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**Eija Aalto**

# **Pre-Service Subject Teachers Constructing Pedagogical Language Knowledge in Collaboration**

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UNIVERSITY OF JYVÄSKYLÄ  
FACULTY OF EDUCATION AND  
PSYCHOLOGY

JYU DISSERTATIONS 158

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**Pre-Service Subject Teachers Constructing  
Pedagogical Language Knowledge  
in Collaboration**

Esitetään Jyväskylän yliopiston kasvatustieteiden ja psykologian tiedekunnan suostumuksella  
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## ABSTRACT

Aalto, Eija

Pre-service subject teachers constructing pedagogical language knowledge in collaboration  
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This study investigates pre-service subject teachers' approaches to language across the curriculum in multilingual and multicultural groups. Its *purpose* was to achieve a deeper understanding of how student teachers approach the current educational challenge of multilingual learner groups, what kind of understanding pre-service teachers have about language within content learning, and what kinds of collaborative efforts they make in co-constructing their knowledge and understanding when integrating language and content across subject borders. These issues were investigated in terms of collaborative construction of pedagogical language knowledge and pedagogical practices across subject boundaries. The *approach* of the study can be described as practitioner research as the researcher had a dual position of a teacher and a researcher, both developing teaching and conducting research. The *aim* was to enhance pre-service teacher education through gaining a deeper understanding of pre-service teachers' perceptions of language and collaboration across disciplines. The study addresses two main *research questions*: 1) What characterizes pre-service teachers' pedagogical language knowledge? 2) What characterizes pre-service teachers' collaborative practice development across subject-boundaries? The study consists of three articles, each approaching pedagogical language knowledge from a different angle. The *data* were derived from a questionnaire with built-in applied tasks aimed at 221 pre-service subject teachers, and two teaching interventions in which two pre-service teacher teams planned and conducted a study unit integrating a content and language (Finnish) subject in a multilingual setting. The intervention data consists of audio-recorded planning sessions and group interviews, video-recorded lessons, student teachers' individual diaries, and field notes taken by the researcher. The data were analysed using qualitative content analysis and thematic analysis. The *findings* show that the pre-service teachers' pedagogical language knowledge echoes to a large extent traditional understandings, constructed during their own school path, of language as merely grammar and vocabulary. Language is perceived mainly as word-level entities instead of viewing language use in relation to genres and situations and supporting learners to succeed in wider contexts. The second language learner perspective regarding language and content learning was clearly new to the student teachers under study, and setting linguistic aims was seemingly challenging. However, language played a major role in pedagogical practice development, as learners' Finnish language skill deficiencies tended to guide the planning process of teaching in a multilingual group. The student teachers' difficulty in defining the disciplinary language and the role of language in content learning seemed to make it difficult to cross the disciplinary boundaries and construct a practice that integrates both subjects in a meaningful way, instead of connecting isolated contents and working modes from each subject. In *conclusion*, the study argues that deeper understanding of student teachers' collaborative meaning-making process is crucial for developing pre-service teacher education in terms of timely supervision practices and relevant supportive tools.

Keywords: pedagogical language knowledge, teacher education, language across curriculum, pre-service teachers, collaboration

# TIIVISTELMÄ

Aalto, Eija

Aineenopettajaopiskelijat rakentamassa pedagogista kielitietoa kollaboratiivisesti

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Tutkimuksen tavoitteena oli syventää ymmärrystä siitä, miten aineenopettajaopiskelijat näkevät kielen roolin eri tiedonalojen oppimisessa ja miten he ottavat monikieliset oppijat huomioon eri tiedonalojen opetuksessa ja rakentavat jaettua ymmärrystään kielitietoisesta opetuksesta. Tähän pyrittiin tarkastelemalla opettajaopiskelijoiden tapaa arvioida ja eritellä monikielisen oppijan kirjoittamisen taitoa sekä heidän tapaansa kollaboratiivisesti suunnitella kielen ja sisältötiedon oppimista yhdistävää pedagogiikkaa monikielisellemme oppijaryhmälle. Tutkimusta motivoi koulujen kasvava kielellinen ja kulttuurinen diversiteetti, joka edellyttää kaikilta opettajilta vastuunottoa monikielisten oppijoiden osallistamisesta ja opiskelukielitaidon ja sisältötiedon limittäisen oppimisen tukemisesta. Tutkimuksen avulla saadaan tietoa, joka auttaa kehittämään opettajankoulutuksen käytänteitä kielitietoisesta opetuksen edistämisestä. Metodisena tutkimusotteena on toimintatutkimuksen paradigmalle läheinen *practitioner research*, jossa tutkija tarkastelee omaa työtään ja toimii kahtalaisessa roolissa, tutkijana ja tutkimuksen kohteena olevan opintojakson opettajana. Sosiokulttuurisen lähestymistavan kehityksessä tutkimuksen pääkäsitteinä ovat pedagoginen kielitieto (*pedagogical language knowledge*) ja kollaboratiivinen oppiminen. Tutkimuksessa selvitellään kahta pääkysymystä: 1) Mikä on tunnusomaista aineenopettajaopiskelijoiden pedagogiselle kielitiedolle? 2) Mikä on tunnusomaista aineenopettajaopiskelijoiden tavalle rakentaa yhteistä, oppiainerajat ylittävää pedagogista käytännettä monikielisellemme oppijaryhmälle? Tutkimus koostuu kolmesta kansainvälisestä artikkelista sekä käsitteellisen viitekehyksen ja tulokset koostavasta yhteenvedosta. Kukin artikkeli lähestyy opettajaopiskelijoiden pedagogista kielitietoa eri näkökulmista. Tutkimusaineisto kattaa 221 aineenopettajaopiskelijalle tehdyn kyselyn ja kaksi suomen kieltä ja sisältöoppiainetta integroivaa opetuskokeilua, joista toinen toteutettiin yläkoulun fysiikan opetuksessa ja toinen aikuisille maahanmuuttajille suunnatulla suomalaisen uskontotiedon kurssilla. Kyselyaineiston analyysissa keskitytään soveltavaan tehtävään, jossa opettajaopiskelijat arvioivat yläkouluikäisen monikielisen oppijan kirjoittamisen taitoa. Opetuskokeiluaineisto koostuu kahden opettajaopiskelijatiimin ääninauhoitetuista suunnittelupalavereista, ryhmähaastattelusta, videoituista oppitunneista, opettajaopiskelijoiden yksilöpäiväkirjoista ja tutkijan tekemistä kenttämuistiinpanoista. Aineistot on pääosin analysoitu laadullisen sisällönanalyysin ja temaattisen analyysin menetelmin, mutta kyselyaineiston analyysissa tutkimusotetta täydennettiin määrällisellä analyysillä. Tulokset osoittivat, että aineenopettajaopiskelijoiden pedagoginen kielitieto heijastelee sekä formalistiseen perinteeseen pohjaavaa ajattelua että sosiokulttuurisen tradition ihannetta. Kuitenkin perinteinen näkökulma kieleen sanastona ja rakenteina oli selvästi hallitseva. S2-oppijan kehittyvän kielitaidon hahmottaminen suhteessa eri oppiaineiden haasteisiin oli opettajaopiskelijoille vaativaa. Niin ikään tiedonalan kielenkäytön jäsentäminen laajemmin kuin oppiaineen käsitteiden osalta osoittautui haastavaksi myös suomen kielen opettajaopiskelijoille. Tiedonalan eri merkityksen rakentamisen tavat jäivät irrallisiksi toisistaan eivätkä muodostaneet pedagogista jatkumoa, ja oppijoiden osallisuutta tukevien strategisten taitojen opetus vähäiseksi. Tulosten perusteella opettajankoulutuksen haasteena onkin tuottaa enemmän työkaluja kielitietoisesta pedagogisten jatkumoiden suunnitteluun ja kollaboratiivisen, oppiainerajat ylittävän työskentelyn ohjaukseen.

Avainsanat: pedagoginen kielitieto, kielitietoinen opetus, opettajankoulutus, kollaboratiivinen oppiminen, tiedonalojen kieli

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## FOREWORD

This dissertation is the outcome of a long process of pedagogical development, research and interaction with teachers, students and colleagues. Writing it in English has been a true learning experience, at times inspiring, often challenging. I am very glad to have embraced that particular challenge, and I hope that, as a result, my work will reach and benefit a wider audience. In the spirit of multilingualism, however, I would like to acknowledge here the key people involved in my research process primarily in my mother tongue – Finnish.

Kielitietoinen aineenopetus on ollut pääkehittämiskohteeni koko OKL:ssä oloaikani eli vuodesta 2005 alkaen. Kielellisen ja kulttuurisen diversiteetin merkitys kaikelle koulutukselle oli nähtävissä jo tuolloin, ja siksi oli hienoa, että saimme yhdessä Sanna Mustosen kanssa mahdollisuuden toteuttaa *SOPPI - suomeksi oppimassa* -sivuston opettajankoulutuksen tueksi. Siitä lähti pitkä ja vaiheikas kehittämisprosessi, jonka osa tämä väitöskirja on.

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Keskustelut emeritaprofessori Hannele Dufvan ja FT Juha Jalkasen kanssa auttoivat minua väitöskirjani kolmannen artikkelin kehittämisessä. Kiitos teille.

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Väitöstutkimukseeni on merkittävästi vaikuttanut opetus- ja pedagoginen kehittämistyöni kielitietoisuuden opetuksen parissa. Suuri kiitos kursseilleni vuo-

desta 2006 alkaen osallistuneille aineen- ja luokanopettajaopiskelijoille. Vuoro-vaikutus kanssanne on haastanut minua kehittämään ajatteluani ja pedagogiikkaani. Erityisesti kiitän tutkimukseni opetuskokeiluihin osallistuneita opiskelijoita. Laitoitte itsenne huikealla tavalla likoon ja mahdollistitte siten tämän tutkimuksen. Lähetän arvostavan ajatuksen tahoillenne. Erityisellä lämmöllä ajattelen myös opettajankouluttajakollegojani, joiden kanssa olemme tehneet jo vuosien ajan yhteistyötä ja rakentaneet yhteistä ymmärrystä siitä, mitä kielitietoinen opetus monikielisessä ryhmässä tarkoittaa eri oppiaineissa. Kiitos yhteisestä matkasta ja monista kokeiluista erityisesti Sanna Salminen, Riitta Tallavaara, Anssi Lindell, Kirsti Lauritsalo, Tommi Mäkinen ja Kati Kajander. Toivon matkamme jatkuvan ja kehityksen kehittyvän. Sanna Mustonen on ollut näkemyksellinen kanssa-ajattelijani opintojakson kehittämisessä - kiitos, Sanna.

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Jyväskylässä marraskuussa 2019

Eija Aalto

## ORIGINAL PAPERS

The thesis comprises the following publications, which are referred to in the text by the Roman numerals I-III:

**Article I** Aalto, E. & Tarnanen, M. 2015. Approaching pedagogical language knowledge through student teachers: assessment of second language writing. *Language and Education*, 7 (5), 400-415.

**Article II** Aalto, E. & Tarnanen, M. 2017. Negotiating language across disciplines in pre-service teacher education. *European Journal of Applied Linguistics*, 5 (2), 245-271.

**Article III** Aalto, E., Tarnanen, M., & Heikkinen, H. L. T. 2019. Constructing a pedagogical practice across disciplines in pre-service teacher education. *Teaching and Teacher Education*, 85, 69-80.

The articles are reprinted with the kind permission of the publishers. Copies of the articles are appended to this report.

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# 1 INTRODUCTION

## 1.1 Redefining teacher expertise in a changing environment

The current social and educational trends have crucial implications for teacher expertise and, hence, also for teacher education. Due to the growing mobility in recent times, multilingual, multicultural and multimodal classes seem to be the norm rather than the exception in most contemporary societies (see e.g. Hornberger 2009). Future teachers of all disciplines need to be prepared for linguistic and cultural diversity in classrooms and enabled to promote learning for all students across the curriculum, regardless of the learners' language proficiency level or background characteristics. This entails new requirements for both language and subject content teaching, as language development and content knowledge are essentially intertwined. It is now recognized that the language of schooling can no longer be taught as a separate subject in isolation, and language teachers are increasingly teaching language within content domains and in collaboration with colleagues across disciplines (e.g. Valdés, Kibler, & Walqui 2014). This requires new understanding of language proficiency development and new pedagogical approaches. Subject teachers of non-linguistic subjects are required to develop their expertise in terms of disciplinary language and literacy practices and the pedagogy that supports integrated language and content development. Disciplinary language and content are intertwined and inseparable (Cummins 2001; Nikula, Dalton-Puffer, Llinares, & Lorenzo 2016). Therefore, in order to optimally support content learning, teachers' language awareness needs to be enhanced and their ability to use diverse linguistic resources for meaning making and to negotiate abstract academic contents with students by building on their diverse language practices needs to be developed (see also García & Sylvan 2011).

In addition to the increasing diversity and mobility of societies, also education reforms towards learner-centred and multidisciplinary pedagogical approaches and current learning challenges in working life raise the need to rethink

teacher expertise in Finland (Finnish National Board of Education NBE 2014; Lonka 2018). The conceptions about learning and knowledge construction and the ways they are socially organized need to be re-considered. Furthermore, teachers cannot remain in their subject communities but are required to cross boundaries within and across communities of practice in schools and teacher education (see e.g. Akkerman & Bakker 2011; NBE 2014; Sins & Andriessen 2012). Learning is no longer seen as the mastering of a given subject or knowledge and recycling of already available skills and knowledge, rather, teachers are constantly required to develop their expertise across a variety of contexts and solve open-ended problems without clear, single right answers (e.g. Markauskaite & Goodyear 2014; Säljö 2010). This requires the ability to negotiate across disciplines and boundaries in changing situations. Amid curricular and other educational change, schools need 'adaptive experts' (Darling-Hammond 2006; Love 2009) who are able to act in constantly changing educational and societal contexts. This means learning things ahead of time that are often not stable or even defined or understood (Säljö 2004). Mastering 'routines' is not sufficient. Instead, teachers are required to be adaptive experts, able to innovate and develop their teaching practices both individually and collaboratively and to cater for all of their pupils' learning and adapt their teaching accordingly. The increasing diversity in schools challenges teachers to critically reflect on the tacit aspects of their disciplinary practices (Wenger 1998) and develop their expertise in collaboration across subject borders.

The social and distributed nature of the teacher learning process implies that teacher collaboration needs to be fostered already in pre-service teacher education (see also Darling-Hammond 2006). Therefore, in this study, I aim to contribute to the research on these current educational challenges in pre-service teacher preparation by examining student teachers' understandings of language within subject content teaching and their readiness for collaborative development of cross-curricular teaching in multilingual settings. The student teachers under study participated in my courses and, therefore, this study highlights both the student teachers' standpoint and the need to develop my teaching further through a research-based approach. I will describe my approach in more detail in the following section.

Teacher education in Finland has a long research-based tradition in which prior research is exploited and an orientation towards reflectiveness and inquiry is promoted (Toom, Kynäslähti, Krokfors, Jyrhämä, Byman, Stenberg, Maaranen, & Kansanen 2010). Theory and research are used to stimulate the transfer of reflective inquiry into practice. While enabling pre-service teachers to conceptualize everyday phenomena and reflect on and develop their practice through inquiry, teacher educators are also required to investigate their own approaches (see e.g. Niemi 2011; on the concept of research-based teacher education see Alvinger & Wahlström 2018). The teacher educator as a practitioner and researcher strives to understand their students and to develop their own practice.

In line with research-based teacher education, the approach of this primarily qualitative study can be described as *practitioner research* (Heikkinen, de Jong,

& Vanderlinde 2016), which is closely related to action research (Kemmis 2009), teacher self-study (Dinkelman 2003; Loughran 2005, 2007) and reflective practice (Loughran 2005, 2007). My ultimate aim is to intentionally and systematically re-search my own practice and to develop both local knowledge (i.e. enhance my pre-service teacher education course) and generate academic knowledge (Dinkelman 2003). Practitioner research is by definition local and small-scale, and often considered a conceptual umbrella for various approaches towards professional development that contribute to the progression of practice in order to enhance the quality of it (Heikkinen et al. 2016; cf. Fox 2007). There does not seem to be a single definition of action research, teacher self-study or reflective practice (see e.g. Rearick & Feldman 1999), and the approach of the present study has crucial features of each of them, but does not cover all of their integral elements. Therefore, the practitioner research approach adopted in this study is defined by exploiting the frameworks developed within all of the above approaches. In the following, I position the approach of the present study by describing the action research space (Rearick & Feldman 1999) created in this setting, particularly the purpose of the study, the type of reflection employed and the disposition to knowledge.

As a teacher educator, I have been teaching a linguistically and culturally responsive pedagogical approach to future teachers at a Finnish university since 2006. Those years have involved numerous phases of pedagogical development. The role of language in supporting learning in multilingual and multicultural groups has been promoted through lectures and discussions, online assignments and optional cross-disciplinary teaching practices. However, the student teachers have not been able to apply the approach studied in a multilingual group to their regular teaching practice, as the local practice school has only a few pupils with a migrant background. Therefore, language-sensitive practices have not been developed or promoted at the level of school practice, nor are these issues likely to be reflected to any depth within the process of teaching practice supervision. To remedy the lack of teaching practice, the student teachers were offered an optional practice in multilingual groups of local schools outside the official practice school. The student teachers' limited opportunities to apply what they had learned in their own practice raised my concern as to whether my educational initiatives really fulfilled the expectations set for them and led me to examine the uncertainties of the practice in order to become better informed about it and develop it further (Dinkelman 2003; Loughran 2005). By examining the student teachers' assignments, discussions and action, I identified what needed to be investigated in my practice and designed and conducted this study accordingly (Loughran 2005, 2007). In this paper, I reflect on the findings of the study and their implications for developing teacher education practices.

