflekteerimisel?
    - 2.3. Millist tüüpi praktilist teadmist toovad õpetajakoolituse üliõpilased välja erinevatel tingimustel reflekteerides (suulises refleksioonis/kirjalikus refleksioonis; üksinda, koos kaasõppijaga, koos juhendajaga reflekteerides)

Eelpool toodud uurimisküsimustele vastamiseks viidi läbi kaks empiirilist uurimust. Esimesele uurimisküsimusele aitavad vastata uurimused I ja II. Teisele uurimisküsimusele aitab vastata uurimus I.

## TEOREETILINE ÜLEVAADE

### *Õpetaja professionaalne areng*

Õpetaja professionaalse arengu all mõistetakse protsessi, mille tulemusel toimuvad kvalitatiivsed muutused nii õpetaja igapäevases praktikas kui ka vastutuse võtmises oma tegevuse eest (Berliner, 2004; Evans, 2002). Õpetajaks kujunemine esimestel etappidel on põhitähelepanu valdkonna spetsiifiliste teadmiste ja esmaste õpetamisoskuste omandamisel (Berliner, 2004; Simons & Ruijters, 2014), mis vajab olulisel määral välist tõuget ja tuge ning võimalusi korduvalt samu õpetamistegevusi harjutada (Berliner, 2001). Sel perioodil on õpetaja põhitähelepanu temal endal (Beijaard et al., 2004; Fuller, 1969). Oma praktiliste kogemuste teadlik mõtestamine aitab õpetajal võtta järk-järgult suurema vastutuse ühelt poolt oma õpetamise, kuid teiselt poolt ka arengu toetamise eest üldisemalt, kujuneb oskus püstitada põhjendatud eesmäärke, valida sobivad viisid nende saavutamiseks ning oskus seada prioriteete (Berliner, 2001; 2004). Samuti

aitab oma kogemuste järjepidev mõtestamine pöörata enam tähelepanu aine sisule ja õpetaja-õpilase vahelistele suhetele ning pannakse alus oma praktilise teadmise loomisele (Beijaard, 2004; Berliner, 2004). Õpetaja praktilise teadmise loomist iseloomustab igapäevatoos ettetulevate olukordade mõtestamine varasemate teadmiste valguses ning selle tulemusel integreeritud teadmiste süsteemi loomine, mida saab kasutada oma otsuste ja tegevuste juhtimiseks tulevikus. Läbi oma praktika pideva jälgimise ja mõtestamise, selle põhjal varasemate teadmiste seostamise ja uute teadmiste loomise läbib õpetaja oma professionaalse arengu järgmised tasemed, mida iseloomustab teatud igapäeva tegevuste rutiinide loomine, mis võimaldada õpetaja pöörata teadlikku tähelepanu õpilaste õppimise toetamisele ning teadlikult enda tegemiste ja õppijate õppimise juhtimine. Läbi teadliku, sisemiselt motiveeritud ja järjepideva panustamise oma professionaalsesse arengusse jõuavad osad õpetajad ekspertõpetaja tasemele, mida iseloomustab tõeline paindlikkus õpetamises. Õpetaja professionaalse arengu viimastele etappidele jõudmine eeldab aga muuhulgas ka oma teadmiste pidevat kaasajastamist ja uute seoste loomist (Berliner, 2004; Simons & Ruijters, 2014). Eelnevast tulenevalt on ilmne, et õpetaja professionaalse arengu keskmes on oma praktilise teadmise loomine.

### *Õpetaja praktiline teadmine*

Õpetaja praktiline teadmine viitab kõikidele teadmistele, mis õpetajal on oma õpetamise kohta ning mis on järjepidevalt seostatud õpetaja praktiliste kogemustega (Fenstermacher, 1994; Meijer, 2004; Shulman, 1986). Seega võib ühelt poolt öelda, et õpetaja praktiline teadmine tuleneb praktikast, kuna see sõltub suuresti nendest kogemustest, mis õpetajal on. Teiselt poolt võib aga öelda, et õpetaja praktiline on loodud praktika jaoks, kuna see on teadmine, mida õpetajad kasutavad oma igapäevaste otsuste langetamiseks ja tegevuste juhtimiseks (Berliner, 2004; Clandinin & Connelly, 1996; Meijer et al., 1999). Eelnevast tulenevalt on aga selge, et iga õpetaja praktiline teadmine on unikaalne ning raske on üheselt määratleda, millest see koosnema peaks (Clandinin, 2010). Kuigi õpetaja praktilise teadmise sisu on subjektiivne, on võimalik eristada praktilise teadmise tüüpe, mis annavad ülevaate, kuid võrd üldistatavad on õpetaja teadmised (Fenstermacher, 1994; Mena et al., 2015; Toom, 2012). Täpsemalt öeldes eristatakse narratiivset teadmist, mis on kontekstispetsiifiline ning aitab mõista konkreetseid olukordi, järelduslikku teadmist, mis aitab juhtida õpetaja otsuseid ja tegevusi sarnastes olukordades, ning põhjendatud teadmist, mis on kõige enam üldistatav ning mille eesmärk on luua oma kogemustele ja teadmistele tuginedes teooria enda edasise tegevuse jaoks. Kuigi igal õpetaja praktilise teadmise tüübil on õpetaja professionaalses arengus erinev roll, on need kõik lahutamatu vajalikud ekspertõpetajaks kujunemisel.

## ***Refleksioon kui viis õpetaja praktilise teadmise loomise toetamiseks***

Refleksioon on peamine viis õpetaja praktilise teadmise ja seeläbi ka õpetaja professionaalse arengu toetamiseks (Berliner, 2004; Cochran-Smith, 2003; Korthagen, 2004). Refleksioon viitab mõtlemisprotsessile, mille eesmärk on oma praktilisele kogemusele tuginedes uusi teadmisi luua kas üksinda või koostöös teistega (Dewey, 1933; Korthagen, 2004; Schön, 1983). Täpsemalt öeldes aitab oma kogemuse põhjalik lahtimõtestamine teadvustada automaatseid käitumismustreid, hinnanguid ja vaikivaid norme, mida sageli spontaanselt rakendatakse (Schön, 1983). Seega aitab refleksioon harjumuspärase käitumise asemel teha teadlikke valikuid oma otsuste ja tegevuse juhtimiseks ning praktika parendamiseks (Dewey, 1933; Husu et al., 2008; Rodgers, 2002). Sealjuures on refleksiooni oluliseks osaks oma praktilise tegevuse mõtestamisel saadud teadmiste seostamine varasemate teadmistega, soodustades sel viisil sügavat õppimist ning kiiret ligipääsu loodud teadmiste (Billing, 2007; Moon, 2004). Sel viisil aitab refleksioon kaasa selliste teadmiste loomisele, mis on ülekantavad erinevatesse olukordadesse ning aitavad õpetajal teadlikult erinevates olukordades langetada soovitud otsuseid ja tegevussamme. Teadlased on välja toonud mitmed aspektid, mis aitavad saavutada reflekteerimise potentsiaalset kasu – isiklikult tähenduslikele olukordadele keskendumine (Husu et al., 2008; Meijer et al., 2011; Tripp, 1994); oma õpetamise videosalvestiste kasutamine (Borko et al., 2008; Leijen et al., 2009; Zhang et al., 2011); kaaslaste tugi (Brennamar, 2004; Leijen et al., 2012; Meijer et al., 2002; Procee, 2006); suunavad küsimused ja stimuleeritud meenutuse meetodil intervjuu (Husu et al., 2008; Korthagen & Vasalos, 2005; Meijer et al., 2002; Sööt & Leijen, 2012). Seega on empiiriliste uurimuste tulemusel leitud viise, kuidas refleksiooni toetada, kuid ei ole piisavalt terviklikke meetodeid, mis neid tõendus põhiseid aspekte arvesse võtaksid ja oleksid suunatud erinevatel professionaalse arengu etappidel olevate õpetajate toetamiseks.