Increasing understanding of this particular field of practice is important because field practices that promote learner independence and agency are frequently applied in teacher education. Typically, small groups of student teachers work largely independently based on given instructions. Supervision is not re-



sourced adequately enough to enable the supervisor to closely support the process. By examining student teachers' uncertainty regarding the educational practice, it is possible to better perceive the significant learning-related aspects of the practice (Dinkelman 2003; Loughran 2005) and, using that knowledge, supervision practices can be developed. This study attempts to contribute to the development of teacher educators by adding to the shared knowledge base for teaching and curriculum development within teacher education.

The disposition to knowledge of this study may be best described in terms of practical (or hermeneutical) action research (Carr & Kemmis 1986). As a practitioner-researcher I strive to deeper understand the action and learning generated by my educational practice. Greater professional understanding is a prerequisite for transformed practice (LaBoskey 2004; Rearick & Feldman 1999). The educational practice investigated in this study comprises my pre-service education courses and the applied interdisciplinary teaching practice designed and provided by me (see Figure 2 in section 3.2). My focus is on student teachers' perception of pedagogical language knowledge in the context of Finnish as a language of schooling and how they collaboratively construct that knowledge across subject borders in the context of an independent field of practice. I examine student teachers' thinking via a questionnaire (Article I) and via their collaboration and group meaning making across disciplines (Articles II and III). As a researcher, I constantly interacted with the student teachers but avoided getting involved in or guiding their planning process, as I was concerned that in their decisions they might try to gratify me instead of developing their own pedagogical practice. I adopted the role of learner and did not try to control the student teachers' planning process (Fox, Martin, & Green 2007). My interest was to examine and perceive my own pedagogical practice from a distance (theoretical interest).

The student teachers were not the sole objects of the study as, through understanding their perspective on the pre-service teacher education course and the teaching practice, I sought to enhance my expertise to be able to develop both the means and the ends of my practice (Kemmis 2009). I was intentionally open to the student teachers' thinking and experiences and the consequences these had for the development of the course. There was a reciprocal relationship between me and the student teachers, although, ultimately, it was up to me to decide how the practice should be developed. Increased understanding of the student teachers' understandings can be used as a basis for the development of effective tools for teacher education (technical interest). Moreover, my study represents a critical-emancipatory interest in knowledge, as my efforts to improve pedagogical practices promote justice, fairness and equality among people (Heikkinen 2019; Kemmis & Smith 2008).

Through this field practice, the student teachers have an opportunity to go beyond the university course and take professional learning into real situations and authentic problems with no right and ready-made answers and, at the same time, develop the practices adopted in teacher education (Moll 1990). I examine how the student teachers approach the current educational challenge, what understanding they have about language within content learning, and what kinds

of collaborative efforts they make in co-constructing their knowledge and understanding and developing a shared practice that integrates language and content knowledge. Deeper understanding of the student teachers' collaborative meaning-making process is crucial for developing pre-service teacher education in terms of timely supervision practices and relevant supportive tools. The findings provide valuable implications for developing teacher education in preparing students to enter professional domains and societal educational contexts in which the ability to perceive learners' developmental needs and to meet them through a collaborative, cross-disciplinary approach is required.

## 1.2 Contextualizing the study: Language in education

The language of schooling has a significant role in education. In this section, I begin by discussing the overall situation of immigrant students in Finnish schools. Thereafter, second language learners' language achievement is discussed and the different learning paths of young and adult second language learners are dealt with in the light of research. Furthermore, the recognition of language as a mediating tool in all learning is identified as an international trend. Finally, teacher education for linguistic diversity is discussed in both the international and Finnish context and the premises of this study are summarized.

The research focus on pre-service teachers' pedagogical language knowledge is motivated primarily in response to the increased number of immigrant students entering Finnish schools, particularly during the 2010s (see Statistics Finland 2017). Finland has changed from a net emigration country to an immigration country only fairly recently, and the pace of increase in the immigrant population has been considerable (Säävälä, Turjanmaa, & Alitolppa-Niitamo 2017). This shift has had a marked impact on Finnish schools, which are currently undergoing rapid linguistic and cultural diversification. Finland's comprehensive education system is considered one of the pillars of the country's global excellence in the OECD's PISA ranking system (Harju-Luukkainen, Nissinen, Sulkunen, Suni, & Vettenranta 2014; Välijärvi, Kupari, Linnakylä, Reinikainen, Sulkunen, Törnroos, & Arffman 2007). In addition to providing opportunities to pupils of all backgrounds to achieve academically, the comprehensive school institution has the key role in integrating them within the education system and providing opportunities to overcome the potential resource disadvantages related to socio-economic background. Therefore, the teachers' role in identifying pupils' social, cognitive or psychological support needs, and also resource needs, is crucial not only in terms of developing functional everyday practices but also regarding the prevention of marginalization.

However, the educational success of immigrant students in Finland has remained relatively low, despite the equalizing education system and high learning outcomes in general (Harju-Luukkainen et al. 2014). Although distinctions in performance between advantaged and disadvantaged students are generally small, in comparison to other students immigrant students underachieve by a

fairly large margin – even when socio-economic status is accounted for (Säävälä et al. 2017; see also Harju-Luukkainen, Tarnanen, Nissinen, & Vettenranta 2018). Depending on the subject, PISA 2012 showed an approximate two-year skills gap for first-generation immigrants and second-generation immigrants to still be slightly behind other students (Harju-Luukkainen et al. 2014). Immigrant students seem to underperform by a relatively large margin when compared to majority students, even after accounting for socio-economic status (OECD, 2013). Children of immigrants are found to be among the most likely to drop out of school after compulsory education, although differences in comparison to the majority population seem to be strongly related to socio-economic status (e.g. Kilpi-Jakonen 2011). Furthermore, research on the psychosocial wellbeing of children with an immigrant background shows worrying tendencies: for example, lack of friends, likelihood of being bullied, indications of anxiety or depression, and problems in relationships with parents are significantly higher among immigrant children compared to children representing the majority community (Matikka, Luopa, Kivimäki, Jokela, & Paananen 2014; Säävälä et al. 2017). Immigrant children do not seem to overcome their social disadvantages, particularly parents' low income and difficulties in the labour market (Kilpi-Jakonen 2012).

On the other hand, in the assessment conducted by the Finnish Education Evaluation Centre (FINEEC), the language proficiency of Finnish-as-a-second-language learners proved to be fairly good and met the assessment criteria set for basic education (Kuukka & Metsämuuronen 2016). On average, student learning outcomes were ranked at proficiency level B2.1 on the CEFR<sup>1</sup> scale and only 13% of pupils were ranked at proficiency level A, which represents language proficiency limited to communication in the most familiar situations. In total, 87% of pupils achieved level B1, indicating a good proficiency level or higher (Kuukka & Metsämuuronen 2016). It is debatable, though, whether the assessment criteria set for basic education are high enough to meet the real language and literacy requirements of further studies, as already by the upper grades of comprehensive school (13-16 year-olds) the disciplinary requirements exceed the criteria for good proficiency (Kuukka & Metsämuuronen 2016).

Young and adult learners' second language learning paths may nonetheless be very diverse. It is relevant to discuss what we know about second language learning among young and adult immigrants as, in this study, the student teachers worked with both young second language learners (age 13-14) in a mainstream classroom and adult second language learners in a specific group for immigrant learners only. In both groups, language learning and content learning were integrated while the learners were still developing their everyday language skills in Finnish in parallel with disciplinary language. Young and adult learners' process of language learning was investigated in a pseudo-longitudinal CEFLING project in which texts written by adult and young learners of Finnish as a second language were compared (Martin, Mustonen, Reiman, & Seilonen 2010). The findings made in a number of sub-studies of the project (e.g. Mustonen 2015;

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<sup>1</sup> Common European framework of reference for languages: Learning, teaching, assessment (CEFR)

Reiman & Mustonen 2010; Seilonen 2013) revealed both similarities and differences in the language development of young and adult learners. Contrary to adults, young learners tended to construct their language more often in authentic communicative situations and relationships, which provided them with better access to different kinds of registers and resources of spoken Finnish (Mustonen 2015; Reiman & Mustonen 2010). Young learners seemed to learn through imitating situational language use and therefore their use of many linguistic constructions was idiomatic early on and they were able to vary their language use according to the register and recipient. Adults' learning, on the other hand, tended to follow the linguistic order provided by textbooks and traditional language teaching, and their constructions more often exemplified learner forms instead of more idiomatic language use (Mustonen 2015).

In education, the role of language as a mediating tool and as the crucial means of interaction among peers in all learning across disciplines has been recognized. There is research evidence that language teaching in isolation from content learning is not the optimal or most efficient way of developing students' academic skills, content knowledge, identity or engagement in school learning communities (e.g. Valdés 2015). Therefore, the focus has been shifted from a separate language teaching setting to mainstreaming and language across the curriculum as spaces for creating opportunities for learners to engage in various subject content classroom communities in which language-rich discipline-specific practices are employed (e.g. Kaufman 2004; Valdés et al. 2014). This educational trend is internationally widely promoted, and mainstreaming has become a growing pedagogical tendency in multilingual and multicultural schools (Bunch 2013; European Core Curriculum 2010; Mohan, Leung, & Davison 2001; for critical views see, e.g. Franson 2007; Gibbons 2009). Nationally, the need for language and culture sensitive pedagogy also received attention in the recently revised Finnish National Core Curriculum for Basic Education in which cultural diversity and language awareness were introduced as one of the seven cornerstones for the development of school culture (NBE 2014; see also Skinnari & Nikula 2017). Furthermore, support for pupils' linguistic and cultural identities and the development of their mother tongues have been set as explicit aims (NBE, 2014). In line with the increasing diversity in classrooms, the current educational policy has increasingly recognized subject teachers' shared responsibility in language and literacy teaching (see also García 2008; Gibbons 2007; Walqui 2006) and the integrated nature of language and content learning.

The need to focus on disciplinary language and literacy practices naturally also concerns native speakers of the language of schooling who would also benefit from linguistic and literacy support (Fang & Pace 2013; Moje 2015; Brozo, Sulkunen, & Veijola 2018; O'Brien, Stewart, & Moje 1995). However, many second language learners have an apparent need for linguistic support, and they in a way force teachers to pay attention to disciplinary language, and optimally, this focus leads the teachers to support the learning of all learners (see also Nikula et al. 2016). The increasing diversity among the student population is therefore both a challenge and an opportunity for pedagogical development.

Research on teacher education for linguistic diversity is so far scarce, and relatively little is known about subject teachers' (also referred to as *mainstream teachers*, *(subject) content teachers* and *secondary teachers*) language awareness and their understanding of language learning in the mainstream classroom (Bunch 2013; Cajkler & Hall 2011; Lucas & Grinberg 2008). However, international research provides evidence that mainstream teachers' abilities to locate and leverage relevant linguistic and cultural information about their students are often limited and even overlooked, which easily leads to vague and imprecise evaluative feedback and failures in setting language and literacy objectives for learning (e.g. de Jong, Harper, & Coady 2013; Faltis et al. 2010; Pettit 2011). Various studies have also reported on teachers' inability to address the language and literacy demands of their discipline, the undervalued and invisible role of language in meaning making, and the limited focus on only vocabulary and key terms (e.g. Creese 2010; Gleeson 2010; May & Smyth 2007; Zwiers 2006).

In addition, teachers in Finnish schools are clearly still largely unprepared to encounter and deal with plurilingual students in their classrooms, and it is evident that some students are not provided with the support needed for quality learning. There is also evidence that teachers tend to overestimate their students' language skills (Sunı & Latomaa 2012) and, according to a recent national evaluation report (Pirinen 2015), only about half of education providers set language objectives (e.g. orderliness of language education or promoting multiculturalism) in their educational strategies, and slightly less than half exercise such practices (e.g. teaching Finnish or Swedish as a second language, or teaching learners' native or heritage languages). Furthermore, it is important that subject teachers are able to distinguish between underachievement due to mainstream factors (e.g. motivation, subject knowledge, commitment) and underachievement due to multilingual and multicultural factors (e.g. the phase of second language learning, cultural expectations) (e.g. Ma 2016). In-service teachers have also themselves expressed the need to improve their expertise in teaching in culturally and linguistically diverse settings at all educational levels (Kuukka, Ouakrim-Soivio, Paavola, & Tarnanen 2015). However, Tarnanen and Palviainen's study (2018) indicates that teachers' beliefs about language awareness do not seem to align with current education policy.

This study draws from theoretical paradigms that underscore the social and context-bound nature of language and literacy (Swain, Kinnear, & Steinman 2015). Language use is always an activity that has a specific situated purpose and audience, and it is embedded in the culturally determined practices of various communities. From this perspective, school subjects and the related knowledge domains are seen as communities of practice having their own ways of using language in knowledge construction. Language use reflects the goals, ideologies and practices of the community and cannot be separated from content knowledge. Therefore, understandings of language and the ability to support disciplinary language learning by drawing on learners' current skills within content teaching are highly required (e.g. Cummins 2001; Walqui & van Lier 2010).

### 1.3 Aims and structure of the thesis

This study is conducted in the context of pre-service subject teacher education. My aim is to understand how student teachers approach language in subject learning. Language plays a crucial role in content learning as it is a mediating tool in meaning making and, therefore, has a major role in supporting the learning of all learners.

The ultimate aim of the study is to develop teacher education by gaining a deeper understanding of the approach of pre-service teachers to meaning making in content learning.

The study seeks to answer the following questions:

1. What characterizes pre-service teachers' pedagogical language knowledge?
  - a. How do they orient themselves to the learners' language skills?
  - b. How do they perceive disciplinary language and literacies?
  - c. How do they pedagogically engage the learners in meaning making and foster both language growth and content learning when co-planning teaching?
2. What characterizes pre-service teachers' collaborative practice development across subject boundaries when teaching a multilingual group?

The research project incorporates three sub-studies which are visualized in Figure 1. Article I is based on questionnaire data and Articles II and III on data in which student teachers of Finnish language and literature collaborated with student teachers of ethics/history and science in two groups in order to plan and enact a study unit across disciplines, comprising language and content learning. In both targeted learner groups the language of schooling was Finnish and at least some of the learners had an immigrant background and were learning Finnish as a second language.

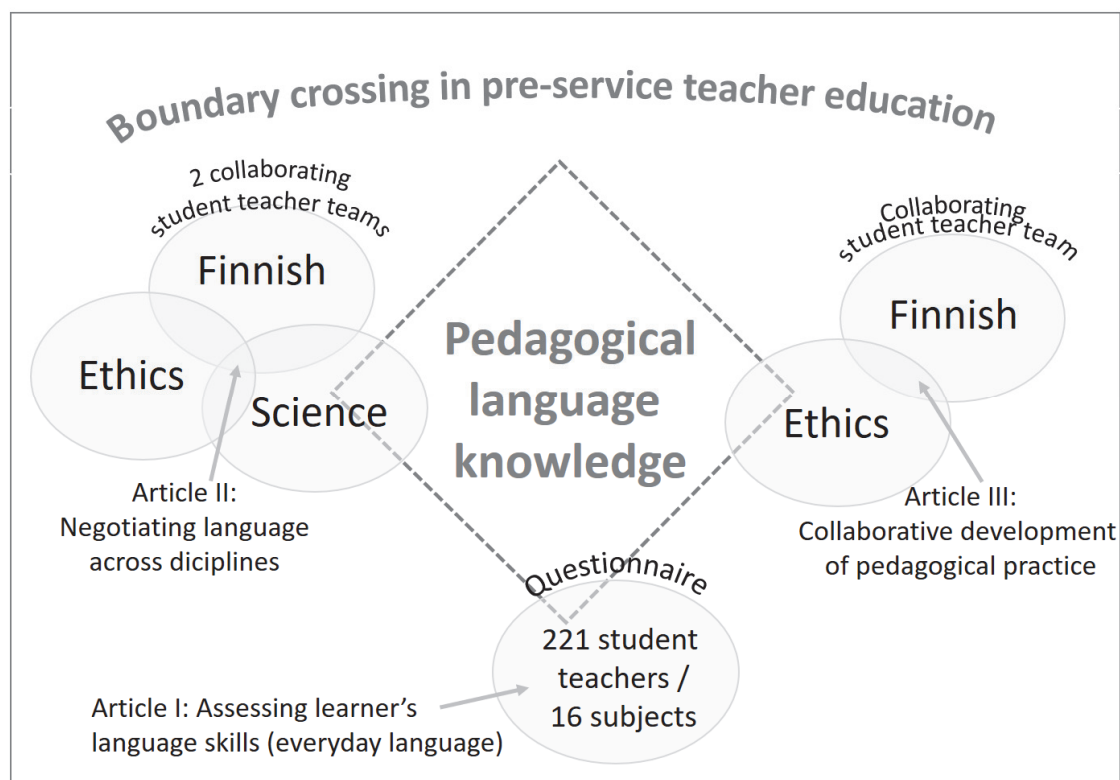


Figure 1 Overall view of the research project and the sub-studies involved

The sub-studies included in the thesis examine pre-service subject teachers' pedagogical language knowledge from different perspectives. Article I is based on questionnaire data in which 221 student teachers assessed a second language learner's writing skill. That sub-study focuses on research question 1a and provides an overall picture of 221 student teachers' orientation to second language learner's language skills (particularly writing). In the research process its function was to provide an initial mapping of student teachers' pedagogical language knowledge and direct the focus of the forthcoming sub-studies.

Article II seeks to answer the research questions 1a, b and c and partly question 2. It examines how student teachers in two teams negotiated language across disciplines when planning their study units for two multilingual groups. Finally, Article III covers all the research questions and examines how a student teacher team collaboratively develop a shared pedagogical practice and co-construct their pedagogical language knowledge.

These aspects of pedagogical language knowledge are crucial for supporting the learning of all learners. As student teachers come from disciplines with characteristic historical and social cultures and traditions, they need to cross subject boundaries and develop a new pedagogical approach that they do not have prior experience of and no model to follow.

The three sub-studies map the student teachers' approaches to pedagogical language knowledge and provide a perspective to enable teacher education to be

developed to better cater for pre-service teachers' needs. Conceptually, the present study approaches these questions through a socio-cultural approach using the concepts of pedagogical language knowledge and collaboration across subject boundaries. The conceptual framework of the study will be discussed in the following sections.



## **2 CONSTRUCTING PEDAGOGICAL LANGUAGE KNOWLEDGE IN COLLABORATION**

The conceptual section of this dissertation firstly presents the socio-cultural approach to learning and then outlines the role of language as a mediator and as a target in all learning. This is followed by a more detailed discussion on the concept of pedagogical language knowledge and how it is connected to supporting the development of learners' academic skills. Pedagogical language knowledge is considered a core concept that student teachers develop during their pedagogical studies. It includes the teachers' ability to orient themselves to the learners' language skills, to disciplinary language and literacies, and to the kind of pedagogy that supports all learners' learning and engagement in meaning making. While teachers need the ability to orient themselves to these aspects on an individual basis, in teacher education they are only guided to develop their expertise in collaboration across subject boundaries. This section concludes by discussing pre-service teachers' collaboration across subject boundaries in developing a shared practice and a mutual understanding of pedagogical language knowledge.

### **2.1 Socio-cultural approach to learning**

The theoretical and empirical work in this dissertation builds on the sociocultural perspective of learning and development (Vygotsky 1978) that treats the nature of thinking, learning and development as human action situated in social, cultural and institutional contexts (Säljö 2001; Vygotsky 1978; Wertsch 1991). When learning is treated as a cultural process, knowing is not restricted to individuals, but knowledge and understandings are both constructed and shared jointly in dialogue between members of communities as they are involved in culturally and historically shaped events and activities (Rojas-Drummond & Mercer 2003). The sociocultural approach to research on language and education is not a coherent or unified theoretical approach (Rojas-Drummond & Mercer 2003), but from

that framework, language and social interaction are perceived as crucial mediators within the cultural process of human development and learning. Interaction constitutes the learning process and language serves as the mediating tool, regulating the internalization of the content and transforming it from the social to individual level (Lantolf & Thorne 2006; Vygotsky 1978; see also Lin 2015). Human action is mediated by tools and signs, mainly that of language, but also other semiotic means including, for instance, symbol systems, counting systems, writing and a range of visual representations (schemes, diagrams, maps etc.) (Moll 1990; Vygotsky 1978). However, language is not used only to convey a message or knowledge, rather language use shapes and mediates our cognition of experience and knowledge (Vygotsky 1978).

There is large consensus among researchers within the Vygotskian or sociocultural framework that knowledge is co-constructed in social contexts as participants build upon each other's thoughts to mutually construct new understanding (Sawyer 2006). Learning is not approached as a process of obtaining information in the mind of the individual or as participation in social practices, but rather as 'a collaborative effort directed toward developing some mediated artefacts, broadly defined as including knowledge, ideas, practices, and material or conceptual artefacts' (Paavola et al. 2004, 569). Knowledge is perceived as concept formation rather than information (Vygotsky 1987; see also Kozulin et al. 2003).

According to Vygotsky (1978), a cognitive problem can be solved through collaborative dialogue by speaking with another person or through private speech—when a person speaks aloud, writes or whispers to themselves. Language is thus used both to make meaning and to mediate a solution to the problem (Vygotsky 1978). Stahl (2006) uses the concept of group cognition as a necessarily publicly visible outcome of group interaction. Ideas presented in interaction are indicators of the understandings in the group and also a prerequisite for members' participation in the collaborative process.

In this dissertation a socio-cultural approach is employed in a number of ways. In pre-service teacher education, one important aim is to get student teachers to adopt epistemic agency (Scardamalia & Bereiter 2006, 2010) as knowledge constructors and structurers instead of passive recipients of transmitted predefined knowledge structures (Paavola & Hakkarainen 2005). Therefore, in this study the student teachers were given authentic and current open-ended problems to solve in collaboration. The students could not merely transfer information from one to another, as the multilingual context of integrating language and content was novel to them and they had no ready-made models to follow. The setting required them to create knowledge through collaboration on a shared objective (Paavola, Lipponen, & Hakkarainen 2004). The teaching interventions in this study operated as a social space for collaborative knowledge creation and learning. While the student teachers generate ideas and meanings together in interaction, they learn also as individuals. Learning is assumed to emerge when participants confront conceptions and challenges beyond what they have already acquired. They are compelled to stretch their capacity by acting in interaction with their peers, crossing boundaries, and going beyond what they are able to do

independently. While the knowledge they create might not be new to outsiders, it is, however, new for the participants themselves.

## **2.2 Language as a mediator and as a target in learning**

In the context of this study, language serves as a tool in learning in two ways. Firstly, as addressed in the previous section, the student teachers under study negotiated to make sense of the role of language within content learning and used language as a mediator in their own discussions when planning, enacting and reflecting on their mutual study unit. They constructed their shared understanding of how language is used to convey meanings in the multilingual classroom and how language and literacies are addressed and explicitly or implicitly taught in relation to content knowledge (pedagogical language knowledge). Their perceptions of language and language learning were also examined through a task set (via questionnaire) to assess the writing samples of a learner of Finnish as a second language. Drawing on Vygotsky's (1978) insight into the interrelatedness of language and thought, it is assumed that the data collected in this study provide a window to the student teachers' understandings of language and enable their collaboration to be investigated.

Secondly, this study focuses on integrated teaching and learning of language and content knowledge in a formal educational context. From that point of view, language serves both as the goal of and as a tool for learning, and its teaching therefore cannot be confined to the language classroom. This does not mean that separate instruction of the language of schooling is not needed, but rather that second language learners cannot acquire language first as an isolated process and then proceed to use it for content learning. Learners often have to study abstract, complex content knowledge ahead of their language development. Furthermore, subject teachers might expect the language of schooling to be taught by language teachers and might not see themselves as language teachers; in addition, they might also assume that second language learners would join the subject classroom only after having achieved rather advanced proficiency in the language of schooling (Vollmer 2008). It is evident, however, that language teachers cannot take full responsibility for teaching the language of all disciplines – the expertise of subject teachers is needed, as subject-specific language, in particular, is essentially bound to meaning making in content areas.

The language of schooling is used as a tool to convey meanings in the classroom and learners learn both disciplinary language and content knowledge through participating in shared meaning making (see also Chi, Leeuw, Chiu, & LaVanher 1994; Cummins 2001; Dalton-Puffer 2011; Meyer, Coyle, Halbach, Schuck, & Ting 2015; Nikula, Dalton-Puffer, Llinares, & Lorenzo 2016). Subject-specific language embodies concepts and disciplinary literacy practices that are a learning challenge for all learners, including native speakers of the language of schooling, but are a particular challenge for second language learners with still developing basic language skills. Particularly in the school context, language is

both a cultural tool for the development and sharing of knowledge between members of a disciplinary community and a psychological tool used for structuring the processes and content of individual thought (Vygotsky 1978). The interaction between collective resources of thinking and conversing (semiotic resources and concrete artefacts, such as written and visual materials) and individual learning is proposed as the basis for development (Vygotsky 1978). Subject teachers are, therefore, teachers of the language of their field, and it is through their guidance that learners get access to disciplinary discourses and develop agency in the subject communities.

The integrated teaching of language and subject content challenges the customary instruction of language as a target in isolated language classrooms (Kaufman 2004). Suni (2008) emphasizes that second languages are to a large extent learned through interaction and therefore via spontaneous acquisition. In that context, language teaching has the role of supporting and structuring the spontaneous process and facilitating learners' participation both in peer and classroom interaction. Progression in the language of schooling cannot be based on a canonical complexity order from simple to more complex constructions. Language teaching should adapt to the actual needs of the learner and respect the course of their learning. Language should be taught through interaction and not for interaction (Suni 2008).

Functional and communicative trends are not new in language pedagogy. For instance, authenticity, learner-centredness, extended notions of formal and informal learning, learning in virtual environments, and language awareness have been promoted over decades (e.g. Aalto, Mustonen, & Tukia 2009; Dufva et al. 2011; Jalkanen 2015; Kaufman 2004; Komppa 2012; Suni 2008; van Lier 1995; Zheng & Newgarden 2012). Furthermore, at the policy and curriculum level there has been a change from language competence as a set of skills to a view of literacies as social practices embedded in social and political processes (e.g. CEFR 2001; NBE 2014; Nikula et al. 2016).

Conventional views of language seem nevertheless to persist both in language teaching practices and in people's every-day conceptions and beliefs about language and language learning (Borg 2011; Peacock 2001; see also Tarnanen & Palviainen 2018). In this context, it can be difficult to bring theory and practice, or ideals and pedagogy, into alignment (Loughran 2006). In Finland, the language teaching tradition both in Finnish and foreign languages is rather textbook-oriented, and it is still usual to speak about language as grammar and vocabulary and modes of language use as isolated skills of speaking, listening, reading and writing (Bovellan 2014; Luukka et al. 2008; Nikula et al. 2016) instead of talking about doing things in language and learning situated language practices. In her study on Finnish as a second language textbook dialogues, Komppa (2012) found that even if the authors promoted functional ideas in the introduction of the book, the texts and activities were still based on a grammar-centred pedagogical approach. Grammatical structures tend to form the skeleton or outline of instruction to which learners' everyday needs and aims are attached (see also Aalto et al. 2009). Varying, situational language use does not seem to be the basis for

Finnish language teaching; instead, many textbook authors still seem to view language learning through formalistic lenses, framing language first and foremost as a system. Furthermore, the textbooks seem to present a fairly established grammatical canon (Aalto et al. 2009; Dufva 2013b; Jaakkola 1997; Komppa 2012; Suni 2008).

A grammar-based orientation to language has also been identified among Finnish pre-service teachers, who tend to view Finnish as a mother tongue largely in terms of grammar instruction and to consider grammar essential even for developing the reading, writing and interaction skills of primary school pupils (Kauppinen, Tarnanen, & Aalto 2014; Tarnanen, Aalto, Kauppinen, & Neittaanmäki 2013). Student teachers' language beliefs are assumed to echo the kind of school teaching the students have themselves experienced. Furthermore, Bovellan (2014) found that for the majority of CLIL (content and language integrated learning) teachers, language appeared to be a set of words and a grammatical system rather than a social practice or a communicative tool. Korhonen and Alho (2006, 2014) note that people's memories and complaints about grammar in mother tongue instruction seem to remain the same regardless of the decade in which they went to school. The decrease in the amount of grammar instruction has not changed this situation. Knowledge of languages tends to be dissociated from their use and vocabulary from meaning making (see also Dufva 2013a, 2013b). Grammatical constructions are easily presented without a clear emphasis on the situated context and in isolation from knowledge formation.

The traditional formalistic view of second language learning as a linear, predictable and isolated process focussed on explicit grammatical structures and vocabulary does not seem adequate for the purposes of teaching and learning language and content knowledge in parallel. Disciplinary language cannot be separated from content knowledge because language and content are inherently interconnected and subjects are represented in language. In content learning, learners are exposed to subject-specific language use and literacy practices that are relevant to the learners and, optimally, communication is meaningful and authentic as they are dealing with real topics. Through the Vygotskian (1978) sociocultural lens, the nature of language and literacy is essentially social and context-bound, and language use and language and content learning are a connected activity. The sociocultural view of language and learning broadens the view from the individual to the social and recognizes the resources provided by the social environment and the affordances that the learners tap into (van Lier 2000). Learners learn the kinds of interaction and action that they are afforded. They do not internalize words and linguistic structures, but by actively participating in various subject communities and learning the language used in them, they appropriate the language practices and thus recycle the resources used by other people and make them their own (Dufva 2013b). This can be seen as a socialization process (Duff & Kobayashi 2010; Walqui 2006).

Learning language in integration with content knowledge can be related to the idea of language use and language learning as a connected activity. Language

emerges from usage through dynamic adaptation to varying contexts and communicative needs (Larsen-Freeman 2013). From that perspective, language development does not follow a canonical order of learning first simple and then more complex constructions, but learning paths vary and reflect the communicative situations and linguistic resources to which learners have access (Larsen-Freeman 2013; Mustonen 2015). Learner participation is highly reliant on mastery of the language of schooling (see Saario 2012). Teachers are therefore required to pedagogically support learners' agency and engage them in processes of participation that help them appropriate different language usages. This could be done through translanguaging, which refers to polyphony and heterogeneity of languages, registers and semiotic resources in meaning making and to their nature as a flexible, social resource for student engagement and mutual knowledge creation (see e.g. Creese & Blackledge 2015; Cummins 2008; Probyn 2015). The different modes of meaning making, ranging from everyday concepts to different registers, graphs, visualizations and verbalizations, mediate the acquisition of scientific content and concepts (Vygotsky 1978; also Gajo 2007; Mortimer & Scott 2003; Swain 2006). As meaning-making tools they are interconnected and interdependent and also inseparable from content knowledge. Optimally, learners are offered linguistic support in subject classrooms as well as adaptable focused language instruction that proactively reacts to the learners' needs and challenges.

From the sociocultural approach to language and language learning, which is promoted in this study, it is important that teachers be aware of their learners' language skills and the characteristics of disciplinary language use and literacy conventions in their own subject. Furthermore, they need to be enabled to support all learners' learning and to adapt their pedagogical approach according to the learners' existing proficiency and individual needs. However, teachers' perceptions of language and language learning impact on their assumptions about the teaching and learning of languages (Moyer 2008). This study examines pre-service teachers' approaches to language as a target and mediator in learning, that is, their conceptions of pedagogical language knowledge. Various approaches to and conceptions of subject teachers' language knowledge are introduced in the following section. Pedagogical language knowledge, a concept adopted in this study, is defined and discussed after illustration of the overall conceptual picture of the field.

## **2.3 Co-constructing pedagogical language knowledge**

### **2.3.1 Subject teacher's pedagogical language knowledge**

The demand for subject teacher (also referred to as *secondary teacher* and *mainstream teacher*) awareness of the language of schooling is not a particularly new issue, but has gained renewed attention in the Finnish educational discussion along with the new Core Curriculum for Basic Education (NBE, 2014). Already

Hawkins (1984, 1999) saw language as central to all learning and all school subjects and called for 'close, on-going cooperation between teachers across the curriculum' (1999, 140). He (*ibid.*) states that, for instance, in Britain teachers' language awareness was demanded in the 1970s out of concern about students' literacy skills in first language (L1) and their low performance in learning foreign languages. Moreover, it was also a reaction to prejudice.

There have always been native speaker students who struggle with knowledge constructions and reading and writing complex and abstract texts in the classroom, and the dominantly content-oriented educational tradition has often left students alone in grasping the language and literacy requirements of the subject (e.g. Creese 2005; Monte-Sano 2011; Shanahan & Shanahan 2008). Research has revealed that language tends to have an invisible, unconscious role in disciplinary meaning making in the classroom (e.g. Nikula 2017). However, plenty of pedagogical research exists on, for instance, argumentation, knowledge construction and social interaction in content learning (e.g. Barton & Levstik 2009; Fang & Pace 2013; Haenen et al. 2003; Lemke 1990; Mercer & Sams 2006; Mortimer & Scott 2003; Nikula et al. 2016). That research and the pedagogical development based on it have been founded particularly on the sociocultural perspective of learning, which emphasizes the crucial role of language in learning and thinking (Vygotsky 1978). Clearly though, language-sensitive practices have not become a ruling practice in disciplinary pedagogies.

The increasing linguistic and cultural diversity in classrooms has significantly contributed to recognizing language and literacy development in subject learning (e.g. García 2008; Gibbons 2007; Nikula et al. 2016; Walqui 2006). The growing number of learners with rich multilingual resources but with inadequate language skills for abstract thinking and knowledge construction in the language of schooling challenges all teachers to consider their practices in supporting the learning of all learners.

This study focuses on multilingual and multicultural learner groups and aims to examine pre-service teachers' abilities to support particularly second language learners in mainstream subject classrooms. The following research review, therefore, covers teachers' language awareness in teaching multilingual and multicultural students, although the language-sensitive pedagogy is significant in supporting the learning of all learners (see e.g. Walqui 2006).

Over the past decades a number of approaches have been adopted to develop mainstream teachers' abilities and understanding for coping in multilingual and multicultural settings (for reviews, see Bunch 2013; Faltis, Arias, & Ramírez-Marín 2010; Lucas & Grinberg 2008; Pettit 2011; Schleppegrell & O'Hallaron 2011). Bunch (2013) points out that mainstream teachers' language expertise differs fundamentally from the knowledge that second language teachers need in their teaching, but also from the pedagogical content knowledge teachers adopt in disciplinary instruction. Furthermore, De Jong and Harper (2005) argue that teaching language learners requires explicit attention and 'more than just good teaching'. Scholars have attempted to capture the language knowledge required from subject teachers and how it differs from the expertise

of language teachers. Many conceptualizations are fairly extensive and include a lot of knowledge that is customarily connected to language teachers' expertise.