## **METOODIKA**

### ***Valim***

Käesoleva doktoritöö raames viidi läbi kaks uurimust. Esimeses uurimuses osales 21 õpetajakoolituse üliõpilast kolmelt erinevalt õppekaval: seitse üliõpilast õppis koolieelse lasteasutuse õpetaja õppekaval, kaheksa põhikooli mitme aine õpetaja õppekaval ja kuus klassiõpetaja õppekaval. Kõik uurimuses osalenud üliõpilased sooritasid uurimuse hetkel oma kohustuslikku praktikat. Koolieelse lasteasutuse õpetaja õppekava üliõpilased olid sooritamas oma viimast diplomipraktikat ja klassiõpetaja õppekava üliõpilased oma teise kooliastme praktikat. Mõlema õppekava üliõpilastel oli varasem õpetamispraktika kogemus. Põhikooli mitme aine õpetaja õppekava üliõpilased olid sooritamas oma päris esimest õpetamispraktikat. Üliõpilastel oli uurimuses osalemine vabatahtlik. Kuigi klassiõpetaja ja põhikooli mitme aine õpetaja õppekava üliõpilastel oli uurimuses rakendatud suunatud refleksiooni protseduur õpetamispraktika kohustuslik osa, oli neid

võimalus loobuda uurimuses osalemisest. Koolieelse lasteasutuse õpetaja õppekava üliõpilaste jaoks oli rakendatud suunatud refleksiooni protseduur vabatahtlik praktikaülesanne. Teises uurimuses osales 80 õpetajat erinevatest haridusasutustest üle kogu Eesti: lasteaedadest (n=44), üldhariduskoolidest (n=33), kutsekoolidest (2), huvikoolist (1). Uurimuses osalesid õpetajad, kes läbisid uurimuse hetkel refleksiooniteemalist täiendkoolitust. Koolitusel osalemine oli õpetajatele tasuta. Kuigi uurimuses rakendatud suunatud refleksiooni protseduur oli koolituse kohustuslik osa, oli õpetajatel võimalus loobuda uurimuses osalemisest.

### ***Andmete kogumine***

*Suunatud refleksiooni protseduur.* Mõlemas uurimuses tegid osalejad läbi suunatud refleksiooni protseduuri. Esimeses uurimuses tegid õpetajakoolituse üliõpilased suunatud refleksiooni protseduuri läbi ning neilt koguti uurimuse jaoks tähenduslike olukordade videosalvestised, suuliste refleksioonide helisalvestised ja kirjalikud refleksioonid. Teises uurimuses oli õpetajatel võimalus valida, kas nad teevad suunatud refleksiooni protseduuri ise läbi või toetavad oma praktika, algajat kolleegi või kogunud kolleegi selle protseduuri läbitegemisel. Teises uurimuses ei kogutud õpetajatelt suunatud refleksiooni protseduuri läbitegemisel loodud andmeid. Protседuuri läbitegemisel saadud kogemusi kasutati hiljem tagasiside küsimiseks.

Suunatud refleksiooni protseduur koosnes neljast etapist. Esimeses etapis lasid osalejad ühte enda õppetegevust filmida. Enne filmimist koguti kõikidelt osapooltelt informeeritud nõusolekud. Teises etapis vaatasid osalejad oma tegevuse salvestise läbi ja valisid selle põhjal kaks olukorda, mille üle järgnevalt põhjalikumalt reflekteerida. Osalejaid suunati valima ühte olukorda, millega nad rahule jäid, ja teist olukorda, mida nad sooviksid muuta. Kolmandas etapis viisid osalejad etteantud küsimustele toetudes läbi kahe väljavalitud olukorra suulise refleksiooni. Esimeses uurimuses said osalejad valida, kas nad viivad suulise refleksiooni läbi üksinda, koos kaasüliõpilasega või koos praktikajuhendajaga. Teises uurimuses viisid osalejad suulise refleksiooni läbi koos oma kolleegiga või toetasid teise õpetaja suulist refleksiooni. Neljandas etapis kirjutasid osalejad etteantud küsimustele toetudes kahe väljavalitud olukorra kirjaliku refleksiooni.

*Poolstruktureeritud tagasiside intervjuud.* Pärast suunatud refleksiooni protseduuri läbitegemist viidi esimeses uurimuses õpetajakoolituse üliõpilastega läbi poolstruktureeritud intervjuud, mille eesmärk oli koguda üliõpilastelt tagasisidet. Intervjuud toimusid grüpiintervjuudena, et koguda ühiselt jagatud arvamusi. Kui üliõpilased ei saanud grüpiintervjuus osaleda, koguti nendelt tagasiside eraldi intervjuuna (n=2) või kirjalikult (n=3). Sõltumata tagasiside kogumise viisist, olid üliõpilaste arvamused võrdlemise sarnased. Kõik intervjuud audiosalvestati osalejate nõusolekul.

*Poolstruktureeritud grüpiarutelud.* Teises uurimuses koguti õpetajate tagasisidet suunatud refleksiooni protseduuri läbitegemise kohta poolstruktureeritud grüpiarutelude käigus. Grüpiarutelud toimusid kahes etapis. Esiteks arutasid



osalejad väikestes gruppides, mis olid suunatud refleksiooni protseduuri läbitemegemise kasutegurid ja väljakutsed ning kuidas nad seda protseduuri edasi arendaksid. Väikesed grupid moodustati selle põhjal, kuidas õpetajad suunatud refleksiooni protseduuri läbi tegid: ise, praktikanti toetades, algajat õpetajat toetades või kogenud õpetajat toetades. Iga väikene grupp koostas oma arutelu põhjal plakati. Teiseks andis iga väikene grupp ülevaate oma tagasisidest kogu grupile, millele järgnes ühine arutelu. Grupiarutelude järel koguti kokku gruppide plakateid. Lisaks tegi uurija arutelude käigus märkmeid uurija logisse, et jäädvustada mõtted, mis ei olnud plakatitele üles märgitud.

### ***Andmete analüüs***

Esimese ja teise uurimuse käigus kogutud andmete analüüsimiseks kasutati kvalitatiivseid meetodeid. Esimeses uurimuses õpetajakoolituse üliõpilastelt kogutud tähenduslike olukordade analüüsimisel ning suulistes ja kirjalikes refleksioonides väljatoodud õpetaja praktilise teadmise tüüpide analüüsimisel kasutati deduktiivset sisuanalüüsi (Mayring, 2000). Tähenduslike olukordade analüüs võttis aluseks õpetamisprotsessi raamistiku (cf. Herbart, 1985; Kansanen & Meri, 1999; Toom, 2006) ning refleksioonide analüüs õpetaja praktilise teadmise tüüpide raamistiku (Fenstermacher, 1994; Mena et al, 2015; Toom, 2012). Esimeses ja teises uurimuses osalejatelt kogutud tagasiside analüüsimisel kasutati temaatilist analüüsi (Ryan & Bernard, 2003). Kvalitatiivse andmeanalüüsi valiidsuse suurendamiseks kasutati uurijate vahelist triangulatsiooni (Denzin, 1970). Lisaks kvalitatiivsele andmeanalüüsile kasutati uurimuses ka Pearsoni hii-ruut testi, et võrrelda üliõpilaste poolt välja toodud praktilise teadmise tüüpide erinevust.

### **TULEMUSED JA ARUTELU**

Käesoleva töö eesmärk oli kirjeldada, kuidas toetab väljatöötatud suunatud refleksiooni protseduur erinevatel professionaalse arengu etappidel olevaid õpetajaid. Uurimuse tulemused viitavad sellele, et antud protseduur aitab alustavatel õpetajatel märgata õpetamisprotsessi erinevaid aspekte. Täpsemalt näitavad üliõpilaste poolt välja valitud tähenduslike olukordade analüüsid, et nad valisid reflekteerimiseks nii olukordi, mis olid seotud nii ainetundmise kui ka õpetaja-õppija vahelise suhte ja õppijate õppimise toetamisega. Sealjuures on viimati nimetatud aspektid iseloomulikud kogenud õpetajatele ning algaja õpetaja tähelepanu on esialgu iseendal ja oma ainealastel teadmistel (Berliner, 2004). Seega võib öelda, et väljatöötatud suunatud refleksiooni protseduur toetab alustavate õpetajate professionaalset arengut, aidates neil märgata õpetamissituatsioonis enam kui arenguliselt iseloomulik. Samal ajal aga tõid kogenud õpetajad välja, et oma õpetamisvideo vaatamine aitas neil märgata aspekte iseenda kohta, millest nad teadlikud olid. Eelkõige tõid õpetajad välja, et nad märkasid enda tugevusi ja olukordi, mis läksid hästi. Uurijad on välja toonud, et kogenud õpetajad keskenduvad peamiselt õpilaste õppimise toetamisele ning mõtestavad enamasti neid

olukordi, mis ei lähe plaanipäraselt (Berliner, 2004). Seega aitas väljatöötatud suunatud refleksiooni protseduur teadvustada oma tugevusi, mis jäävad kogenud õpetajal tihtilugu teadvustamata. Kokkuvõttes võib öelda, et uurimuse tulemused viitavad oma õpetamise videote vaatamise kasulikkusele õpetaja professionaalse arengu erinevatel etappidel.