Although the approaches toward subject teachers' language knowledge and skill base vary, scholars seem to share many fundamental understandings (Bunch 2013; Faltis et al. 2010). Broadly taken, various frameworks and conceptualizations aim to describe, firstly, subject teachers' orientation to language, language use and language learners, e.g. values, beliefs and awareness of linguistic diversity and the connection between language, culture and identity formation. Secondly, their knowledge and understanding of the academic language and the general role of language in subject learning are addressed, e.g. language demands of the disciplinary practices, the benefits of skills and knowledge learned in L1, and their understanding of the typical phases in language learning. Thirdly, the pedagogical skills needed in multilingual and multicultural classrooms for supporting engagement and scaffolding learning are often included in the conceptualizations, e.g. the ability to build on learners' background knowledge and draw on linguistic and cultural diversity in teaching, and the ability to adjust teaching for learners with varying experiences of schooling and to use talk as a tool in enhancing learners' reasoning and understanding (see, e.g. Bunch 2013; de Jong & Harper 2005; Faltis et al. 2010; Gibbons 2007; Lee et al. 2013; Lucas & Villegas 2011; Walqui 2006). However, relatively little is known about mainstream teachers' language knowledge or language learning experiences, or their understanding of language learning in the mainstream classroom. In all, research on teacher education for linguistic diversity is so far scarce (Bunch 2013; Cajkler & Hall 2011; Lucas & Grinberg 2008).

Various approaches and concepts have been adopted and proposed to describe subject teachers' expertise and language-sensitive practices: for example *educational linguistics* (Fillmore & Snow 2002), *pedagogical language knowledge* (Bunch 2013; Galguera 2011), *linguistically responsive teacher* (Lucas & Villegas 2011, 2013), *language-sensitive teaching* (Bailey, Burkett, & Freeman 2008), *teacher language awareness* (Braidbach, Elsner, & Young 2011; Andrews 2003 in the context of language teaching), and *language intensive tasks and practices* (Lee et al. 2013; Quinn, Lee, & Valdés 2012). How linguistic and cultural diversity influences pedagogical practices has also been dealt with in terms of *socially just pedagogies* (Moje 2007). The relationship between content and language learning has been examined in the research field of *content and language integrated learning*, CLIL (see e.g. Dalton-Puffer, Llinares, Lorenzo, & Nikula 2014) and the pedagogical links to *inclusive pedagogy* (Peterson & Hittie 2003) are also close.

In this study, I am particularly concerned with subject teachers' ability to engage all learners and support their learning, and I therefore approach the role of language and language use from the pedagogical viewpoint. I also consider defining subject colleagues' expertise merely from a linguist's point of view to be a controversial issue. Disciplinary expertise has deep roots and is challenging to change. Language and literacy perspectives need to be negotiated with subject teachers and not prescribed from outside. Furthermore, the conceptualizations



made by linguists turn out to be inefficient and useless unless subject teachers themselves accept them and incorporate them in their expertise.

I adopt the concept of *pedagogical language knowledge* that Bunch (2013, 307) defines as 'knowledge of language directly related to disciplinary teaching and learning and situated in particular (and multiple) contexts in which teaching and learning take place'. I consider this definition meaningful and reasonable for subject teachers, as it approaches language from the concrete disciplinary context and not primarily from linguistic premises. Bunch's definition embodies the following aspects that I consider particularly important. Firstly, this approach promotes a distributed view of language (e.g. Zheng & Newgarden 2012) in which language is not primarily recognized as a code of linguistic structures and verbal patterns, but rather as a social institution (see also Kravchenko 2009) and action that serves to coordinate behaviour in real time and community across time and space (see also Bunch 2013; Walqui & van Lier 2010). Language forms and functions are thus considered subordinate to action, i.e. in this particular research setting, the disciplinary activities and practices. Secondly, teachers' pedagogical language knowledge refers to their understanding of the social and context-bound nature of language and literacy. For instance, academic language differs fundamentally from every-day language, and teachers need the skill to analyse disciplinary language use and to observe the role and characteristics of spoken and written language variation according to the situation, audience and genre in disciplinary learning (e.g. Cummins 2001; Lemke 1990; Mortimer & Scott 2003; Unsworth 2001). This does not primarily require mastery of a predictable, finite set of concepts and linguistic systems, but rather an adaptable ability to analyse language as action (van Lier & Walqui 2012) and to identify key constructions that convey the essential meanings. Thirdly, the concept includes the pedagogical knowledge and skills needed to develop meaningful activities that engage students' interest, promote collaborative meaning making, and foster both language growth and content learning (see also Bachmann & Palmer 1996; Bunch 2013; Canale & Swain 1980). Fourthly, although not explicitly addressed, I perceive the learner in 'the multiple contexts in which learning takes place' as a multilingual student with a specific linguistic repertoire (e.g. first language and other language resources) and prior knowledge and skills that the teaching optimally builds on and that the teacher therefore needs to be aware of. The above definition of pedagogical language knowledge has a number of consequences for the pedagogical approach, which I will discuss in more detail in subsection 2.3.2.

Prior research on mainstream teachers' expertise in adopting language-sensitive pedagogy highlights teachers' lack of knowledge about the crucial role of language in subject content learning. It has been demonstrated that teachers are often unable to analyse the phases of language development or to intentionally address the specific language and literacy requirements of the various learning contexts and the texts and textual practices they use in their teaching (Coady et al. 2011; de Jong et al. 2013; May & Smyth 2007; Valdés et al. 2005). Furthermore, teachers' ability to pinpoint and exploit relevant information about their students' linguistic and cultural histories within and beyond school is often insufficient

and even ignored (de Jong et al. 2013). Insufficiency of information easily leads to unspecified and ambiguous assessment feedback and shortcomings in setting language and literacy goals for learning. It also interferes with the teacher's ability to identify learners' linguistic challenges in studying academic content knowledge (de Jong et al. 2013; Faltis et al. 2010; Pettit 2011).

Various studies have reported the unappreciated and invisible role of language in meaning making and limited focus on vocabulary and key terms alone (Creese 2005, 2010; Gleeson 2010; Zwiers 2007). Valdés et al. (2005; see also Love 2009; Nikula et al. 2016; Nikula 2017; Vollmer 2008) note that most teachers use spoken language unconsciously. For instance, Gleeson (2010) has discovered that subject content teachers set hardly any language learning goals and, in her study, any focus on academic language seemed to be incidental rather than planned or strategically considered. However, the teachers recognized writing explanations in science as a skill that requires explicit teaching, although they did not recognize it as a language-related skill but a subject-related skill (Gleeson 2010). In Gajo's (2007) study on the integrated nature of content and language, subject teachers were more precise than language teachers regarding the use of language in the science classroom. The examples from Gajo and Gleeson both point to the vital intertwining of language and content knowledge. For subject teachers' pedagogical decision making, however, while understanding the role of language of their subject is one important concern, understanding how students learn a new language in school is another important consideration. Moreover, according to Gleeson (2010), teachers might well be unsure about what aspects of language to teach and how to address language in their teaching. They may even misconceive language teaching as simplifying, boring, and disconnected from subject content (Gleeson 2010) or as the domain of language, not subject, teachers (Moate 2011).

To sum up, this study aims to contribute to the research from the viewpoint of pre-service teacher education through examining how pre-service teachers in collaboration develop their pedagogical language knowledge, i.e. how they assess learners' language skills and perceive the role of language in content learning, and how they pedagogically support second language learners' linguistic and participation skills.

### **2.3.2 Pedagogical language knowledge as a tool for supporting academic skills development**

In the previous subsection, teacher's pedagogical language knowledge was defined as a broad concept covering, for instance, the teacher's ability to analyse situated language use and pedagogically support learning. There is considerable consensus among researchers regarding the intertwined nature of language and content and their learning as a connected activity (Dufva 2013b; van Lier 2007). Furthermore, scholars largely agree about the fundamental principles in supporting the development of academic skills in subject studies (see e.g. Cummins & Early 2015; Kibler, Walqui, & Bunch 2015; Stanford University 2013; n.d.). In general terms, effective learning is often connected to a pedagogy that builds on

learners' prior knowledge and skills and promotes critical literacy, active learning, and deep understanding (e.g. Bransford, Brown, & Cocking 2000; Cummins 2001; Haenen et al. 2003; Meyer & Coyle 2017; New London Group 1996). These aspects are largely promoted in core curriculum reforms in various countries, Finland included (NBE 2014). In the US, scholars have made significant advances in pedagogical development in generating approaches for the inclusion of second language learners in the new standards-aligned instruction (see e.g. Kibler et al. 2015; Stanford University 2013; Valdés et al. 2014). Involving all learners in quality education of academic skills is considered crucial for the development of citizenship and agency in society.

For the purposes of this study, the pedagogical principles shared by Cummins' academic expertise framework (2001, 2006) and the pedagogical re-conceptualizations promoted by Stanford University (2013) and Kibler et al. (2015) (see also Valdés et al. 2014; Walqui 2006; Walqui & van Lier 2010) were adopted as cornerstones for modelling pedagogical practice development that promotes optimal and integrated learning of both language and content knowledge. Their pedagogical approaches towards optimal and parallel learning of language and meaningful content rest upon the following understandings.

First, learners are treated as intelligent, imaginative, and linguistically talented; individual differences are not seen as diminishing the potential of an individual learner (Cummins 2001). Learners need to experience that despite their limited access to the language of schooling they are valued and treated as speakers in their own right (Kramsch 1995). Teachers and peers should make them feel legitimated to participate in mutual knowledge construction in the classroom by allowing and expecting them to contribute with their current resources and to socialize into language use and argumentation in subject content areas (Walqui 2006). Learners build new knowledge upon their prior understanding, and the new knowledge is connected to the existing conceptual structures in such a way that it leads to deep understanding and extended language skills (Cummins 2001; Kibler et al. 2015).

Second, all learners are engaged in meaningful cognitively challenging tasks in which they are guided to activate their prior knowledge and required to participate in shared knowledge construction, as disciplinary language and literacy practices are learned through participation in challenging activities. Instead of using primarily simplified language and materials, learners are guided to engage with complex, amplified texts. The texts are enriched both linguistically and extra-linguistically in order to provide students with multiple clues and perspectives for constructing their understanding of the concepts (Gibbons 2003; Kibler et al. 2015; Walqui 2006; Walqui & van Lier 2010). Furthermore, learners should be encouraged to use their mother tongue and other language resources in learning, as strong skills in L1 promote learning of academic content (e.g. Lucas & Villegas 2011).

Third, active participation in challenging activities is scaffolded by support adjusted to the learners' individual needs. Activities are designed to scaffold students' development and increase autonomy. This is done through monitoring the

learners' growing understanding and developing academic skills. Furthermore, the activity continuum is not linear but designed in a cyclical way: concepts are reintroduced in phases of higher levels of complexity and inter-relatedness. However, the scaffolds are by definition temporary and intended to teach learners how to take charge of their own learning process. The responsibility is handed over to learners themselves as soon as possible (Kibler et al. 2015; Walqui 2006).

Fourth, support is also provided through interaction with peers and teachers. Following the sociocultural idea of a learning community, these interactions create a space for knowledge construction and identity development. It is through interaction that the students can socialize into the learning community and negotiate their identity as members of the community (Cummins 2001). Learning is thus not perceived primarily as an individual process, but as a process of apprenticeship in a social context (see also subsection 2.1). Through interaction, learners are encouraged and guided to actively and versatily use the language(s), to practice their skills in line with the specific demands set by the task (Kibler et al. 2015). According to Cummins, learning is optimized when these interactions maximize both cognitive engagement and identity investment (Cummins 2001). In content-focused teaching, the learners' identity development is often not addressed in particular, although, as Bruner (1996) claims, the relationship between peer learners is as important as the activities and content knowledge in which they are involved. If all learners have equal agency and ownership in terms of the process and the outcome of learning, the schooling socializes them into active participation and guides them in their participatory identity development.

Finally, explicit attention to language enhances students' development of academic skills (Cummins 2001). The focus on language should not be restricted to the linguistic code but focus rather on the analysis of how language is used for achieving various social goals and constructing meanings in different situations and texts. From early on, learners' critical literacy should be developed by using their entire linguistic repertoire in deep-level processing of texts. The focus on language also covers the need to position students in such a way that enables them to use language to generate knowledge themselves and to act in a meaningful way with respect to social realities, thus expanding their opportunities for cognitive engagement and identity investment (Cummins 2001, 2006).

It is important to promote mainstream pre- and in-service teachers' pedagogical language knowledge, as research shows that a perceived lack of ability in the language of schooling is sometimes considered reflective of limited academic or cognitive ability (Safford & Costley 2008). Students have even experienced limited access to cognitively demanding literacy experiences and a reduced curriculum because they have not been thought to be 'ready' for academic contents due to their developing language skills. In pursuing simplification of tasks and texts, albeit well-meaningly, teachers may restrict students' opportunities to practise and develop their academic skills (Safford & Costley 2008). If teachers are not able to recognize and analyse the different linguistic and cultural bases on which students become involved in their studies and how these premises

shape and define individuals' learning paths, students may underachieve in school, with broader long-term impacts on society (see e.g. Cummins 1984; Skutnabb-Kangas 1984). Learners need to experience that despite their limited access to the language of schooling they are valued and treated as 'speakers in their own right' (Kramsch 1995).

In this study, pedagogical language knowledge and student teachers' approach to language and content learning within disciplines are considered crucial to how they are able to support learners' learning. Subject teachers are required to provide second language learners with full access to academic language and subject-area content, yet without proper teacher preparation, their teaching may be limited to instruction in vocabulary or language that is decontextualized from disciplinary contents and meanings (Robinson 2005; Schleppegrell & O'Hallaron 2011). Therefore, pre-service teachers need to be supported to develop the understanding and skill to learn about their learners, how to identify the language demands inherent in classroom tasks, and how to pedagogically scaffold learning. The challenge, however, does not lie on the shoulders of the individual teacher, but, optimally, the pedagogical culture at whole-school level should promote learning communities in which practices are developed in collaboration across disciplines. This study examines student teachers' readiness to meet their diverse students, and aims to develop ways of supporting their learning through professional collaboration.

## **2.4 Collaboration across subject boundaries**

In the context of this study, student teachers develop their pedagogical practice and their pedagogical language knowledge in collaboration across subject boundaries. Co-construction of mutual understanding and new knowledge is assumed to entail learning.

Drawing on Vygotskian sociocultural theory, learning is viewed as an intrinsically social phenomenon in which interaction comprises the learning process and language serves as the means for mediation, guiding the internalization of the content and transforming it from the social to individual level (Lantolf & Thorne 2006; Lin 2015; Vygotsky 1978). Collaborative learning, rooted in Vygotsky's sociocultural theory (Vygotsky 1978; see also Dillenbourg 1999), is a widely and often ambiguously used term that refers to a variety of approaches adopted to describe and implement practices of students working with peers towards a shared goal (Dillenbourg 1999; Orland-Barak & Tillema 2006; Van den Bossche 2006). Collaborative practices have been regarded as crucial to professional development because they facilitate opportunities for teachers to create networks that enable them to reflect on and share their practice, reconsider their understanding of learning and teaching, and co-construct new knowledge (Achinstein 2002; Chan & Pang 2006).

While there is no mutual agreement on the definition of collaborative learning, Dillenbourg (1999) claims it has been understood in the literature in two distinct ways: as a teaching method, or as a learning mechanism. Orland-Barak and Tillema (2006), on the other hand, distinguish between two differing tracks of collaborative enquiry: focus on the process, or focus on the product of collaboration. Dillenbourg (1999) argues that collaborative learning is neither a method nor a mechanism, but rather a kind of 'social contract' that requires the engagement and contribution of all participants. Optimally, he claims, interaction among learners generates activities that trigger learning mechanisms and enhance higher-order thinking, deep learning, and knowledge internalization. As interaction ideally invites participants to negotiate, explain, clarify, mutually adjust, agree, and disagree, these activities should trigger knowledge construction and internalization.

Roschelle and Teasley (1995, 70) define collaboration as 'a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem'. This definition involves consciously aiming to create something new, such as knowledge, solutions, understanding or practices and, as part of that process, learning through interaction. The process of creation is cyclical and iterative and involves ambiguity and uncertainty (Damsa & Jornet 2016). The interaction and action are interweaved, and the outcome of the shared effort is something that cannot be credited to any individual and exceeds what any single participant could have constructed on their own (Kuusisaari 2014).

It is noteworthy that many scholars have used, for instance, the concepts of *peer learning* (Boud et al. 2001; Havnes et al. 2016), *small group learning* (Damsa 2013) and *cooperative learning* (Kyndt et al. 2013) in a similar way, describing a mutual effort towards shared understanding. Sometimes these concepts are used somewhat synonymously, sometimes they are defined separately. For example, Dillenbourg (1999) makes a distinction between collaboration and cooperation, arguing that in cooperation the division of labour is high with partners splitting the work into sub-tasks and working on an individual basis, whereas in collaboration partners do the work together (see also Roschelle & Teasley 1995). According to Dillenbourg, cooperation is often associated with rather asynchronous communication, whereas collaboration is synchronous. He admits that there can be a horizontal division of labour in collaboration, but then the tasks are interwoven and the roles of the partners shift from time to time. Bruffee (1995), on the other hand, claims that the terms have different origins, with cooperative learning used in reference to children and collaborative learning in reference to college and university students. According to Bruffee, the terms also differ, for instance, in regard to the nature of knowledge, with cooperative learning directed towards the learning of individual disciplines (foundational knowledge), and collaborative learning referring to the learning of skills, such as critical argumentation, reasoning or the construction of new knowledge (non-foundational knowledge) (see also Kyndt et al. 2013). As the distinction between the concepts goes beyond the scope of this study, the concept of collaborative learning is employed.

According to Dillenbourg (1999), collaborative learning situations are typically perceived as symmetrical with respect to power status, although the group symmetry may change during the process. Participatory roles may constantly shift, but it is essential that division of labour is minimal and participants genuinely work together. This creates positive interdependence and individual accountability between the participants. Dillenbourg (1999) refers to this as a 'social contract' between learners in reaching their goal. The shared goal may partially have been set up at the outset of the project, but as the task is open-ended there is space for negotiation and modification during the process. Participants can vary in their understanding of the point and goal of an action and approach it from different viewpoints. Negotiation of different standpoints and misunderstandings is central, and it is through this process that participants create something together. Through this collaborative activity, participants are solving a joint problem, and the process of problem solving is expected to involve learning (Dillenbourg 1999). Learning can be observed through the construction of new knowledge and the development of shared ideas.

In this study, student teachers collaborate across disciplinary boundaries that can be defined as 'sociocultural differences that give rise to discontinuities in interaction and action' (Akkerman et al. 2011, 139). *Boundary crossing* refers to attempts made to create ongoing, two-sided action or interaction across different practices (Akkerman et al. 2011). It requires going into unfamiliar territories and demands cognitive retooling (Tsui & Law 2007). The two small groups of student teachers examined in this study work across the disciplines of Finnish language and ethics/science in a multilingual and multicultural classroom. They are required to share, negotiate and co-construct knowledge in order to develop a study unit integrating language and content learning, a perspective that is novel to all of them. The task given to them could not have been conducted without the contribution of both subjects. The main boundaries to be crossed during the collaboration are: the pedagogical and disciplinary traditions of the Finnish language and ethics/science; linguistically and culturally homogeneous classroom versus multilingual and multicultural classroom; language and content; and parallel roles as students in teacher education and teachers at an institute. The multilingual and multicultural setting with its built-in disciplinary boundary crossing provides a fruitful space for collaboration and construction of a shared pedagogical practice that goes beyond the participants' customary areas of expertise.

Students are interdependent when they collaboratively construct a shared practice that goes beyond the subject matter (Lin 2015) and represents a change in their prior disciplinary traditions and understanding. According to constructivist principles, learning is most likely to occur when learners' existing knowledge is challenged in collaborative work with others (Gash 2015). Collaboration across subject boundaries tends to bring about collisions between prior knowledge, understandings, interests, perspectives, practices, and traditions. The tensions can be related to epistemic, socio-relational or affective aspects, and they can even disable learning (e.g. Damsa 2013). However, inherent tensions

stemming from sociocultural differences should not be seen as sources of potential difficulty, but rather as sources of deep learning, as they force participants to reflect on and become aware of their existing practices and assumptions, thus affording opportunities for renewal, a higher level of creativity, and developmental transformation (see also Akkerman et al. 2011; Gash 2015; Sins & Andriessen 2012). According to Akkerman et al. (2011), groups differ in how they deal with boundaries; some reconstruct them without necessarily overcoming the inherent discontinuities, while others look for routine means to overcome them in order to cooperate effectively. However, the aim is not necessarily to dissolve the boundary and merge the intersecting social domains by moving from diversity to unity, but rather to solidify continuity of action and interaction through mutually developing a new in-between practice. It is obvious that tensions cannot enable changes in practice if they are not acknowledged and identified by the collaborating participants. Even if tensions are identified but the actions do not change the existing social organization comprising the contradiction, the problem is left in place and the practice is not renewed (Barowy & Jouper 2004).

Student teachers' knowledge asymmetry and the possibility to work with a more capable peer representing another field of expertise may facilitate student learning in the zone of proximal development (ZPD), which combines individual development and social interaction (van Lier 2000; Vygotsky 1978). The ZPD has been typically applied to teacher-student collaboration and scaffolded collaboration of children in a classroom setting, but increasingly the research focus has also been on peer collaboration of equally capable adults (Kozulin et al. 2003; Kuusisaari 2014). The concept of ZPD treats learning as a social process in which learners can go beyond their present capabilities as individuals by using mediating tools (Chaiklin 2003) and creating something fundamentally new: advanced activities and practices that individuals could not have created on their own (Bereiter 2002; Stahl 2006).

In this study, the ZPD is considered a metaphorical concept (Kozulin et al. 2003), as student teachers are assumed to collaborate within their zone of proximal development, which forms on the basis of their prior knowledge, experiences and disciplinary traditions and the challenge of creating a pursued novel shared practice (Vygotsky 1978). Such collaboration is considered meaningful for learning and development. The student teachers come from different disciplinary practices and expertise and thus represent, at least in some respect, a more capable peer to each other, and hence scaffold each other's personal development through the ZPD. They face a current challenge and aim to develop a practice of their own to meet it. They participate in a process of negotiation and co-construction of new knowledge, representing a change in their prior pedagogical tradition and understanding. They truly need each other and would be unable to complete the task on an individual basis, as expertise in both disciplinary areas (the Finnish language and science/ethics) is needed. The problem to be solved is novel to all of them, as they have no experience of teaching language and content to multilingual and multicultural learners. In addition, while the student teachers each bring their own disciplinary expertise, parallel language and content teaching is



new to all of them. Therefore, we can assume that while their individual competences are inadequate for solving the problem independently, they are able to work on it in collaboration, and are thus acting within their zone of proximal development. The interaction provides conditions for developing shared understanding and learning (see also Damsa & Jornet 2016).

The cognitive benefits of effective collaborative learning are clearly demonstrated in the research literature (Khosa et al. 2013; see also a meta-analysis of studies on cooperative learning by Kyndt et al. 2013; Ramsden 2003). However, it is by no means self-evident that the learning mechanisms and collaborative knowledge construction will come into operation and result in new knowledge and practices in all collaborative interactions (see also Kreijns et al. 2003; Kuusisaari 2010; Meirink, Imants, Meijer, & Verloop 2010; Summers & Volet 2010; Tillema & van der Westhuizen 2006; Van den Bossche et al. 2006). For instance, undergraduate students do not tend to consider collaborative learning as effective (Raidal & Volet 2009; Ruys, Van Keer, & Aelterman 2010; Thurman, Volet, & Bolton 2009). The ability to learn together depends on the quality of the interaction in the group and to what extent participants make a conscious, continued effort to coordinate their activity with respect to the construction of knowledge (e.g. Barron 2003; Kreijns et al. 2003). As Roschelle and Teasley (1995) point out, genuine collaborative learning is achieved through interpretive, elaborative talk, rather than through collaboration itself. Similarly, according to Dillenbourg (1999, 5), 'Peers do not learn because they are two, but because they perform activities which trigger learning mechanisms'. According to Hesse, Care, Buder, Sassenberg, and Griffin (2015), it is possible to teach and develop social skills such as participation, perspective taking, and social regulation through collaborative learning; raising the question, therefore, of how to trigger learning mechanisms in order to promote learning. Paavola et al. (2004) compared the existing models of innovative knowledge communities and concluded that in all of them innovative learning and knowledge advancement are characterized as cyclical and iterative processes involving ambiguity and even chaotic elements. Knowledge creation is a longish process of transforming existing ideas and developing practices.

Collaboration has recently been the focus of extensive educational research covering a wide range of settings (see e.g. Kuusisaari 2014). Prior studies on collaborative learning have largely focused on classroom interaction between peers or in teacher-student relationships (Hmelo-Silver 2003; Sawyer 2006) and in-service teachers' collaborative learning within professional learning communities (e.g. Kuusisaari 2013; Meirin 2007; Popp & Goldman 2016). In addition, the partnership between pre-service and in-service teachers has also been studied (Willegems et al. 2017). Many studies focus on interactional processes and patterns and aim to trace the elements that foster or impede the productiveness of group collaboration (Barron 2009; Kuusisaari 2013) and to examine the dynamics of knowledge construction and how it changes and evolves (Orland-Barak & Tillema 2006). The analytic focus can be set on individual learning (e.g. Barron 2009; Meirink, Meijer & Verloop 2007) or on group learning (Kuusisaari 2013). Previous

research on boundaries in teacher education has mainly focused on the sociocultural differences between teacher education programmes and teacher practice in schools (e.g. Edwards & Mutton 2007; Gorodetsky & Barak 2008; Tsui et al. 2007) and on learning related to identity development (e.g. Waitoller & Kozleski 2013).

Prior studies on English as a second language (ESL) teachers' and content teachers' collaborations have focused on, for instance, power relationships between teachers (Creese 2002; Mousa 2012), teachers' perceptions of collaboration (Pawan et al. 2011) or factors describing successful collaboration (Mousa 2012). Research recognizes the need to provide interdisciplinary practical experiences and pedagogical models of collaboration between ESL and content area teachers already in pre-service education (e.g. Agyei & Voogt 2012; DelliCarpini 2009; Kaufman & Brooks 1996; Kleyn & Valle 2014; Tilley-Lubbs & Kreye 2013). For instance, Kleyn and Valle (2014) strived to rethink the academic structures and develop a co-teaching model for diverse classrooms across academic boundaries in which pre-service teachers' collaboration was intensively supervised by teacher educators. Interconnections across fields were created and teacher and student learning was increased, but the findings suggested that new approaches are needed for developing inclusive pedagogies that engage diverse students.

In the present study, the student teachers were provided with a space for collaborative practice construction and problem solving involving a current developmental challenge. They entered a new context, as teaching and learning in multilingual and multicultural groups was a new perspective for the majority of the participating student teachers and none of them had prior experience of language and content integration. I consider the process of learning to be both individual and socio-cultural, and I examine the student teachers' collaboration across subject boundaries in terms of how they deal with the knowledge asymmetry between participants, how they negotiate shared understandings, and what kind of knowledge and understanding they construct in the multilingual setting.

### **3 DATA AND METHODS**

As described earlier in Chapter 1, a practitioner research approach was adopted for examining pre-service teachers' pedagogical language knowledge and collaboration across subject borders in a multilingual context. As a teacher educator and a researcher, I aimed to learn from my practice in order to develop it further. Moreover, the research setting was designed to support the student teachers' learning and they were provided a space for learning in collaboration across disciplines. In this section, the research setting and the methodology employed are discussed more in detail.

#### **3.1 Research setting and participants**

This research focused on two different types of multilingual and multicultural settings, both relevant to the current educational context. The study consists of three sub-studies reported in three articles, each of which approaches pedagogical language knowledge from a different angle. The first sub-study (Article I) explicitly sought to understand how student teachers of various subjects perceive language and orient themselves to second language use. This was done by examining how the student teachers assess a second language (L2) learner's writing skills. These assessments were assumed to provide an overall picture of what student teachers consider important in language use and how they ponder different assessment criteria for these skills. In the research process the function of the first sub-study was to provide an initial mapping of student teachers' pedagogical language knowledge and direct the focus of the forthcoming sub-studies.

Study 1 thus formed a basis for in-depth case studies (studies 2 and 3) examining cross-disciplinary student teacher groups' collaborative construction of pedagogical language knowledge. In studies 2 and 3 the focus was aimed at the pedagogical planning level by examining student teachers' small group collaboration across subject boundaries. Studies 2 and 3 report on two teaching interventions that were conducted in multilingual groups in a mainstream classroom

in a comprehensive school and in an adult migrants' integration education course. Study 2 set out to explore what kinds of meanings student teachers give to language and language use in the context of subject teaching and what kind of spaces for meaning making they create for learners in their planning discussions. Study 3 focused on student teachers' collaboration in developing a shared pedagogical practice within subject boundaries. Study 2 was based on the data from both interventions, whereas Study 3 focuses only on the Ethics-Finnish intervention. The sub-studies are summarized in Table 1 and their implementation is described in detail over the following pages.

TABLE 1 The research setting and the participants in each study. Student teachers' acronyms used in the data excerpts are given in brackets.

Study	Research methods	Participants	Context
<b>Study 1 (Article I)</b>	Online questionnaire with built-in applied tasks	221 (203) student teachers	Embedded in a university course
<b>Study 2 (Article II)</b>	2 teaching interventions	<b>Science-Finnish intervention</b> 3 participants: – science teacher student (SciST) – 2 Finnish language and literature teacher students (FinST2, FinST3)	Mainstream classroom in comprehensive school, 7th grade (ages 13-14); 2 students with migrant background in a group of 22 students Topic of the study unit: optical lenses
		<b>Ethics-Finnish intervention</b> 2 participants: – ethics and history teacher student (EthST) – Finnish language and literature teacher student (FinST1)	Adult group (~10 students) with migrant background in integration training. Limited Finnish language resources (A1-A2 on CEFR scale) Topic of the study unit: Finnish religious culture
<b>Study 3 (Article III)</b>	1 teaching intervention	<b>Ethics-Finnish intervention</b> 2 participants: – history teacher student (EthST) – Finnish language and literature teacher student (FinST1)	Adult group (~10 students) with migrant background in integration training. Limited Finnish language resources (A1-A2 on CEFR scale) Topic of the study unit: Finnish religious culture

The empirical investigation was set up and conducted in the context of teacher education. Of the studies discussed here, the questionnaire-based Study 1 took place within a study unit focusing on subject-specific pedagogical practices from the viewpoint of linguistic and cultural diversity in the classroom. Intervention-based Studies 2 and 3 were performed as part of an optional teaching practice. The settings and participants of the studies are summarized in Table 1.

The participants in the study were Finnish fourth-year subject teacher students who were being trained to teach in the nine-year Finnish comprehensive school system, mainly grades 7 to 9 (ages 13-16), and upper secondary school (grades 1 to 3, ages 16-19). To qualify as subject teachers, all students across the curriculum need to complete a Master's degree, which includes at least 60 ECTS of teachers' pedagogical studies provided by the departments of teacher education. As part of their pedagogical studies, the students were completing a study unit on subject-specific pedagogical practices from the viewpoint of linguistic and cultural diversity in the classroom: how to build on learners' prior skills and scaffold learning and develop language-sensitive pedagogical practices. The study unit was conducted by the researcher.

Study 1 involved a total of 221<sup>2</sup> student teachers in a survey carried out by a questionnaire with built-in applied tasks. The aim of the enquiry was to explore the student teachers' pedagogical language knowledge and, specifically, as reported in Article I, to determine their ability to assess second language learners' language proficiency in relation to the perceived linguistic challenges in their own discipline. Writing skills were selected as the core of the data analysis, as Finnish school pedagogical practices rest heavily on the written tradition, for instance with regard to assessment and course fulfilment. The assumption was that the student teachers' analysis of pupils' writing performance reflects their pedagogical language knowledge and understanding of language.

The student teachers that participated in Study 1 represented 16 school subjects: History and Philosophy (HP) (n=20), Finnish Language and Literature (F) (n=31), Foreign Languages (FL) (English, Swedish, German, French, and Russian) (n=62), Physics and Chemistry (PC) (n=18), Mathematics, Biology and Environmental Science and ICT (MBEI) (n=30), Sports and Health Education (SH) (n=51), and Music (M) (n=9).

After the compulsory study unit on subject-specific pedagogical practices from the viewpoint of linguistic and cultural diversity in the classroom, the student teachers were invited to carry out their applied teaching practice on a cross-disciplinary basis in a multilingual and multicultural learner group and with a specific focus on language and content integration. In the applied teaching practice, the student teachers were free to choose the school and the focus of their practice according to their own wishes and needs. In total, 16 student teachers volunteered to participate in this teaching intervention in order to gain more experience of teaching and learning in multilingual and multicultural settings, and six student projects were carried out in four schools with a focus on language and

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<sup>2</sup> Students of Physics and Chemistry did not answer the open-ended verbal assessment task, thus the total number of informants is 203.

content learning in various school subjects. Two projects were selected for research and detailed analysis, mainly on the grounds that they represented two different contexts of multilingual and multicultural education: a comprehensive school mainstream classroom with two learners with a migrant background, and an integration training course for adult migrants. These two contexts representing two extremes of multilingual learner groups provided an interesting view of Finnish education. However, the different nature of the two contexts made them sometimes difficult to combine in the analysis.

Studies 2 and 3 focused on the intervention data related to student teachers across disciplines collaborating to develop their own approach to language and content integration. The science–Finnish intervention (hereafter *science intervention*) had three participants: a student teacher of science (acronym *SciST*) and two student teachers of Finnish and literature (acronyms *FinST2* and *FinST3*). The ethics–Finnish intervention (hereafter *ethics intervention*) was conducted by a student teacher pair: a student teacher of ethics and history (acronym *EthST*) and a student teacher of Finnish and literature (acronym *FinST1*). The participating student teachers did not know each other beforehand. They were grouped and positioned in different projects based on their stated areas of interest. The participating student teachers' status was symmetrical and no group roles or task responsibilities were preassigned.

None of the student teachers had prior experience of language and content integration, and their experience of multilingual and multicultural learner groups varied. The student teachers of Finnish language and literature had done their teaching practice (approximately 10 weeks and 7 ECTS credits) in classrooms of Finnish as a second language, and two of them were familiar with most of the learners in the intervention classrooms. *EthST* had prior experience of multilingual and multicultural groups as she was, alongside her studies, under contract to the institute in which the intervention took place and had previously taught the same course but without a specific language focus. *SciST* had no former noteworthy experience of teaching multilingual and multicultural groups. All of the student teachers had participated in a study unit (taught by the researcher) on subject-specific pedagogical practices from the viewpoint of linguistic and cultural diversity in the classroom. Therefore, they were, in principle, aware of how to build on learners' prior skills, scaffold learning, and develop language-sensitive pedagogical practices. Although the study unit was practically oriented, due to limited resources the student teachers did not have the opportunity to put the approach introduced in the earlier course into practice.