Lisaks sellele, et videosalvestis võimaldas näha õpetamisolukordi terviklikult ning märgata ka aspekte, mis õnnestusid, suunas väljatöötatud protseduur õpetajaid valima kaks enda jaoks tähenduslikku olukorda, millele edasises refleksioonis põhjalikumalt keskenduda. Sealjuures oli üks tähenduslikest olukordadest jõustav ehk olukord õpetamisprotsessist, millega ise rahule jääd. Üliõpilaste refleksioonide analüüsimine tõi välja, et jõustavate olukordade üle reflekteerides tõi osalejad välja enam teoreetilisi põhjendusi ja vähem konkreetseid võtteid olukordade lahendamiseks kui keeruliste olukordade üle reflekteerides. Seega viitavad tulemused sellele, et jõustavate olukordade üle reflekteerimine toetab õpetaja praktilise teadmise loomist, mis on üldistatav erinevatesse olukordadesse. Ka üliõpilastelt esimeses uurimuses kogutud tagasiside ja õpetajatelt teises uurimuses kogutud tagasiside viitasid sellele, et refleksiooniprotseduuri läbitegemine oli õpetajate jaoks jõustav. Ühelt poolt andis enda tugevuste märkamine enesekindlust. Teiselt poolt aitas protseduur jõuda taipamiseni ja märkamiseni, mis viisid muutusteni õpetaja igapäevapraktikas. Seega viitavad uurimuse tulemused sellele, et väljatöötatud suunatud protseduur toetab õpetajaid viisil, mida nad tajuvad jõustavana.

Üliõpilaste refleksioonide analüüsimine tõi esile, et kaaslane roll suulises refleksioonis toetas enam üldistava teadmise loomist kirjaliku refleksiooni etapis. Täpsemalt öeldes olid need üliõpilased, kes viisid suulise refleksiooni läbi koos oma kaasüliõpilasega või praktikajuhendajaga oma kirjalikes refleksioonides vähem hinnangulised kui üliõpilased, kes viisid suulise refleksiooni üksinda läbi. Seega viitavad uurimuse tulemused, et kaaslane aitab refleksiooniprotsessis olukordi lahti mõtestada ning hoiduda pelgalt hinnangute andmisest. Ka üliõpilastelt esimeses uurimuses ning õpetajatelt teises uurimuses kogutud tagasiside rõhutas kaaslane rolli olulisust refleksiooniprotsessis. Ühelt poolt väärtustati võimalust oma mõtteid ja tähelepanekuid jagada. Ainuüksi oma mõtete sõnastamise aitab anda sellele konkreetse vormi ning vajadusel märgata ebakõla oma mõtlemises. Teiselt poolt hinnati aga võimalust näha olukorda kaaslane vaatenurgast ning saada toetavat tagasisidet ja konstruktiivseid soovitusi. Seega viitavad uurimuse tulemused sellele, et õpetajate professionaalse arengu toetamises erinevatel etappidel on oluline roll kaaslaste toel.

Mõlemas uurimuses osalejatelt kogutud tagasiside tõi esile olulise kitsaskohad õpetaja professionaalse arengu toetamises. Nimelt viitavad tulemused sellele, et erinevatel professionaalse arengu etappidel olevad õpetajad on ebakindlad seoses oma teoreetiliste teadmiste ja praktilise kogemuste seostamisega. Üliõpilaste valmistab raskusi konkreetsete olukordade mõtestamine oma teoreetiliste teadmiste valguses, kuna nad tundsid, et neid ei ole piisavalt spetsiifilisi teadmisi, mis vastaksid väljavalitud olukordadele. Kogenud õpetajate ebakindlus oli seotud nende teoreetiliste teadmiste asjakohasusega, kuna uusi teadmisi tuleb haridus-

valdkonnas kiiresti juurde. Sealjuures väljendasid erineval professionaalse arengu etapil olevad õpetajad teadmatust, kuidas toetada oma teoreetiliste teadmiste täiendamist ja kaasajastamist. Samal ajal on just täpne ja asjakohane teoreetiline teadmine see, mis aitab õpetajal langetada tõenduspõhiseid otsuseid ja annab talle autoriteedi, mis omakorda toob kaasa autonoomsuse oma otsustes (Simons & Ruiters, 2004). Seega viitavad käesoleva doktoritöö tulemused vajadusele toetada teadlikumalt õpetajate oskust leida teoreetilist teadmist ja seostada see oma praktilise kogemusega.

## **KOKKUVÕTE**

Käesoleva uurimuse tulemused annavad ülevaate sellest, kuidas toetab väljatöötatud suunatud refleksiooni protseduur erinevatel professionaalse arengu etappidel olevaid õpetajaid. Uurimuse tulemused viitavad sellele, et väljatöötatud protseduur sobib erineva kogemusega õpetajate toetamiseks, pakkudes mitmekülgeid toetusmeetmeid alustades videosalvestisest ja tähenduslike olukordade valimisest ning lõpetades kaaslaste toe ja suunavate küsimustega. Uurimuse tulemused osutavad sellele, et sama protseduuri erinevaid aspekte on võimalik kohandada õpetajate erinevate vajaduste ja ootustega. Seega on tegemist paindliku meetodiga, mida saab võtta aluseks erinevatel professionaalse arengu etappidel olevate õpetajate toetamiseks.

## APPENDICES

### Appendix 1. Guiding Questions for the Oral Reflection

1. What is happening?
  - 1.1 What can you see/hear yourself doing?
  - 1.2 What can you see/hear the students doing?
  - 1.3 Is there a relationship between what you are doing and what the students are doing?
  
2. Why do you think this is happening?
  - 2.1 Which student behaviours are caused by your behaviour?
  - 2.2 Which behaviour of yours is caused by the students' behaviour?
  - 2.3 What makes the incident a critical incident for you?
  
3. Relating the incident to theory.
  - 3.1 Which teacher role does the incident relate to?
  - 3.2 How does the literature support your causal explanation for section 2 (in the case of the empowering incident)?
  - 3.3 What suggestions does the literature offer for solving this problem (in the case of the challenging incident)?
  
4. What have you learnt from this event so far? How will you make use of the things that you have learned from this event?

## Appendix 2. Guiding Questions for the Written Reflection

1. Relating the incident to theory.
  - 1.1 Which teacher role does the incident relate to?
  - 1.2 How does the literature support your causal explanation for section 2 (in the case of the empowering incident)?
  - 1.3 What suggestions does the literature offer for solving this problem (in the case of the challenging incident)?
  
2. What will be your future action?
  - 2.1 What will be your future action regarding this incident?
  - 2.2 What do you hope to achieve by this action?
  - 2.3 What personal principles underlie your choice of action?
  
3. How will you make use of the things you have learned from this event?

### Appendix 3. Questions for the semi-structured interview

1. How would you describe your experience with the guided reflection procedure? Please explain.
2. What were the benefits of carrying out the guided reflection procedure? Please explain.
3. What were the challenges of carrying out the guided reflection procedure. What kind of difficulties you encountered? Please explain.
4. How useful was the procedure in terms of the goals you set for your teaching practice? How did the procedure supported you in achieving the goals you set for your teaching practice? Please explain.
5. How would you develop this procedure further? Please explain.
6. How clear were the instructions and consent forms. What would you change in these?