The interventions differed from each other markedly, as the science intervention took place in a mainstream classroom in a Finnish comprehensive school with only two students with migrant backgrounds, and the ethics intervention was conducted in an adult migrant group as part of an integration course given by a private non-governmental institute. In the science intervention the learners were participating in a compulsory course, while in the ethics intervention the course was optional for the students, and the attendance varied from 3-10 students for each class.

In both settings the language of instruction was Finnish, but the students' level of Finnish proficiency varied significantly. The language proficiency of most of the students in the integration training varied from beginner to more independent user of the language, that is, on average level A1–A2 on the CEFR scale (see <http://www.coe.int/en/web/common-european-framework-reference-languages>). In the science intervention, both of the students with migrant backgrounds studied all of the school subjects in the mainstream classroom, although one of them was clearly still struggling with speaking and writing in Finnish. In addition, the native speakers of Finnish in the science intervention varied notably in their disciplinary literacy skills.

### **3.2 The dual position of the teacher-researcher**

The dual role of the researcher as a knowledge creator and the implementer of the action is distinctive of action research (Patton 2015). The researcher examines and develops the practice in parallel to implementing it. This dual position is both an epistemic and an ethical issue in the research process (e.g. Olsen & Lindøe 2004; Trondsen & Sandaunet 2009). My background and motivation for choosing this research topic and conducting this study are described above in section 1.1. In this section, I first discuss briefly the ethical choices made in conducting the study and then go on to reflect on the influence of my dual position on knowledge production in the research setting. I will then reflect the research process more thoroughly in section 5.3.

Regarding ethical considerations, the study was conducted in accordance with the ethical instructions provided by the Finnish Advisory Board of Research Integrity (2012). The study fulfils the criteria for respecting the autonomy and privacy of research participants, avoiding harm, and the protection of data (National Advisory Board on Research Ethics 2009). The anonymity of the participants was secured throughout the process of analysing and reporting the findings. Furthermore, all participating student teachers were aware that they were being studied, and their participation in the study was voluntary. Research permission was sought via the questionnaire (sub-study 1), and the student teachers involved in the interventions were informed about the research setting and the focus of the study at the time of enrolling in the interdisciplinary teaching practice. All participants had the possibility to withdraw whenever they wanted. Moreover, during conducting the study and in reporting the findings the subjects were treated with respect in regard to their opinions, approaches and personal characteristics (Ryen 2007; Silverman 2001; 2005).

My two-fold position as a teacher and researcher had a significant impact on the research setting as a whole. My long experience of developing the course in close interaction with student teachers of various subject content areas provided me with valuable opportunities to reflect on my practice and revise the goals and focus points of both the course and the present study (Patton 2015). This interaction with the student teachers deepened my responsiveness to their

perspectives and learning needs, and thereby developed me professionally (Patton 2015). The interplay of teaching and data collection during one academic year is summarized in Figure 2. During the autumn term 2012, I taught a course on a linguistically and culturally responsive pedagogical approach in multilingual and multicultural groups. The course for 221 student teachers was conducted in eight subject groups focusing on subject-specific issues in teaching heterogeneous groups. Although I was in a teacher position, as a researcher I constantly observed student teachers' thinking and their approach to the topic and considered how the course could and should be developed in order to make it more meaningful to the students and to meet and extend their prior knowledge and experiences. My approach was thus research-driven also while teaching, and I was not only a distant observer (Olsen & Lindøe 2004). Furthermore, as the course was implemented in separate subject groups, I was an outsider in the groups in terms of subject-specific expertise (e.g. physical education, languages, science, chemistry, history). From the outsider position, I often adopted the role of an opponent in order to challenge the student teachers to consider the role of language in their disciplinary traditions and provoked them to critically analyse the customary approaches. Through these discussions, I was involved in a shared process of meaning making that guided my perceptions of the students' understandings and enhanced my learning (Patton 2015). Moreover, the course was constantly developed through dialogue with the students.

In the beginning of the course the student teachers were invited to answer an online questionnaire with built-in applied tasks. The purpose of the questionnaire was to map the student teachers' existing attitudes and skills regarding the language of schooling and second language learners. Here my dual position was again clear, as I created the questionnaire in the position of a researcher, but gave it as an assignment to my students as a teacher. Due to time limitations, I was unable to fully make use of the results of the questionnaire in my teaching, although I did present a summary of the results to each group. The student teachers were given the opportunity to forbid the use of their responses for research purposes.

The clear majority of the participating student teachers had no prior experience of teaching or learning in a multilingual learner group and, therefore, the primary task of the course was to raise their awareness of the issue as a whole. The course consisted of three lectures and an applied independent task. The first lecture focused on multilingual learners: what backgrounds do they come to the subject classroom with, what kind of teaching arrangements are often conducted, what kinds of language resources might the learners have, and what might their proficiency profile in Finnish be like. The focus of the second lecture was on disciplinary language and literacies. Textbook text was analysed and subject-specific characteristics of language use and terminology were identified. Within the time limitations of a lecture, linguistic features could not be analysed very deeply. The main point was to raise awareness of the differences between language use in different subjects and the responsibility of the subject teacher in teaching the



linguistic conventions of their own discipline. Before the third lecture, the student teachers completed an independent assignment in which they watched and made observations of video clips in which second language learners were supervised in reading disciplinary texts, defining concepts and understanding tasks of various subjects. On the basis of the lectures and online self-study materials, the student teachers were asked to apply what they had learned to a subject that they have taught or are going to teach in their own teaching practice and to develop a material plan that included targeted support for second language learners. The student teachers' task reports were discussed in the third lecture and the means for supporting all learners' learning were summarized. Unfortunately, the student teachers could not apply the studied approach to their regular teaching practice, as the local practice school had very few pupils with a migrant background. Therefore, language-sensitive practices were not developed or promoted at the level of school practice, nor were they reflected to any depth in the process of teaching practice supervision. Limited opportunities to apply what had been learned in the student teachers' own practice hindered learning and the development of pedagogical skills. I was concerned, therefore, as to what the learning outcomes of my pre-service teacher education course were.

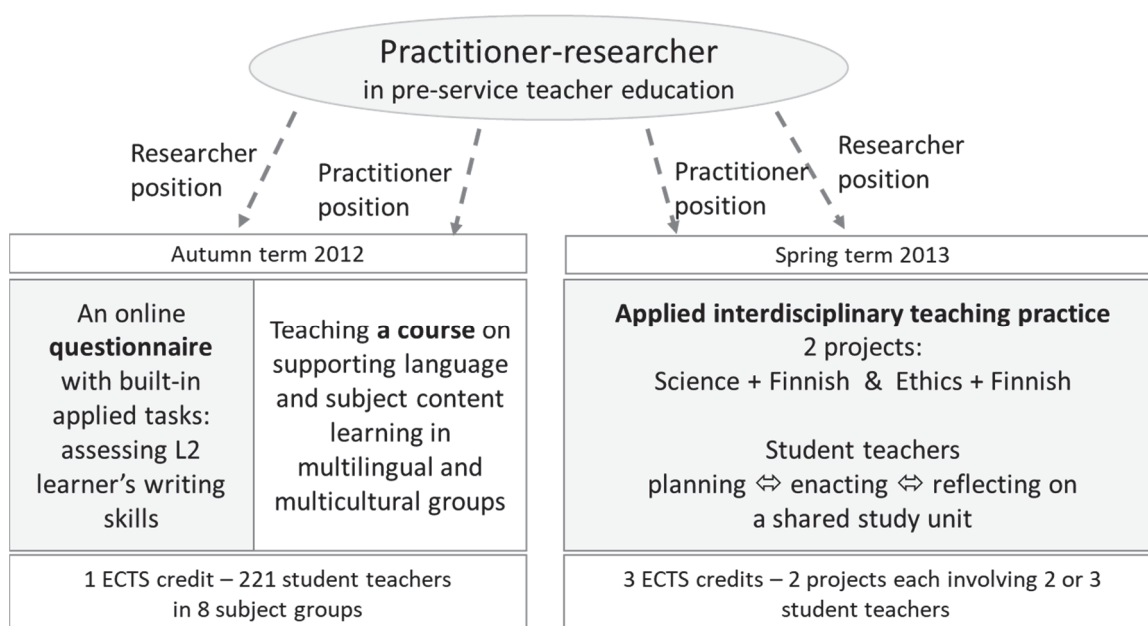


Figure 2 The dual position of the practitioner-researcher

During the autumn term course, I offered the students the opportunity to learn more about teaching multilingual and multicultural groups by participating in an applied interdisciplinary teaching practice. Again, my dual position was clear as I investigated the student teachers' collaborative knowledge construction during the teaching practice while also providing them with opportunities to learn more and gain deeper experience of a linguistically sensitive pedagogical approach.

The teaching interventions took place mainly in the spring term. During them, my twofold position as a teacher and researcher was particularly evident. I facilitated the teaching interventions by organizing the practice and providing the requirements and instructions for action, and finally assessed student performance on a pass-fail scale. As a researcher, I intentionally refrained from interfering in the student teachers' process unless they asked for my help or supervision, as the intention was to better understand their own pedagogical approach in order to develop supervision practices in teacher education. I wanted to observe and understand their approaches toward language across the disciplines, and I was concerned about the risk that they would try to anticipate my thinking and implement my ideas (for similar considerations, see e.g. Trondsen & Sandaunet 2009). This twofold role often raised contradictory feelings in me, as it seemed to me that at certain points the student teachers might have benefited from fresh ideas, research-based propositions, or affirming feedback.

My dual position required constant critical reflection during the entire research process from data collection to the analysis phase. I needed to balance between avoiding getting too involved in the student teachers' processes while still offering them the support they needed. Loughran (2005) talks about the tension between telling and growth, referring to the difficulty in balancing between the teacher educator's desire to share their knowledge on the one hand, while, on the other hand, allowing the student teachers to learn for themselves and creating opportunities to reflect and self-direct their learning. Moreover, the student teachers were not left completely on their own as their planning process was guided in many structural ways. They were initially provided with tools for outlining their project and self-regulation of their interaction. These tools included, for instance, lesson plan templates and instructions for log-keeping (see Appendix). Learning was thus supported in many indirect ways through the intervention setting, but as many studies have proved, it is difficult to set up such conditions for interaction that would guarantee learning (e.g. Dillenbourg 1999).

In all, the dual position as a researcher and as a teacher was an advantage and a resource in that it allowed me to look closely at the collaborative process of the student teachers. This familiarity helped me in analysing the student teachers' planning talk and in defining the aspects that seemed most worthy of study (see also Hökkä 2012).

### **3.3 Data collection**

This study incorporates two types of data: 1) data elicited by a questionnaire with built-in applied tasks, and 2) intervention data gathered from two cross-disciplinary teaching interventions. These data sources and the procedures of data collection are described in the following sections.

### 3.3.1 Study 1: Data elicited by a questionnaire

The online questionnaire completed by the pre-service teachers covered a wide range of statements, open-ended questions and built-in applied tasks related to the student teachers' understandings of diversity in subject classrooms, disciplinary language, and the use of learners' multilingual resources in subject learning. The assessment of writing samples was chosen as the focus of Study 1 because pedagogical practices rest significantly on the written tradition in Finnish schools and it was assumed that the student teachers' analysis of pupils' writing performance reflects their pedagogical language knowledge and understanding of language. The text samples were written by a 14-year-old pupil with a migrant background (see Appendix, Study 1) and consisted of a message to an online shop and an argumentative text. These two non-academic samples were selected primarily for practical reasons, as it was not practically feasible to obtain learner writing samples from 16 separate subjects. Two everyday texts representing different genres from a single learner were considered to provide a reasonably representative sample of a learner's writing skills. The texts were selected from a large research database of the CEFLING project, in which three trained raters had graded them A2 on the Common European Framework Reference scale (see more about the project from Martin et al. 2010). The texts are fairly short, but as such they represent rather typical production of a Finnish 14-year-old pupil. Although longer samples would have offered material for more extensive analysis, brevity of writing, which poses a specific challenge for proficiency assessment, is characteristic of that age group. Furthermore, the assessment task was embedded in a rather large questionnaire that had to be completed within a reasonable amount of time.

The data in Study 1 consist of open-ended verbal assessments and Likert scale assessments completed by the participants. Table 2 shows the instructions given and the sequence of the tasks.

TABLE 2 Data setting of Study 1: Two types of data elicited by a questionnaire

Assessing samples of writing	No. of participants
– <b>Open-ended verbal assessment 1:</b> What is the pupil's writing skill like? Describe as diversely as possible and give reasons for your observations.	203
– <b>Likert scale assessments:</b> Assess the same samples of writing on the basis of the following criteria: comprehensiveness, grammatical complexity, grammatical accuracy, lexical variation and textual coherence.	221
– <b>Open-ended verbal assessment 2:</b> Which of the criteria used in the multiple-choice questions is most important in your opinion? Why?	221

The pre-service teachers completed the questionnaire as described in section 3.2. The results were shown to them in general terms and discussed with them in the final lecture. The discussions were not used as research material. Research permission was obtained from each respondent individually via a question at the end of the questionnaire.

### 3.3.2 Studies 2 and 3: Intervention data

The intervention data used in Studies 2 and 3 were collected from two teaching interventions in which two cross-disciplinary pre-service teacher teams planned and conducted a study unit that integrated a content subject and Finnish language to be taught in a multilingual group. The student teachers chose to participate in the teaching practice under study in order to gain more experience of teaching and learning in multilingual and multicultural settings. The student teachers were asked to plan and implement a study unit that integrated the teaching of Finnish language and a content topic. Thus, the problem and its solution were not predefined and it was up to the participants to define the project and generate a practice of their own in a situation where no prior concrete models were at their command. However, the student teachers were initially provided with tools for outlining their project and self-regulation of their interaction. The tools included, for example, lesson plan templates and instructions for log-keeping (see Appendix). In addition, the group interviews indirectly supported their learning process and orientation to the topic. In the science intervention, the student teachers (SciST, FinST2 and FinST3) agreed on the topic (optical lenses) with the teacher of the school, whereas in the ethics intervention, the student teachers (EthST and FinST1) chose to focus on the characteristics of Finnish religious culture.

As described in section 3.1, these two projects were selected for research mainly on the grounds that they represented two different contexts of multilingual and multicultural education: a comprehensive school mainstream classroom with two learners with a migrant background, and an integration training course for adult migrants. These two contexts representing two extremes of multilingual learner groups provided an interesting view of Finnish education. It is worth noting that the projects to be observed in this study had to be selected before they started. Therefore, I could not know at that time what the projects would be like with respect to student teacher collaboration or the projects' potential success.

The intervention data consisted of audio-recorded planning sessions (PL) and group interviews (INTW), video-recorded lessons (L), participants' individual diaries, and field-notes made by the researcher. The data collection process of each of the interventions is illustrated in Figures 3 and 4.

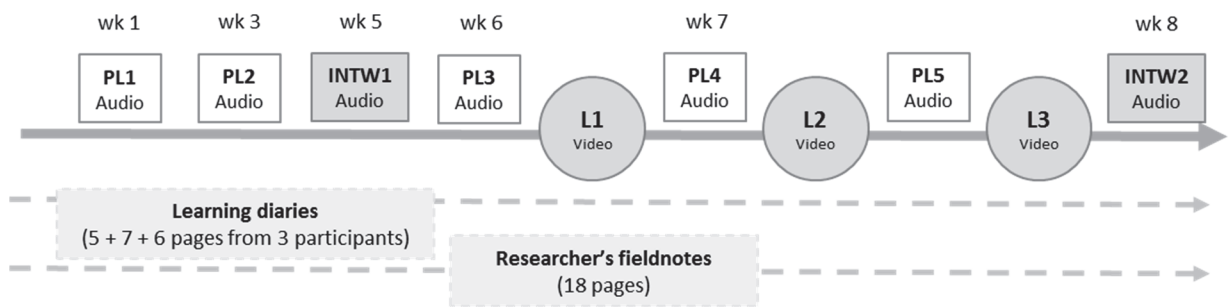


Figure 3 Timeline of data collection and data of the science intervention

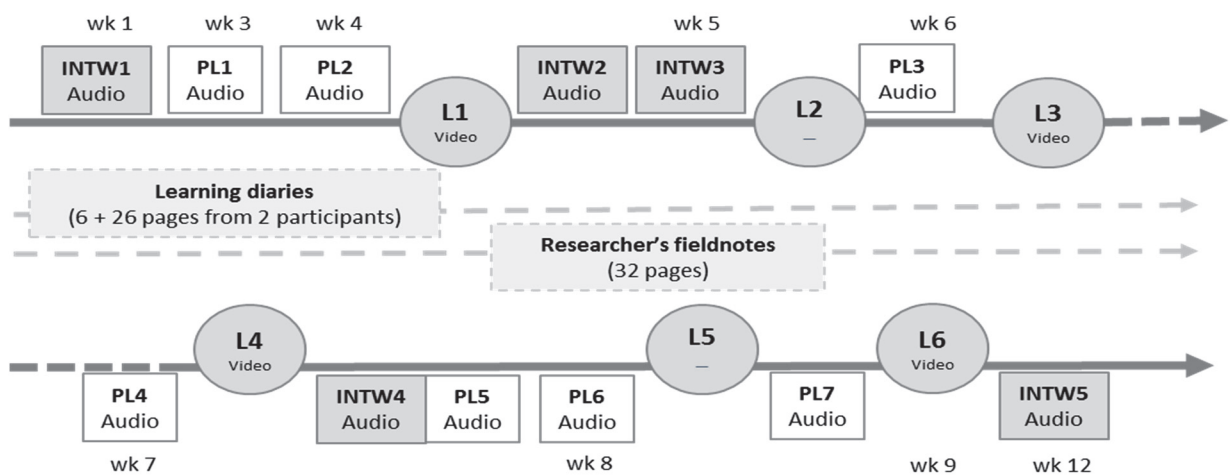


Figure 4 Timeline of data collection and data of the ethics intervention

The collaboration was fairly small-scale, as the intervention teams consisted of two and three members and the length of the collaborative projects was relatively short. The science intervention lasted about 8 weeks, whereas the duration of the ethics intervention was about 12 weeks. In the science intervention, the planning sessions lasted 60–125 minutes (445 mins in total) and the group interviews 80 and 90 minutes (170 mins in total). In the ethics intervention, the planning sessions lasted 15–105 minutes (495 mins in total) and the group interviews 20–140 minutes (285 mins in total). The classroom lessons lasted 90 minutes. The researcher was present in all interviews and in lessons 1, 3, 4 and 6. The student teachers were both present in each of the planning sessions.

The student teachers were instructed to keep learning diaries using the stream of consciousness technique. The log-keeping was instructed with the simple questions *What was I wondering today?* → *What did you realize today?* *What issues do you want to learn more about?* *What are you learning from your partner(s)?* *What inspires you in your planning?* *What issues are you uncertain about?* The questions

were aimed at supporting reflection but avoiding pressure and stress. Most participants' learning diaries were rather brief, approximately six pages, but FinST1 in the ethics intervention was an active diarist and her diary totalled 26 pages.

The researcher's field notes encompassed firstly, the observations made during and after the group interviews and secondly, the observations from the lessons conducted by the student teachers. In the ethics intervention, lessons 2 and 5 were not video-recorded: lesson 2 was a class trip and lesson 5 for technical reasons. The video-recordings were conducted with a single camera focused on the teacher. Research permissions were obtained from the learners of both groups, but the video-recording was aimed at the teachers in order not to distract or interfere with the learners. Eventually, the videos were not analysed for the purposes of the study as the analytic focus was targeted at the planning and negotiation process. The video-recordings were used merely for ensuring the students' recollections of the lessons produced during the planning sessions and interviews.

### **3.4 Analysis methods and procedure**

This study can be described as qualitative, although some basic quantification was used in Study 1. I chose a qualitative approach in order to gain an overall understanding of the pre-service teachers' pedagogical language knowledge. The starting point of this research was empirical, data-driven analysis (Miles & Huberman 1994). Therefore, to begin with, the whole data corpus was read and re-read several times in order to get an overall picture of the data. In all three sub-studies, ATLAS.ti 7 was used as an analytical tool in data processing. In the following, the analytical procedure is explained in more detail for each sub-study.

#### **3.4.1 Study 1: Data elicited by a questionnaire**

In Study 1, both qualitative and quantitative analyses were adopted, although the main focus was on qualitative data to deepen understanding of the student teachers' pedagogical language knowledge in the context of learner skill assessment. Quantitative data was used to gain descriptive information on a larger scale. Data-driven and theory-informed qualitative content analysis (Hsieh & Shannon 2005; Miles & Huberman 1994; Patton 2015) were used to comb through the student teachers' open-ended verbal assessments to identify the core consistencies and meanings of the assessment criteria that they had adopted. Their opinions of the quality of the text were not treated as an issue of interest. The goal was to establish categories that provide a more detailed understanding of how the student teachers view writing as a skill. This was done using conventional content analysis (see Hsieh & Shannon 2005), which is recognized as a data-driven method (cf. theory-driven method; Miles & Huberman 1994). Although the analysis was data-driven and the analytical categories were generated from

the data, it was informed by various linguistic categorizations and conceptualizations that directed my attention in the student assessments. The categories were constructed, compared and refined through cycles of empirical analysis of the students' formulations in the data. Through my inferences, the analysis developed towards a more conceptual understanding of their pedagogical language knowledge. The student teachers' criteria were finally grouped and reduced to three major clusters: word-related, sentence-related and text-related, reflecting their linguistic level of attention. Text comprehensibility was excluded from the clusters as it formed a criterion of its own. The word-related cluster included references to spelling and punctuation, word inflection, vocabulary use and colloquialism. Vague, unspecified references to grammar or grammatical mistakes were also incorporated into the word-related cluster. The sentence-related cluster consisted of comments on sentences or how clauses were connected to each other. Cohesion between clauses was also categorized as a sentence-level assessment because the participants did not treat it as a textual issue. Finally, comments dealing with genre, content, context and coherence were categorized as a text-related assessment category.

To determine the significance of each of the clusters, the analysis was finally quantified by counting the frequencies of each category. Thereafter, it was possible to contrast the assessment instruments of the different subject groups with each other and draw conclusions on the differences and similarities between the subject groups. Furthermore, the student teachers' Likert scale assessments of the text samples were analysed, tracing the similarities and differences between the subject groups. Finally, the student teachers' assessments were analysed in terms of the pedagogical language knowledge orientation that they reflected. Two orientations, technical and analytical, were identified. These orientations characterized the verbal assessments more broadly than separate criteria. Notably, however, some individual student teachers represented both approaches in their responses.

### **3.4.2 Study 2: Intervention data and focus on meanings given to language**

The same intervention data (planning sessions, group interviews, learning diaries and researcher's field-notes) were used in Studies 2 and 3. Therefore, the data was analysed several times from the perspective of the different research questions. To start with, the audio-recordings were transcribed verbatim, and the data was anonymized. As the main objective was to analyse the kinds of meanings attributed to language that the student teachers constructed in collaboration in their talk, rather than the detailed construction of the talk, more accurate transcription methods were not adopted. The whole data corpus was then read and re-read several times in order to get an overall picture of the data. The transcribed audiotapes were listened through again, and the transcriptions checked and corrected where needed.

The discussions in the intervention data were rambling, variable, and sometimes even internally inconsistent. Therefore, the analysis process was not linear but iterative, constantly moving back and forth between the parts and the whole,

the data and the theory. The qualitative data analysis software ATLAS.ti 7 was used for coding and analysing the data.

The coding and analyses of the student teachers' collaborative knowledge constructions were started with a thematic analysis (Braun and Clarke 2006). Thematic analysis offered a flexible means of analysing and illustrating a large set of discussion and interview data. The approach is often criticized for this flexibility. However, as Braun and Clarke (2006) emphasize, it is crucial to report how this flexibility is used. Through thematic analysis, the researcher identifies, analyses and reports themes or patterns that capture something relevant about the data in relation to the research task. It is up to the researcher to define what counts as a theme in the context of the research topic (Braun & Clarke 2006).

Thematic analysis can be conducted either inductively (data-driven) or deductively (theory-driven) and the level of analysis may vary. The approach in this study can be described as inductive and semantic. An open coding scheme was used to identify frequently occurring language-related themes, commonalities, and prevailing patterns in the data without paying explicit attention to theory or findings of the previous research. The semantic approach refers to an analytic process that proceeds from description to interpretation and theorization (Braun et al. 2006, 84).

The data analysis proceeded through the following phases. Firstly, the structure of the whole data was analysed by discerning the conversational episodes based on their substantive contents. Thereafter, both interventions were examined in terms of the process of study unit creation. Particularly, episodes of goal setting, planning, enacting and reflecting were identified in order to perceive the trajectories of brainstorming, elaborating, implementing, and reflecting on the shared study unit. The analysis then focused on the linguistic aspects that emerged in the participants' negotiations. The language-related accounts were thematized in order to recognize prevailing patterns of thinking about language. In this phase, four aspects were identified:

- language as a content or skill to be learned
- language-related activities
- linguistic resources planned to be in use
- language expertise

The aspect of language as a content or skill to be learned covered, for instance, discussions on language as a school subject, the different skill areas in language proficiency, language in relation to content knowledge, and the situated nature of language use (e.g. the relationship of everyday language and academic language). The accounts incorporated also discussions on learning to learn a language and how to track and assess learners' learning and achievement, what is perceived as skill development, and how to support it and give feedback. The student teachers also dealt a great deal with the criteria for selecting learning material, particularly the simplicity, comprehensibility, relevance, and familiarity of the linguistic input. From this aspect, the student teachers' focus on word-, sentence- and textual level phenomena were recognized.



The second aspect, language-related activities, involved the linguistic and meaning-making actions planned for learners, e.g. different working modes and language modes, the division of roles (whether the teacher or learners explain, read, write, interpret, etc.), and the spaces for interaction and collaborative meaning making. The third aspect concerned various linguistic resources that the student teachers planned to use, such as texts, materials, media, social space, cooperation, learners' prior knowledge, skills and experiences.

Finally, the student teachers discussed the issue of linguistic expertise. They evaluated each other's and their own linguistic skills, positioning themselves and each other in different roles and providing each other with different agencies when conducting the intervention.

In all phases of analysis, I identified, coded and analysed the episodes of talk and the aspects of language. The coding and analysis was in all phases carefully discussed with the supervisors in light of the various examples from the data. Ambiguities were acknowledged, discussed and, where needed, re-examined.

Study II explored the meanings the pre-service teachers gave to language and language use in the context of subject learning and the spaces for meaning making they create for students. To address these questions, prevailing patterns of thinking about meaning making in the disciplinary context were recognized. Meanings and relevance given to language and language use were explored and compared between the two interventions in order to create an analytical approach that would cater to both interventions. The discourses on language use in action were then explored through the lens of what kinds of spaces for meaning making they provided for the learners. The discursive approach adopted focused on the development of themes across the utterances in the discussion and did not analyse linguistic elements on a detailed local level (Gee & Handford 2012). The data were studied in relation to which discourses seemed to be informing and defining what the student teachers said about language and meaning making (Lankshear & Knobel 2004).

### **3.4.3 Study 3: Intervention data and focus on student teacher collaboration**

The dynamics of the collaborative process is examined particularly in Study 3 through analysing the student teachers' ways of considering their existing pedagogical practice and developing it toward their ideals, and the dynamics of pedagogical practice construction, how it changes and evolves (see also Kuusisaari 2014; Orland-Barak & Tillema 2006; Roschelle & Teasley 1995). The analysis conducted in Study 3 rests to a large extent on the work done in Study 2 with the same data, although the analytical focus was transferred to student teacher collaboration as a working mode in pre-service teacher education. On the basis of Study 2, the data was already familiar to me in its entirety. Originally, I intended to report on the collaboration in both interventions in Study 3, and the analyses were conducted on both sources of data. However, due to article space limitations, this proved to be impossible, and the ethics intervention, which provided richer and more versatile material for analysis, was selected to be reported.

The focus of analysis in Study 3 was on development and practice construction at a group level, particularly on the topical development of the pair of student teachers (cf. focus on the micro level of interaction, e.g. Damsa 2013 and Kuusisaari 2013, and focus on individual learning, e.g. Barron 2003 and Meirink, Meijer, & Verloop 2007). Data-driven and theory-informed qualitative content analysis (Hsieh & Shannon 2005; Patton 2015) was used to reduce the amount of material and to analyse the student teachers' collaboration (Schreier 2014). The analytical procedure was iterative and proceeded via the following phases.

To begin with, the structure of the data as a whole was analysed by discerning conversational episodes based on their substantive contents. The discussion data were divided into episodes of topic talk by means of data-driven systematic qualitative analysis of the contents (Patton 2015).

As the main interest of this study was to examine student teachers' collaborative construction of their shared pedagogical practice in which they integrate language and subject knowledge, it was crucial to develop an analysis frame that encompassed both aspects, the practice development as a temporal activity and the focus on language and content. In order to get a comprehensive and unambiguous perception of the rich and rambling discussion data, the analytical focus was set on the pedagogical ideals and the tensions the student teachers addressed in their collaboration. The role of language was then considered in relation to this line of pedagogical practice development.

The episodes of talk were therefore examined in terms of the pedagogical ideals that the student teachers raised in the planning sessions and group interviews, the tensions that emerged, and the approaches towards language in a subject learning context or in meaning making in general. It became evident that the student teachers struggled throughout the project between their established teacher-led pedagogical practice and the more learner-centred pedagogical ideal. This tension was therefore selected for more detailed analysis and was interpreted inductively by examining two types of topical episodes: 1) episodes in which the student teachers critically considered their existing pedagogical practice, and 2) topical sequences in which the student teachers oriented themselves toward transforming their current pedagogical practice and promoted learner activation, interaction, discussion and participation with each other and with the teachers. The selection of key episodes was done without preconceived categories of analysis. Thereafter, the coding of the key episodes was partly theory-informed as the development of a coding system was initially inspired by the work of Damsa (2013), Kuusisaari (2014), and Popp & Goldman (2016), but the final coding scheme (see Table 3) was piloted and adjusted through recurrent data-driven coding cycles and refinements of the approach in line with the research questions of the study (Schreier 2014). The coding scheme was discussed with the supervisors in light of the various examples from the data. Ambiguities were acknowledged, discussed and, where needed, re-examined.

The student teachers' collaboration in developing their pedagogical practice was also examined across time. Phases in the pedagogical practice development were identified by exploring key sequences and seeking the points at which the

student teachers re-formulated their focus and began to outline and structure it in a new way (Kärkkäinen 1999). This was usually done by bringing a new viewpoint to the discussion, which led to a change in defining the focus of the activity.

Finally, in line with the purpose of this study, the student teachers' pedagogical language knowledge within the subject boundary was examined on the basis of their analyses of their existing pedagogical practice and their efforts to generate a new practice in collaboration. This was done by examining how the student teachers addressed the key aspects of pedagogical language knowledge: learners' language skills, disciplinary language, and pedagogical choices that, firstly, promote student engagement, meaningful activities and collaborative meaning making and, secondly, foster both language growth and content learning.

TABLE 3 Coding scheme for qualitative content analysis of collaborative development of pedagogical practice

CATEGORIES OF ACTION		DESCRIPTION OF ACTION	DATA EXAMPLE
main categories	sub-categories		
CRITICAL CONSIDERATION OF CURRENT PEDAGOGICAL PRACTICE	Reflecting on or analysing the current pedagogical practice	Naming or analysing difficulties that impede the team from transitioning away from their current pedagogical practice	<i>'we were thinking about discussion that we'd sort of like to have more of it - - but you notice in discussions where there are two who have the upper hand in the language and then one who is really weak that the discussion gets turned away from where the weaker speaker is'</i> (INTW4: 068)
	Problematizing the current pedagogical practice	Challenging or questioning the current practice	<i>'they certainly have to ask something, we can't simply lecture throughout the course'</i> (PL2: 443)
GENERATING A NEW PEDAGOGICAL PRACTICE	Creating shared understanding	Framing the pedagogical principles and ideals underpinning the current and desired practice and redirecting and reformulating the focus of planning (on a general level, not specific to individual tasks or activities)	<i>'what if we didn't do things so much all together [as a group], like now we did a huge amount with them just all together -- if we sort of differentiated more -- so that they'd just do some tasks and we'd then go around [the group individually]'</i> (INTW4: 068)
	Generating new initiatives	Bringing in ideas for activities and tasks that can contribute to student activation and engagement	FinST: <i><b>should we have some sort of dialogue or discussion at the end?</b></i> (new initiative) EthST: <i>um, yeah where they'd sort of discuss with each other, I'm just wondering, <b>could they</b></i> (analysis), <i>if we had here some of the, um, if they sort of had a go at remembering the names of their own religions - - <b>what if I made another version of this discussion [text] where I could leave out - - this word and leave out this word</b> - -</i> (elaboration)
	Analysing new initiatives	Evaluating the task or activity	FinST: <i><b>yeah or then just do questions like 'what are your beliefs?'</b></i> - - (elaboration) (PL1: 427-433)
	Elaborating new initiatives	Developing the activity or task idea further	

In the present study, the students' process was structured by instructions (see Appendix) and the students were encouraged to request supervision when needed. Group dynamics and group reflection were discussed in the group interviews, but no specific instructions on these were provided (cf. Havnes et al. 2016 on preparing and training students for peer learning activities, group dynamics and group reflection). The student teachers were instructed to reflect on their learning and to report on their observations in their diaries, but the reflection was done on an individual basis only. Although group dynamics and group reflection were dealt with in depth in prior pre-service teacher education courses, those approaches were not adopted in the interventions in a target-oriented way.

## 4 FINDINGS

The main aim of this study was to gain a deeper understanding of pre-service teachers' pedagogical language knowledge and how it is constructed in cross-disciplinary collaboration. The focus was on their orientation towards learner's language skills (RQ1a), disciplinary language and literacies (RQ1b), and their pedagogical approach in supporting both language and content learning (RQ1c). Furthermore, characteristics of the student teachers' collaborative practice construction across subject boundaries were examined particularly in Studies 2 and 3 (RQ2). In the next section, I shall summarize the findings of the three sub-studies (subsections 4.1.1-4.1.3) and synthesize the findings in relation to the main research questions (subsection 4.2).

### 4.1 Summarizing the findings of the empirical sub-studies

The following subsections (4.1.1-4.1.3) present summaries of the findings of the three sub-studies (Articles I-III).

#### 4.1.1 Pre-service teachers' assessment of second language writing (Article I)

The purpose of this study was to gain an overall picture of pre-service teachers' understandings of language as a target of learning in content learning. This was examined through an applied task in an online questionnaire targeted at 221 subject teacher students representing 16 school subjects. The analytic focus was on student teachers' ability to assess second language learners' language proficiency (particularly writing skills) in relation to the perceived linguistic challenges in their own discipline. Study 1 formed a basis for the in-depth case-studies (studies 2 and 3) examining cross-disciplinary student teacher groups' collaborative construction of pedagogical language knowledge.

The research questions of Study 1 were: 1) How do subject teacher students assess samples of L2 writing? and 2) What do their assessments reveal about their pedagogical language knowledge?