## REFERENCES

- Allas, R., Leijen, Ä., & Toom, A. (2017). Supporting the construction of teacher's practical knowledge through different interactive formats of oral reflection and written reflection. *Scandinavian Journal of Educational Research*, 61(5), 600–615. DOI: <http://dx.doi.org/10.1080/00313831.2016.1172504>
- ALLEA (2017). *The European Code of Conduct for Research Integrity* (Revised Edition). All European Academies, Berlin 2017.
- Anspal, T., Leijen, Ä., Löfström, E. (2019). Tensions and the Teacher's Role in Student Teacher Identity Development in Primary and Subject Teacher Curricula. *Scandinavian Journal of Educational Research*, 63(5), 679–695. doi: <http://doi.org/10.1080/00313831.2017.1420688>.
- Aus, K., Jögi, A.-L., Poom-Valickis, K., Eisenschmidt, E. & Kikas, E. (2017). Associations of newly qualified teachers' beliefs with classroom management practices and approaches to instruction over one school year. *European Journal of Teacher Education*, 40 (1), 28–45.
- Bakkenes, I., Vermunt, J. D., & Wubbels, T. (2010). Teacher learning in the context of educational innovation: Learning activities and learning outcomes of experienced teachers. *Learning and Instruction*, 20(6), 533–48. <https://doi.org/10.1016/j.learninstruc.2009.09.001>
- Beijaard, D., Meijer, P. C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. *Teaching and Teacher Education*, 20(2), 107–128.
- Beijaard, D., Meijer, P. C., Morine-Dersheimer, G., & Tillema, H. (2005). Trends and Themes in Teachers' Working and Learning Environment. In D. Beijaard, P. C. Meijer, G. Morine-Dersheimer, & H. Tillema (Eds.), *Teacher Professional Development in Changing Conditions* (pp. 9–23). Dordrecht: Springer.
- Berg, B. L. (2001). *Qualitative research methods for social sciences* (pp. 238–267) (4th ed.). Boston, MA: Allyn and Bacon.
- Berliner, D. (1988). The development of expertise in pedagogy. Charles W. Hunt Memorial Lecture presented at the *Annual Meeting of the American Association of Colleges for Teacher Education* (New Orleans, LA, February 17–20, 1988).
- Berliner, D. C. (1994). Expertise: The wonders of exemplary performance. In John N. Mangieri and Cathy Collins Block (Eds.), *Creating powerful thinking in teachers and students* (pp. 141–186). Ft. Worth, TX: Holt, Rinehart and Winston.
- Berliner, D. C. (2001). Learning about and learning from expert teachers. *International Journal of Educational Research*, 35, 463–482. doi: [http://doi.org/10.1016/S0883-0355\(02\)00004-6](http://doi.org/10.1016/S0883-0355(02)00004-6).
- Berliner, D. C. (2004). Describing the Behavior and Documenting the Accomplishments of Expert Teachers. *Bulletin of Science, Technology & Society*, 24, 200–212. doi: <http://doi.org/10.1177/0270467604265535>.
- Biesta, G., Priestley, M., & Robinson, S. (2015). The role of beliefs in teacher agency, *Teachers and Teaching: theory and practice*, 21(6), 624–640, DOI: 10.1080/13540602.2015.1044325
- Billing, D. (2007). Teaching for transfer of core/key skills in higher education: Cognitive skills. *Higher Education*, 53, 483–516.
- Borko, H., Jacobs, J., & Koellner, K. (2010). Contemporary Approaches to Teacher Professional Development. In P. Peterson, E. Baker, and B. McGraw (Eds.), *International Encyclopaedia of Education* (3<sup>rd</sup> ed., pp. 548–556). Elsevier: Oxford.
- Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. E. (2008). Video as a tool for fostering

- productive discourse in mathematics professional development. *Teaching and Teacher Education*, 24, 417–436.
- Brennammar, K. (2004). *Conscious Action Through Conscious Thinking – Reflection Tools in Experiential Learning*. Public seminar. Amsterdam: Amsterdam University Press.
- Bressman, S., Winter, J.S., & Efron, S.E. (2018). Next generation mentoring: Supporting teachers beyond induction. *Teaching and Teacher Education: An International Journal of Research and Studies*, 73(1), 162–170.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32–42.
- Caena, F. (2011). *Literature review. Teachers' core competences: requirements and development*. European Commission.
- Calderhead, J. (1996). Teachers: beliefs and knowledge. In D. C. Berliner, & R. C. Calfee (Eds.), *Handbook of Educational Psychology* (pp. 709–725). New York: Macmillan.
- Clandinin, D. J. (2010). Learning to teach: A question of knowledge. *Education Canada*, 40(1), 28–30.
- Clandinin, D. J., & Connelly, F. M. (1996). Teachers' Professional Knowledge Landscapes: Teacher Stories—Stories of Teachers—School Stories—Stories of Schools. *Educational Researcher*, 25(3), 24–30. <https://doi.org/10.3102/0013189X025003024>
- Clark, C., & Lampert, M. (1986). The Study of Teacher Thinking: Implications for Teacher Education. *Journal of Teacher Education*, 37(5), 27–31. <https://doi.org/10.1177/002248718603700506>
- Cochran-Smith, M. C. (2003). Learning and Unlearning: The Education of Teacher Educators. *Teaching and Teacher Education*, 19(1), 5–28.
- Connelly, F. M. & Clandinin, D. J. (1990). Stories of Experience and Narrative Inquiry. *Educational Researcher*, 19(5), 2–14.
- Creswell, J. W. (2007) *Qualitative Inquiry and Research Design: Choosing among Five Approaches* (3rd Edition). Thousand Oaks: SA.
- Danielowich, R. (2014). Shifting the reflective focus: Encouraging student teacher learning in video-framed and peer-sharing contexts. *Teachers and Teaching: theory and practice*, 20(3), 264–288. <http://doi.org/10.1080/13540602.2013.848522>.
- Darling-Hammond, L., Chung Wei, R., Alethea, A., Richardson, N., & Orphanos, S. (2009). *Professional Learning in The Learning Profession: A Status Report on Teacher Development in The United States and Abroad*. Stanford, CA: National Staff Development Council and The School Redesign Network.
- Day, C., Sammons, P., Stobart, G., Kington, A., & Gu, Q. (2007). *Teachers matter: Connecting lives, work and effectiveness*. New York: McGraw Hill.
- Denzin, N. (1970). *The research act: a theoretical introduction to sociological methods*. New Brunswick, NJ: Transaction Publishers.
- Desimone, L. M. (2009). Improving Impact Studies of Teachers' Professional Development: Toward Better Conceptualizations and Measures. *Educational Researcher*, 38(3), 181–199.
- Dewey, J. (1933). *How we think*. Buffalo, NY: Prometheus Books.
- Eisenschmidt, E., & Oder, T. (2018). Does mentoring matter? On the way to collaborative school culture. *Educational Process: International Journal*, 7(1), 7–12.
- Eisner, E. W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. New York: Macmillan.
- Erss, M., Mikser, R., Löfström, E., Ugaste, A., Rõuk, V., & Jaani, J. (2014). Teachers' Views of Curriculum Policy: The Case of Estonia. *British Journal of Educational Studies*, 62(4), 393–411.



- Estonian Code of Conduct for Research Integrity, (2017). Tartu: Centre for ethics, University of Tartu.
- European Commission (2013). *The Attractiveness of the teaching profession: Study on Policy Measures (vol 1). Final report*. Brussels: EC.
- European Commission (2015). *Shaping career-long perspectives on teaching. A guide on policies to improve Initial Teacher Education*. Brussels: European Commission.
- European Commission/EACEA/Eurydice (2018). *Teaching Careers in Europe: Access, Progression and Support. Eurydice Report*. Luxembourg: Publications Office of the European Union.
- Evans, L. (2002). What is teacher development? *Oxford Review of Education*, 28(1), 123–137.
- Feiman-Nemser, S. (2001). From Preparation to Practice: Designing A Continuum to Strengthen and Sustain Teaching. *Teachers College Record*, 103(6), 1013–1055.
- Fenstermacher, G. D. (1994). The knower and the known: the nature of knowledge in research on teaching. *Review of Research on Teaching*, 20, 1–54.
- Flores, M. A. (2018). Linking teaching and research in initial teacher education: knowledge mobilisation and research-informed practice. *Journal of Education for Teaching*, 44(5), 621–636.
- Flores, M. A. (2020). Feeling like a student but thinking like a teacher: a study of the development of professional identity in initial teacher education, *Journal of Education for Teaching*, 46(2), 145–158.
- Fuller, F. F. (1969). Concerns of teachers: A developmental conceptualization. *American Education Research Journal*, 6, 207–226.
- Fund, Z. (2010). Effects of communities of reflecting peers on student-teacher development – including in-depth case studies. *Teachers and Teaching: theory and practice*. 16(6), 679–701.
- Gibbs, G. (1988). *Learning by Doing: A guide to teaching and learning methods*. Further Education Unit. Oxford Polytechnic: Oxford.
- Given, L. M. (Ed.). (2008). *The SAGE encyclopedia of qualitative research methods*. Thousand Oaks, California: SAGE Publication, Inc.
- Gratton, C., & Jones, I. (2004). *Research Methods for Sport Studies* (pp. 140–157). New York, NY: Routledge.
- Grimmett, P. P., & MacKinnon, A. M. (1992). Craft knowledge and the education of teachers. *Review of Research in Education*, 18(1), 385–456.
- Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, reimagining teacher education. *Teachers and Teaching: Theory and Practice*, 15(2), 273–289.
- Gümnaasiumi riiklik õppekava* [National curriculum for secondary schools] (2018). Vabariigi Valitsuse 8. veebruari 2018. a määrus. Riigi Teataja 2018/9.
- Hammerness, K. (2006). From Coherence in Theory to Coherence in Practice. *Teachers College Record*, 108(7), 1241–1265.
- Hammerness, K., Darling-Hammond, L., & Bransford, J. (2005). How teachers learn and develop. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 358–389). San Francisco: Jossey-Bass.
- Hatch, T., & Grossman, P. (2009). Learning to look beyond the boundaries of representation. Using technology to examine teaching (overview for a digital exhibition: learning from the practice of teaching). *Journal of Teacher Education*, 60(1), 70–85.

- Herbart, J. F. (1835) In Wendt, H. (1835/1841). Umriß pädagogischer Vorlesungen von Johan Friedrich Herbart. Verausgegeben und mit erläuternden Anmerkungen versehen von Hermann Wendt. Leipzig: Verlag von Philipp Reclam jun.
- Howell, D. C. (2006). *Statistical methods for psychology* (6th ed.). Belmont, CA: Thomson.
- Huff Sisson, J. (2016). The significance of critical incidents and voice to identity and agency. *Teachers and Teaching: theory and practice*, 22(6), 670–682.
- Husu, J. (2003). Constructing ethical representations from the teacher's pedagogical practice: A case of prolonged reflection. *Interchange*, 34(1), 1–21.
- Husu, J., Toom, A., & Patrikainen, S. (2008). Guided reflection as a means to demonstrate and develop student teachers' reflective competencies. *Reflective Practice*, 9(1), 37–51.
- Johns, C. (2000). *Becoming a Reflective Practitioner*. Oxford: Blackwell.
- Kansanen, P. (2014). The Deutsche Didaktik and the American Research on Teaching. In P. Kansanen (Ed.), *Discussions on Some Educational Issues VI* (pp. 97–118). Research Report 145. Department of Teacher Education, University of Helsinki.
- Kansanen, P., & Meri, M. (1999). The didactic relation in the teaching-studying-learning process. In B. Hudson, F. Buchberger, P. Kansanen, & H. Seel (Eds.), *Didaktik/ Fachdidaktik as Science(-s) of the Teaching Profession. TNTEE Publications*, 2(1), 107–116.
- Kansanen, P., Tirri, K., Meri, M., Krokfors, L., Husu, J., & Jyrhämä, R. (2000). *Teachers' pedagogical thinking. Theoretical landscapes, practical challenges*. New York: Peter Lang.
- Kelchtermans, G. (2004). CPD for professional renewal: moving beyond knowledge for practice. In C. Day & J. Sachs (Eds.), *International Handbook on the Continuing Professional Development of Teachers* (pp. 217–237). Maidenhead: Open University Press.
- Koolieelse lasteasutuse riiklik õppekava* [National curriculum for preschool child care institutions] (2011). Vabariigi Valitsuse 29. mai 2008. a määrus nr 87. Riigi Teataja 2008/23/152.
- Kori, K., Pedaste, M., Leijen, Ä., & Mäeots, M. (2014). Supporting reflection in technology-enhanced learning. *Educational Research Review*, 11, 45–55.
- Korthagen, F. A. J. (2004). In search of the essence of a good teacher: Towards a more holistic approach in teacher education. *Teaching and Teacher Education*, 20, 77–97.
- Korthagen, F. A. J., & Vasalos, A. (2005). Levels in reflection: Core reflection as a means to enhance professional growth. *Teachers and Teaching: Theory and Practice*, 11(1), 47–71.
- Krull, E. (2002). *Eesti õpetaja pedagoogilised arusaamad, arvamused ja hoiakud millenniumivahetusel. Küsitluse "Töö klassis õpetaja pilguga" põhijäreldused*. [Estonian teachers' educational attitudes and beliefs at turn of the millennium. Main conclusions from the inquiry "Working in the classroom seen through teachers' eyes".] Tartu: Tartu Ülikooli Kirjastus.
- Krull, E.; Oras, K.; Sisask, S. (2007). Differences in teachers' comments on classroom events as indicators of their professional development. *Teaching and Teacher Education*, 23(7), 1038–1050.
- La Velle, L. & Flores, M. A. (2018). Perspectives on evidencebased knowledge for teachers: acquisition, mobilisation and utilisation. *Journal of Education for Teaching*, 44(5), 524–538.

- Lamb, P., & Lane, K. (2012). Enhancing the spaces of reflection: A buddy peer-review process within physical education initial teacher education. *European Physical Education Review*, 19(1), 21–38.
- Leijen, Ä., & Pedaste, M. (2018). Pedagogical beliefs, instructional practices, and opportunities for professional development of teachers in Estonia. In H. Niemi, A. Toom, A. Kallioniemi, & J. Lavonen (Eds.), *The teacher's role in the changing globalizing world* (pp. 33–46). BRILL.
- Leijen, Ä., Lam, I., Wildschut, L., & Simons, P. R. J. (2009). Difficulties teachers report about students' reflection: Lessons learned from dance education. *Teaching in Higher Education*, 14(3), 315 – 326.
- Leijen, Ä., Valtna, K., Leijen, D. A. J., & Pedaste, M. (2012). How to determine the quality of students' reflections? *Studies in Higher Education*, 37(2), 203–217.
- Leinhardt, G. (1990). Capturing craft knowledge in teaching. *Educational Researcher*, 19(2), 18–25.
- Lepik, M., Elvisto, T., Oder, T., & Talts, L. (2013). Õpetajate üldpedagoogiliste oskuste struktuur ja tüüpprofiilid. In E. Krull, Ä. Leijen, M. Lepik, J. Mikk, L. Talts ja T. Õun (Eds.), *Õpetajate professionaalne areng ja selle toetamine* (pp. 248–273). Tallinn: Eesti Ülikoolide Kirjastus.
- Lieberman, A., & Pointer Mace, D. (2008). Teacher Learning: the Key to Educational Reform. *Journal of Teacher Education*, 59, 226–234.
- Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Program Evaluation*, 30, 73–84.
- Malva, L., & Leijen, Ä. (2020). Läbilõikeline ülevaade üliõpilaste hinnangutest Tartu Ülikooli õpetajakoolituse õppekavade sidususele 2014.–2018. aastal. *Eesti Haridus-teaduste Ajakiri*, 8(1), 100–127.
- Mayring, P. (2000). Qualitative content analysis. *Forum: Qualitative Social Research*, 1(2), Art. 20.
- Meijer, P. C. (2010). The Teacher Education Knowledge Base: Experienced teachers' craft knowledge. In E. Baker, P. Peterson & B. McGaw (Eds.), *International Encyclopedia of Education*, 3rd Edition (vol. 7; pp. 642–649). Oxford: Elsevier.
- Meijer, P. C., de Graaf, G., & Meirink, J. (2011). Key experiences in student teachers' development. *Teachers and Teaching: theory and practice*, 17(1), 115–129.
- Meijer, P. C., Verloop, N., & Beijaard, D. (1999). Exploring language teachers' practical knowledge about teaching reading comprehension. *Teaching and Teacher Education*, 13, 59–84.
- Meijer, P. C., Zanting, A., & Verloop, N. (2002). How can student teachers elicit experienced teachers' practical knowledge? Tools, suggestions, and significance. *Journal of Teacher Education*, 53(5), 406–419.
- Meirink, J. A., Meijer, P. C., & Verloop, N. (2007). A Closer Look at Teachers' Individual Learning in Collaborative Settings. *Teachers and Teaching: theory and practice*, 13(2), 145–164.
- Mena, J. M., García, M. L., & Tillema, H. H. (2012). Student teacher reflective writing: what does it reveal? *European Journal of Teacher Education*, 36(2), 147–163.
- Mena, J., García, M., Clarke, A., & Barkatsas, A. (2015). An analysis of three different approaches to student teacher mentoring and their impact on knowledge generation in practicum settings. *European Journal of Teacher Education*, DOI: <http://doi.org/10.1080/02619768.2015.1011269>

- Mikser, R., Kärner, A., & Krull, E. (2016). Enhancing teachers' curriculum ownership via teacher engagement in state-based curriculum-making: the Estonian case. *Journal of Curriculum Studies*, 48(6), 833–855.
- Mikser, R., Veisson, M., Tuul, M., Õun, T., ja Kööp, K. (2020). Lasteaiaõpetajate hinnangud ja selgitused oma töö raskuse muutumisele: professionaliseerumine kui sümboolne kapital. *Eesti Haridusteaduste Ajakiri*, 8(1), 128–155.
- Moon, J. A. (2004). *Reflection in learning and professional development*. New York: Routledge-Falmer.
- Morse, J. M. (2003). Principles of mixed methods and multimethod research design. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural research* (pp. 189–208). Thousand Oaks: Sage.
- OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, <https://doi.org/10.1787/9789264196261-en>.
- OECD (2015). *Education at a Glance 2015: OECD Indicators*. OECD Publishing: Paris.
- OECD (2018). *Education at a Glance 2018: OECD Indicators*. OECD Publishing: Paris.
- OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*. TALIS, OECD Publishing: Paris.
- Okas, A., van der Schaaf, M., & Krull, E. (2013). Algajate ja kogenud õpetajate praktilise teadmise avaldumise tunnisündmuste kommenteerimisel stimuleeritud meenutuse meetodil. *Eesti Haridusteaduste Ajakiri*, 1, 25–45.
- Oliver, D. G., Serovich, J. M., & Mason, T. L. (2005) Constraints and opportunities with interview transcription: towards reflection in qualitative research. *Social Forces*, 84(2), 1273–1289.
- Oosterheert, I. E., & Vermunt, J. D. (2001). Individual differences in learning to teach: relating cognition, regulation and affect. *Learning and Instruction*, 11(2), 133–156.
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing Teacher Professional Learning. *Review of Educational Research*, 81(3), 376–407.  
doi: <http://dx.doi.org/10.3102/0034654311413609>.
- Oras, K., Liivat, A., & Krull, E. (2013). Algajate õpetajate tunnianalüüsiostkuste arendamine videosalvestatud tundide juhendatud analüüsiga. In E. Krull, Ä. Leijen, M. Lepik, J. Mikk, L. Talts, & T. Õun (Eds.), *Projekti „Õpetajate professionaalne areng ja selle toetamine“ tulemused õpetajakoolituse teenistuses* (pp. 207–220). Artiklite Kogumik. Tartu-Tallinn: Eesti Ülikoolide Kirjastus.
- Õpetajate koolituse raam nõuded* [Framework requirements for teacher education] (2019). Vabariigi Valitsuse 16. augusti 2019. a määrus nr 35. Riigi Teataja 2019/10.
- Patrikainen, S., & Toom, A. (2004). *Stimulated recall – a method to study teacher's pedagogical thinking, knowledge, and action*. Paper presented at the NERA 2004 Annual Conference, Reykjavik, Iceland.
- Patton, M. (1990). *Qualitative evaluation and research methods* (pp. 169–186). Beverly Hills, CA: Sage.
- Pedaste, M., Leijen, Ä., Poom-Valickis, K., & Eisenschmidt, E. (2019). Teacher professional standards to support teacher quality and learning in Estonia. *European Journal of Education*, 54(3), 389–399.
- Piowar, V., Thiel, F., & Ophardt, D. (2013). Training Inservice Teachers Competencies in Classroom Management. A Quasi-Experimental Study with Teachers of Secondary Schools. *Teaching and Teacher Education*, 30, 1–12.
- Põhikooli riiklik õppekava* [National curriculum for basic schools] (2018). Vabariigi Valitsuse 14. veebruari 2018. a määrus. Riigi Teataja 2018/8.

- Poom-Valickis, K., & Lõfström, E. (2014). Pikiuuring õpetajaks õppijate professionaalse identiteedi kujunemisest. *Eesti Haridusteaduste Ajakiri*, 2(1), 241–271.
- Poom-Valickis, K., Oder, T., Kislenko, K., Talts, L., Elvisto, T., & Lepik, M. (2014). Teachers' Beliefs Regarding their Professional Role. In A. Liimets & M. Veisson (Eds.), *Teachers and Youth in Educational Reality* (pp. 61–80). Frankfurt am Main: Peter Lang Verlag.
- Procee, H. (2006). Reflection in education: A Kantian epistemology. *Educational Theory*, 56(3), 237–362.
- Rodgers, C. R. (2002). Defining Reflection: Another Look at John Dewey and Reflective Thinking. *Teachers College Record*, 104(4), 842–866.
- Ryan, G. W., & Bernard, H. R. (2003). Techniques to Identify Themes. *Fields Methods*, 15(1), 85–109.
- Salo, A., Uibu, K., Ugaste, A., & Rasku-Puttonen, H. (2019). The challenge for school-based teacher educators: establishing teaching and supervision goals. *Teacher Development*, 25(3), 609–626.
- Sarv, A., & Karm, M. (2013). Õpetajakoolituse õppejõudude roll õpetajakoolituse üliõpilaste refleksiooni- ja analüüsiostkuste kujunemisel. In E. Krull, Ä. Leijen, M. Lepik, J. Mikk, L. Talts, & T. Õun (Eds.), *Projekti „Õpetajate professionaalne areng ja selle toetamine“ tulemused õpetajakoolituse teenistuses* (pp. 42–74). Artiklite Kogumik. Tartu-Tallinn: Eesti Ülikoolide Kirjastus.
- Schön, D. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Shulman, L. S. (1986). Those who understand: knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.
- Shulman, L. S., & Shulman, J. H. (2004). How and What Teachers Learn: A Shifting Perspective. *Journal of Curriculum Studies*, 36(2), 257–271.
- Simons, P. R.-J., & Ruijters, M. C. P. (2014). The Real Professional Is a Learning Professional. S. Billett, C. Harteis, and H. Gruber (Eds.), *International Handbook of Research in Professional and Practice-based Learning* (pp. 955–985). Springer International Handbooks of Education: Springer, Dordrecht.
- Sööt, A., & Leijen, Ä. (2012). Designing support for reflection activities in tertiary dance education. *Procedia – Social and Behavioral Sciences*, 45, 448–456.
- Stader, E., Colyer, T., & Berliner, D. C. (1990, April). *Expert and novice teachers' ability to judge student understanding*. Paper presented at the meetings of the American Educational Research Association, Boston, MA & Berliner, 1990
- Stevenson, M., Hedberg, J. G., O'Sullivan, K. A., & Howe, C. (2016). Leading learning: the role of school leaders in supporting continuous professional development. *Professional Development in Education*, 42(5), 818–835 .  
<https://doi.org/10.1080/19415257.2015.1114507>
- Tashakkori, A. & Teddlie, C. (2003). *Handbook of Mixed Methods in Social & Behavioral Research*. Thousand Oaks: Sage.

- Teddle, C., & Tashakkori, A. (2009). *Foundations of Mixed Methods Research: Integrating Qualitative and Quantitative Approaches in the Social and Behavioral Sciences*. Thousand Oaks, CA: Sage Publications.
- Thomas, D. R. (2006). A general inductive approach for analysing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237–246.
- Timperley, H. (2008). *Teacher Professional Learning and Development*. Paris: UNESCO.
- Toom, A. & Husu, J. (2018). Teacher's Work in Changing Educational Contexts: Balancing the Role and the Person. In H. Niemi, A. Toom, A. Kallioniemi & J. Lavonen (Eds.), *The Teacher's Role in the Changing Globalizing World: Resources and Challenges Related to the Professional Work of Teaching* (pp. 1–10). Leiden: Brill.
- Toom, A. (2006). *Tacit pedagogical knowing: At the core of teacher's professionalism*. Research Reports 276. University of Helsinki: Department of Applied Sciences of Education.
- Toom, A. (2012). Considering the Artistry and Epistemology of Tacit Knowledge and Knowing. *Educational Theory*, 62(6), 621–640.
- Toom, A., Husu, J., & Patrikainen, S. (2015). Student teachers' patterns of reflection in the context of teaching practice. *European Journal of Teacher Education*, 38(3), 320–340. DOI <http://doi.org/10.1080/02619768.2014.943731>
- Tripp, D. (1993). *Critical incidents in teaching: Developing professional judgement*. London: Routledge.
- Tripp, D. (1994). Teachers' lives, critical incidents, and professional practice. *International Journal of Qualitative Studies in Education*, 7(1), 65–76, DOI: <http://doi.org/10.1080/0951839940070105>
- Tuul, M., Mikser, R., Neudorf, E., & Ugaste, A. (2015). Estonian preschool teachers' aspirations for curricular autonomy – the gap between an ideal and professional practice. *Early Child Development and Care*, 185(11–12), 1845–1861.
- Ugaste, A., Tuul, M., Mikser, R., Neudorf, E., & Jürimäe, M. (2016). Koolieelse lasteasutuse õpetajate kui õppekava arendajate kogemused, ootused ja hinnangud. *Eesti Haridusteaduste Ajakiri*, 4(1), 92–118.
- Uibu, K., Padrik, M., & Tenjes, S. (2016). Klassiõpetajate keele- ja suhtluseoskuste hindamine emakeeletunnis struktureeritud vaatluse teel. *Eesti Haridusteaduste Ajakiri*, 4(1), 226–257.
- Veen, K., Zwart, R., & Meirink, J. (2011). What makes teacher professional development effective? A literature review. In M. Kooy & K. Van Veen (Eds.), *Teacher Learning that Matters* (pp. 3–21). New York: Routledge.
- Vermunt, J. D., Vriikki, M., Warwick, P., & Mercer, N. (2017). Connecting teacher identity formation to patterns in teacher learning. In D. J. Clandinin, & J. Husu (Eds.), *The SAGE Handbook of Research on Teacher Education* (Vol. 1, pp. 143–159). London: SAGE Publications Ltd.
- Viera, A. J., & Garrett, J. M. (2005). Understanding interobserver agreement: the Kappa statistic. *Family Medicine*, 37(5), 360–363.
- Vriikki, M., Warwick, P., Vermunt, J. D., Mercer, N., & Van Halem, N. (2017). Teacher learning in the context of lesson study: A video-based analyses of teacher discussions. *Teaching and Teacher Education*, 61, 211–224.
- Zanting, A., Verloop, N. and Vermunt, J.D. (2001). Student teachers' beliefs about mentoring and learning to teach during practice teaching. *British Journal of Educational Psychology*, 71(1), 57–80.
- Zhang, M., Lundeberg, M., Koehler, M. J., & Eberhardt, J. (2011). Understanding Affordances and Challenges of Three Types of Video for Teacher Professional Development. *Teaching and Teacher Education*, 27(2), 454–462.

## ACKNOWLEDGEMENTS

In this section, I would like to thank the people who have supported me on this doctoral journey.

First and foremost, I wish to express my deepest gratitude to my supervisors prof. Äli Leijen and prof. Auli Toom. I could not have reached the end of my studies without your continuous support and patience. Äli, I can say without any exaggeration that you have been the originator of my academic career. You saw a potential in me that no one else had noticed, and since then, you have guided and supported me in any ways possible. Despite all the struggles that we have had, you have been like my academic mother – always behind my back and standing up for me if necessary. Auli, you had the courage to begin this journey with me without really knowing me. I remember being so honoured when you accepted the invitation of become my co-supervisor and thinking that I really have to step up now. You have a miraculous skill of giving encouraging feedback. Even when I have doubted in my work, you have always found the ways to highlight my strengths. Even though I had my share of struggles throughout this journey, you have both always believed in me and been so patient with me. You have learned to accept my peculiar way of working and given me all the advice and support that I could have imagined. I am so grateful that our paths have crossed and I am honoured that you have been there for me to guide my way.

I would also like to show my sincere appreciation to prof. Margus Pedaste who has played an important role in the continuous of my studies. Margus, you delicately noticed when I was in a desperate need of guidance and offered me support that I could not even expect. I am genuinely grateful for that.

I would also like to thank all the members of ACTTEA research team – prof. Äli Leijen, prof. Margus Pedast and prof. Edgar Krull from Estonia, prof. Auli Toom and Lauri Heikonen from University of Helsinki, prof. Jukka Husu and Mikko Tiilikainen from University of Turku, Juan Jose Mena Marcos from University of Salamanca, prof. Pauline Meijer and Dubravka Knezic from the University of Utrecht. You took me in as a young student, and showed me how to work in an international research group. It was a significant experience in my path as a beginning researcher.

I am grateful for all the fantastic researchers who have been in different commissions throughout my studies and given me relevant feedback – prof. Jack Holbrook, prof. Evelyn Kiive, prof. Jaan Kõrgesaar, prof. Edgard Krull, Hasso Kukemelk, Anne Laius, prof. Äli Leijen, prof. Jaan Mikk, Rain Mikser, prof. Olev Must, prof. Margus Pedaste, prof. Miia Rannikmäe, Marvi Remmik, prof. Krista Uibu. Your questions, comments and discussions have provided me with priceless insight that significantly improved my research and doctoral thesis, in general.

I highly value the contribution of all the participants who were involved in my studies – student teachers and teachers – who took the time to carry out the guided reflection procedure and provide feedback on their experiences, and school

administrators, parents and pupils who agreed to be a part of filming. I really appreciate your open-mindedness and willingness to collaborate.

I would also like to take this opportunity to say my warmest thanks to my fellow doctoral students – Liina Adov, Mirjam Burget, Pihel Hunt, Triinu Kärbla, Maile Käsper, Laura Kirss, Külli Kori, Liina Malva, Triin Peitel, Katrin Saks, Gerli Silm – and my dear colleagues – Liina Lepp, Mario Mäeots, and Pille Nelis. I highly value all the conversations that we have had and the times we have spent together. It has been motivating to share this journey with you.

Last but not least, I owe my greatest thanks to my loved ones. My dearest Urmas, I could not have finalized my studies without your infinite support. You have been my rock and supported me in everything that I have done. I do not have enough words to thank you for creating time and space for me to write, for taking care of me and everything else while I was writing, and for always believing in me. My sister Triin, thank you for always picking me up, when I needed it, remembering what is really important and taking time to help me to take a break whenever I needed it. I will always remember our endless walks and amounts of sweets that you let me to eat from your supplies whenever I needed a sugar boost. My mother Merike, your enthusiasm in my studies and how proud you are of me mean a lot to me. Thank you for stepping in with everything you could when I really needed it.



## **PUBLICATIONS**

## CURRICULUM VITAE

**Name:** Raili Allas  
**Date of birth:** 04.11.1987  
**Citizenship:** Estonian  
**Work address:** University of Tartu, Faculty of Social Sciences, Institute of Education, Salme 1a, Tartu 50103  
**E-mail:** raili.allas@ut.ee

### Education:

2014– ... University of Tartu, PhD studies in Educational Science  
2011–2014 University of Tartu, Master studies in Educational Sciences  
(*cum laude*)  
2008–2011 University of Tartu, Bachelor studies in Early Years Teacher  
(*cum laude*)  
2003–2007 Tallinn Secondary School of Science

### Professional employment:

2019–... University of Tartu, Faculty of Social Sciences, Institute of Education, Specialist of Teacher Education  
2017–2019 University of Tartu, Faculty of Social Sciences, Institute of Education, Junior Research Fellow in Teacher Education  
2016–2017 University of Tartu, Faculty of Social Sciences, Institute of Education, Teacher education specialist  
2015–2017 Youth to School Foundation, Teacher coach  
2014–2015 University of Tartu, Faculty of Social Sciences and Education, Institute of Education, Junior Research Fellow  
2014–2014 University of Tartu, Faculty of Social Sciences and Education, Institute of Education, Specialist in Educational Research  
2013–2013 University of Tartu, Faculty of Social Sciences and Education, Institute of Education, Teaching Practice Development Manager

### Field of research:

Teacher education and reflection

### Publications:

Allas, R., Leijen, Ä., & Toom, A. (2020). Suunatud refleksiooni protseduuri rakendamise peamised kasutegurid ja kitsaskohad õpetajakoolituse üliõpilaste ja õpetajate hinnangul. *Eesti Haridusteaduste Ajakiri*. *Accepted for publication*.  
Allas, R., Leijen, Ä., & Toom., A. (2020). Guided reflection procedure as a method to facilitate student teachers' perception of their teaching to support the construction of practical knowledge. *Teachers and Teaching: Theory and Practice*. *Accepted for publication*.

- Allas, R., Leijen, Ä., & Toom., A. (2017). Supporting the construction of teacher's practical knowledge through different interactive formats of oral reflection and written reflection. *Scandinavian Journal of Educational Research*, 61(5), 600–615.
- Leijen, Ä., Allas, R., Toom., A., Husu, J., Mena Marcos, J.-J., Meijer, P., Knezic, D., Pedaste, M., Krull, E. (2014). Guided reflection for supporting the development of student teachers' practical knowledge. *The European Procedia Social and Behavioral Sciences*, 314–322.

## ELULOOKIRJELDUS

**Nimi:** Raili Allas  
**Sünniaeg:** 04.11.1987  
**Kodakondsus:** Eesti  
**Address:** Tartu Ülikool, sotsiaalteaduste valdkond, haridusteaduste instituut, Salme 1a, Tartu 50103  
**E-mail:** raili.allas@ut.ee

### Haridustee:

2014–... Tartu Ülikool, Haridusteaduse doktoriõpe  
2011–2014 Tartu Ülikool, Kasvatusteaduste magistriõppe (*cum laude*)  
2008–2011 Tartu Ülikool, Koolieelse lasteasutuse õpetaja bakalaureuseõpe (*cum laude*)  
2003–2007 Tallinna Reaalkool

### Teenistuskäik:

2019–... Tartu Ülikool, Sotsiaalteaduste valdkond, haridusteaduste instituut, õpetajahariduse spetsialist  
2017–2019 Tartu Ülikool, Sotsiaalteaduste valdkond, haridusteaduste instituut, õpetajahariduse nooremteadur  
2016–2017 Tartu Ülikool, Sotsiaalteaduste valdkond, haridusteaduste instituut, õpetajahariduse spetsialist  
2015–2017 Noored Kooli Sihtasutus, Tuutor  
2014–2015 Tartu Ülikool, Sotsiaal- ja haridusteaduskond, Haridusteaduste instituut, nooremteadur  
2014–2014 Tartu Ülikool, Sotsiaal- ja haridusteaduskond, Haridusteaduste instituut, teadustöö spetsialist  
2013–2013 Tartu Ülikool, Sotsiaal- ja haridusteaduskond, Haridusteaduste instituut, pedagoogilise praktika arendusjuht

### Teadustegevus:

Õpetajakoolitus ja refleksioon

### Publikatsioonid:

Allas, R., Leijen, Ä., & Toom, A. (2020). Suunatud refleksiooni protseduuri rakendamise peamised kasutegurid ja kitsaskohad õpetajakoolituse üliõpilaste ja õpetajate hinnangul. *Eesti Haridusteaduste Ajakiri. Aktsepteeritud publitseerimiseks.*

Allas, R., Leijen, Ä., & Toom., A. (2020). Guided reflection procedure as a method to facilitate student teachers' perception of their teaching to support the construction of practical knowledge. *Teachers and Teaching: Theory and Practice. Aktsepteeritud publitseerimiseks.*

- Allas, R., Leijen, Ä., & Toom., A. (2017). Supporting the construction of teacher's practical knowledge through different interactive formats of oral reflection and written reflection. *Scandinavian Journal of Educational Research*, 61(5), 600–615.
- Leijen, Ä., Allas, R., Toom., A., Husu, J., Mena Marcos, J.-J., Meijer, P., Knezic, D., Pedaste, M., Krull, E. (2014). Guided reflection for supporting the development of student teachers' practical knowledge. *The European Procedia Social and Behavioral Sciences*, 314–322.

## DISSERTATIONES PEDAGOGICAE UNIVERSITATIS TARTUENSIS

1. **Карлел, Карл.** Обоснование содержания и методики обучения родному языку во вспомогательной школе. Tartu, 1993.
2. **Ots, Loone.** Mitmekultuurilise hariduse õppekomplekt eesti kirjanduse näitel. Tartu, 1999.
3. **Hiie Asser.** Varajane osaline ja täielik keeleimmersioon Eesti muukeelse hariduse mudelitena. Tartu, 2003.
4. **Piret Luik.** Õpitarkvara efektiivsed karakteristikud elektrooniliste õpikute ja drillprogrammide korral. Tartu, 2004.
5. **Merike Kull.** Perceived general and mental health, their socio-economic correlates and relationships with physical activity in fertility-aged women in Estonia. Tartu, 2006.
6. **Merle Taimalu.** Children's fears and coping strategies: a comparative perspective. Tartu, 2007.
7. **Anita Kärner.** Supervision and research training within the professional research community: Seeking new challenges of doctoral education in Estonia. Tartu, 2009.
8. **Marika Padrik.** Word-formation skill in Estonian children with specific language impairment. Tartu, 2010.
9. **Krista Uibu.** Teachers' roles, instructional approaches and teaching practices in the social-cultural context. Tartu, 2010.
10. **Anu Palu.** Algklassiõpilaste matemaatikaalased teadmised, nende areng ja sellega seonduvad tegurid. Tartu, 2010.
11. **Mairi Männamaa.** Word guessing test as a measure of verbal ability. Use of the test in different contexts and groups. Tartu, 2010.
12. **Piret Soodla.** Picture-Elicited Narratives of Estonian Children at the Kindergarten-School Transition as a Measure of Language Competence. Tartu, 2011.
13. **Heiki Kriips.** Õpetajate suhtlemiskompetentsus ja suhtlemisoskused. Tartu, 2011.
14. **Pille Häidkind.** Tests for assessing the child's school readiness and general development. Trial of the tests on the samples of pre-school children and first-grade students in Estonia. Tartu, 2011.
15. **Karmen Trasberg.** Keskkooli- ja gümnaasiumiõpetajate ettevalmistus Eesti Vabariigis (1918–1940) õpetajakoolituse ajaloolise kujunemise kontekstis. Tartu, 2011, 207 lk.
16. **Marvi Remmik.** Novice University Teachers' professional development and learning as a teacher: Opportunities and Conditions at Estonian Higher Education Institutions. Tartu, 2013, 129 p.
17. **Pilve Kängsepp.** Küsimuste kasutamine kui võimalus toetada õpilaste arusaamist loetust. Tartu, 2014, 125 p.

18. **Marge Täks.** Engineering students' experiences of entrepreneurship education. A qualitative approach. Tartu, 2015, 150 p.
19. **Reelika Suviste.** Students' mathematics knowledge and skills, and its relations with teachers' teaching and classroom management practices: Comparison between Estonian- and Russian-language schools. Tartu, 2015, 147 p.
20. **Liina Lepp.** The objectives of doctoral studies and factors influencing doctoral study process from the perspectives of different parties. Tartu, 2015, 271 p.
21. **Ülle Säälük.** Reading literacy performance: Metacognitive learning strategies matter, schools have effect on student outcomes. Tartu, 2016, 119 p.
22. **Katrin Saks.** Supporting Students' Self-Regulation and Language Learning Strategies in the Blended Course of Professional English. Tartu, 2016, 216 p.
23. **Anne Okas.** Novice and experienced teachers' practical knowledge in planning, delivery and reflection phases of teaching. Tartu, 2016, 172 p.
24. **Küllli Kori.** The Role of Academic, Social and Professional Integration in Predicting Student Retention in Higher Education Information Technology Studies. Tartu, 2017, 168 p.
25. **Ingrid Koni.** The perception of issues related to instructional planning among novice and experienced teachers. Tartu, 2017, 142 p.
26. **Ivar Männamaa.** Development of an educational simulation game and evaluation of its impact on acculturation attitudes. Tartu, 2017, 154 p.
27. **Egle Säre.** Developing the reasoning skills of pre-schoolers through Philosophy for Children. Tartu, 2018, 131 p.
28. **Anu Sööt.** The procedure of guided core reflection for supporting the professional development of novice dance teachers. Tartu, 2018, 135 p.
29. **Tiina Anspal.** The development of teacher identity through role and self-conception in pre-service teacher education. Tartu, 2018, 157 p.
30. **Age Salo.** The dual role of teachers: school-based teacher educators' beliefs about teaching and understandings of supervising. Tartu, 2019, 156 p.
31. **Mirjam Burget.** Making sense of responsible research and innovation in science education. Tartu, 2019, 175p.
32. **Kaire Uiboleht.** The relationship between teaching-learning environments and undergraduate students' learning in higher education: A qualitative multi-case study. Tartu, 2019, 169 p.
33. **Karin Naruskov.** The Perception of Cyberbullying among Estonian Students According to Cyberbullying Types and Criteria. Tartu, 2020, 176 p.