The findings indicated that the student teachers' attitudes towards second language learners were overall positive. Despite the evident deficiencies in the learner's writing skills, the student teachers highly valued comprehensibility as the key criterion of second language performance. They were thus willing to read between the lines to determine the writer's intended meaning and were not pre-occupied with mistakes. The student teachers' assessments of the text samples were fairly consistent when asked to assess the writing samples in terms of comprehensibility, grammatical complexity and accuracy, coherence, and lexical variation (Figure 5). Most considered the texts to be completely or fairly comprehensible and fairly coherent. Grammatically, the texts were assessed to be relatively simple and inaccurate, and lexically rather simple. There were no major differences between subject groups, but the future language teachers tended to consider the pupil's writing performance to be more comprehensible and more accurate than the future non-language subject teachers.

Although the student teachers had all been, and continued to be, in the position of a language learner themselves, most of them did not have any prior experience of second language learners' written Finnish, neither did many of them have any personal experience of learning in a second language. It was, therefore, difficult for them to perceive the challenges of the second language learner.

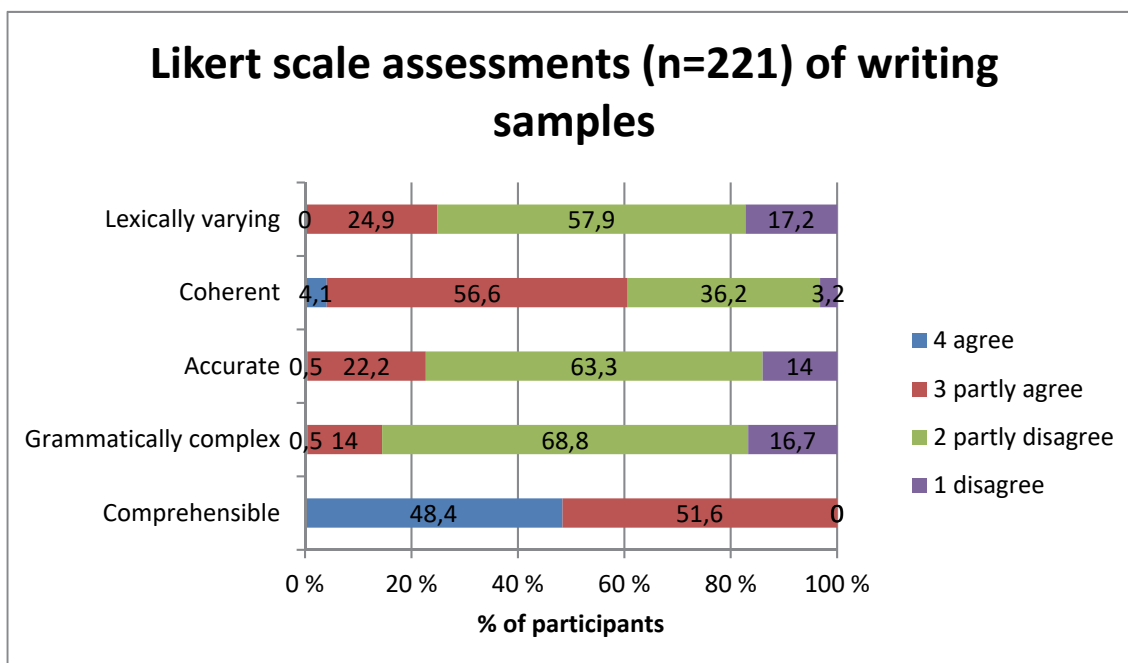


Figure 5 Student teachers' Likert scale assessments of the writing samples

The student teachers' orientation to pupil performance varied. Typically, the orientation was somewhat technical, consisting to large extent of listing and naming distinct features of the pupil's texts (see Figure 6). Language was thus mainly perceived as small, conventionalized units and observations were most frequently made at the word level (Figure 7). These technically oriented student teachers tended to adopt traditional L1 assessment criteria and their ability to distinguish between significant and less crucial linguistic deficiencies seemed to be inadequate. However, the border between a technical and a more analytical orientation was not clear-cut, and a given response could have characteristics representative of both orientations. Within the more analytical orientation, the student teachers interpreted learner performance in relation to the phase of language learning and the wider context of language use as understood from a socio-cultural perspective. Textual, socio-cultural approaches to language were mainly adopted by student teachers of languages, which may indicate the ongoing pedagogical change that is gaining ground also in schools, but is already embedded in language teacher education. In general, no significant differences were observed between subject groups.

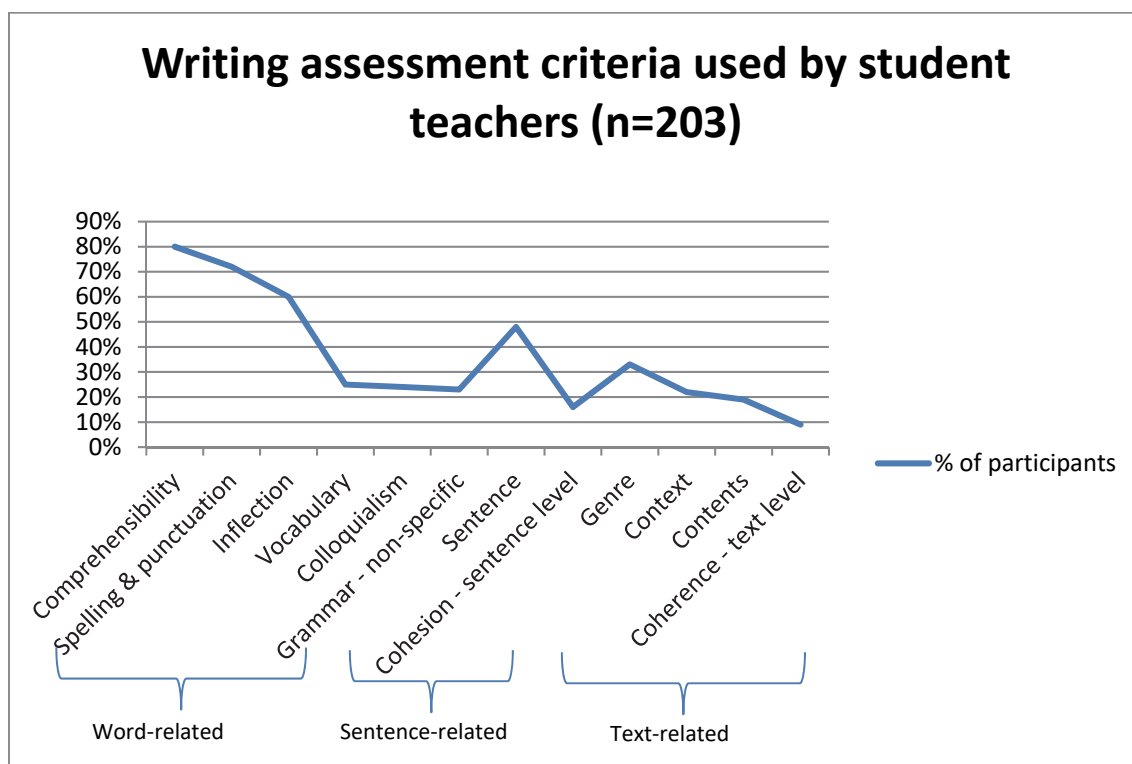


Figure 6 Writing assessment criteria used by the student teachers in open-ended verbal assessment



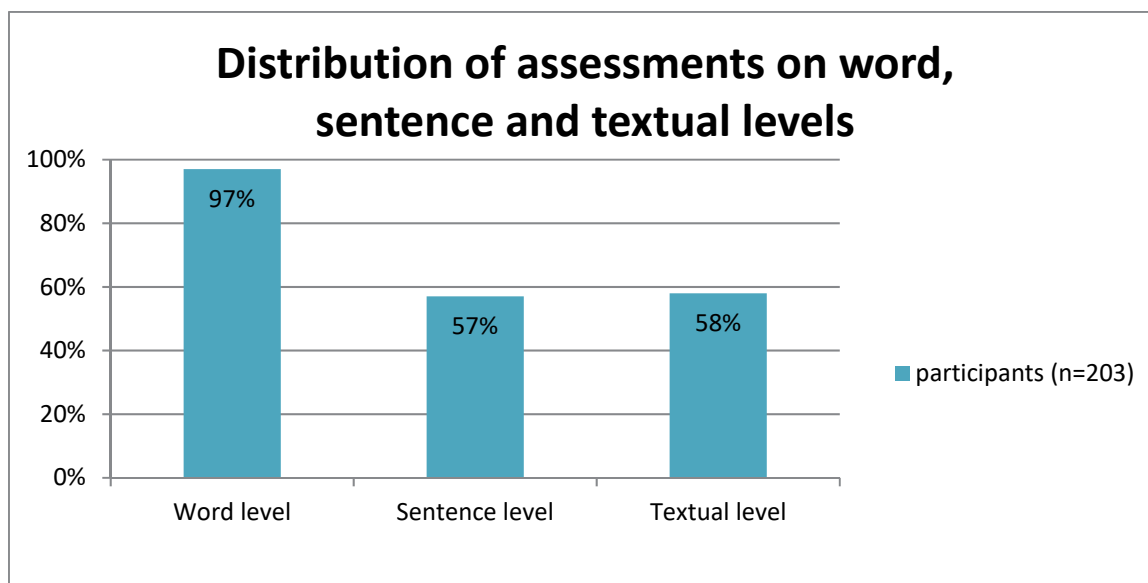


Figure 7 Student teachers' references to word-, sentence- and textual-level phenomena in the pupil's writing

In summary, Study 1 explored student teachers' pedagogical language knowledge in relation to their orientation to learner's skills. The findings revealed student teachers' positive attitude towards learner performance, with a strong emphasis on comprehensibility over other assessment criteria. Furthermore, writing performance and language were largely perceived as word-level phenomena by the student teachers of all subject groups, although textual approaches to language use were traced mainly to student teachers of languages. This is a rather expected finding, as language students are much more likely to have assessed learners' writing skills during their pedagogical studies.

#### 4.1.2 Pre-service teachers negotiating language across disciplines (Article II)

Article II looks into the meanings pre-service teachers give to language and language use in the context of subject learning and the spaces for meaning making that they create for the learners. Also, the discourses informing and defining what student teachers say about language and meaning making were examined in relation to learner- vs. teacher-centred pedagogical practice. The analysis was conducted based on the following research questions: 1) What meanings are given to language and language use in the context of subject teaching? 2) What kind of pedagogical language knowledge is reflected in participants' planning discussion? and 3) What kind of space for meaning making is created for students in the planning discussions of the two interventions? The main concepts adopted in the analysis were *collaboration*, *translanguaging* and *pedagogical language knowledge*.

The findings of the study reveal the pre-service teachers' pedagogical language knowledge particularly in relation to their orientation to disciplinary language and literacies. The student teachers' attitude towards integrating language

and content was found to be positive and their effort to support the learning of learners with diverse backgrounds was evident. However, the role of language and literacy in disciplinary learning remained vague for the student teachers and discipline-specific language use was to a large extent invisible. Furthermore, their pedagogical language knowledge tended to echo the traditional subject division with language and content treated as separate entities, and language skills were not treated as an explicit target and tool for learning in content teaching. In the science intervention, the student teachers emphasized the importance of reading strategies but the application of the strategies was not part of knowledge construction. Similarly in the ethics intervention, the ability to interpret statistics was highlighted in the discussions, but concrete strategic teaching remained limited. Furthermore, writing was treated as a technical skill used mainly for copying words and definitions, instead of using writing as a means for thinking and knowledge construction. In all, the focus on academic language was incidental rather than planned or strategically considered (see also Gleeson 2010).

Pedagogically, the student teachers relied on a rather teacher-centred approach as the space created for meaning making in the classroom remained relatively narrow and the various meaning-making resources (e.g. drawing, speaking and writing) did not complement each other in the knowledge construction continuum. In particular, spoken language use can be described as an unconscious and unanalysed means of meaning making (see also Love 2009; Nikula 2017; Valdés et al. 2005), although the student teachers highlighted the relationship between academic language and everyday language as a key issue in their discussions.

Interactive meaning making was used as a teaching method much more than a genuinely social contract type of collaborative learning and knowledge construction. Furthermore, the student teachers carried out much of the meaning-making work themselves instead of engaging the learners in the process.

Disciplinary language was perceived mainly in terms of words and concepts alone, and the broad mix of various semiotic means, genres, texts, and patterns of language use available for disciplinary meaning making was left unconsidered (see also, Creese 2005; 2010; Gleeson 2010). Language and content were connected in a natural way only at the level of vocabulary. Furthermore, learners' language skill development in the content learning context remained limited.

In terms of collaborative knowledge construction, the student teachers seemed to struggle between learner-centred practice as their pedagogical ideal and the teacher-centred tradition in subject teaching (see e.g. Lin 2015). In the collaborative learning approach it is assumed that higher-order thinking, deep learning, and knowledge internalization require multi-layered interaction and active meaning-making activities instead of making notes or internalizing ready-made concepts (Meyer et al. 2015). Collaborative translanguaging did not seem to serve as a tool in building learners' meaning-making potential as independent thinkers and autonomous learners.

The two cases examined in this article were very diverse. However, the student teachers in both cases tended to struggle with similar issues and to echo

similar ideals. Language and literacy practices were only minimally evident and concrete pedagogical tools for developing learners' learning skills and supporting meaning making in interaction were limited.

#### **4.1.3 Pre-service teachers' collaborative practice development (Article III)**

In article III, two student teachers' collaboration in pedagogical practice development was traced when integrating Finnish language and ethics content knowledge in a multilingual and multicultural classroom. The study examined how the student teachers critically considered their existing pedagogical practice and made efforts to develop towards a more learner-centred approach. The crossing of subject boundaries was examined by analysing what kind of pedagogical language knowledge their practice development reflected. The research questions of sub-study 3 were: 1) How do pre-service teachers collaboratively develop a shared pedagogical practice within subject boundaries? and 2) What pedagogical language knowledge does the student teachers' collaboration reflect?

The process of practice development was iterative and involved ambiguity and uncertainty. The student teachers' collaboration reflected predictable inconsistencies, as they were in a cross-disciplinary setting orienting themselves to something new. They had a mutual will to engage and activate the learners in meaningful activities. However, their talk revealed that their pedagogical ideals did not match their practice and that they continuously problematized their current pedagogical practice in terms of emphasis on vocabulary and difficulties in learning, the customary teacher-driven pedagogical tradition, and the built-in knowledge asymmetry when crossing subject boundaries.

The student teachers made efforts to redirect their pedagogical focus toward a more learner-centred approach four times during the process (Figure 8), but did not discuss in depth how they perceived learner engagement or what this requires in terms of pedagogical practice. Moreover, it is noteworthy that the classroom activities were designed as a continuum of task types and not planned according to explicit content learning or (linguistic) skills development objectives, as the student teachers formulated the goals of each lesson only at the end of each planning session when filling in the lesson plan form. The difficulty of defining linguistic aims and planning the activities accordingly tended to impede the whole process. The analysis suggests that the student teachers were not able to resolve the critical inconsistencies behind their approach because their idea of language and content integration was still developing and, despite their continuous efforts to analyse their practice, they did not seem to have tools for pedagogical development. This tendency may be typical of relatively short-term student teacher projects.

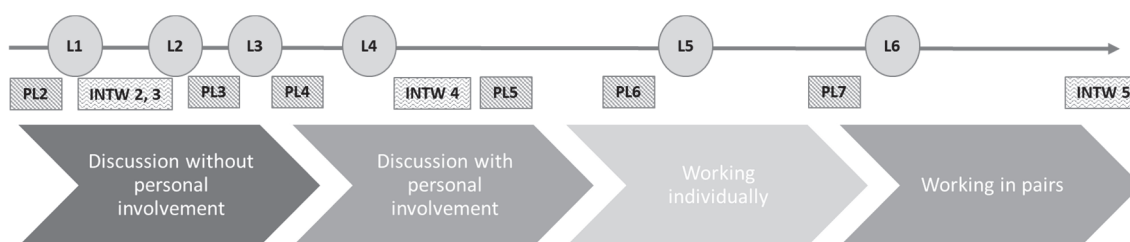


Figure 8 The phases of pedagogical practice development and learner activation

The observed tendencies in pedagogical practice development suggest that the student teachers' pedagogical practice was interwoven with their pedagogical language knowledge, particularly their ways of perceiving 1) learners' language skills and 2) disciplinary language and, furthermore, 3) the pedagogical knowledge and skills needed to develop meaningful activities that engage learners in collaborative meaning making and foster both language growth and content learning. Both in their critical consideration of their existing pedagogical practice and in their efforts to generate more learner-centred activities, the student teachers were sensitive to the learners' language skills but viewed them through the lens of deficiencies and difficulties in learning. They thus did not consider the learners' existing knowledge and experiences as a resource for learning.

The student teachers' difficulty in outlining the role of language in content learning and perceiving the characteristics of disciplinary language seemed to narrow their understanding of disciplinary language to vocabulary, without acknowledging, for instance, the discursive and textual aspects characteristic of the subject. Negotiation of the role of language as part of content knowledge learning thus remained restricted and language and content tended to remain as separate reified entities and not as a unified process (Dalton-Puffer 2011) of engaging learners in developing language and content knowledge and skills in a target-oriented way.

Finally, the pedagogical aspect of the student teachers' pedagogical language knowledge rested on their emphasis on the learners' limited skills and the idea of linguistic simplification of tasks and materials, while support for participation, peer interaction and strategic reading and language use remained low. The student teachers did recognize the need to activate the learners, but this did not lead them to develop ways of supporting learner engagement through cognitively challenging activities or to provide tools for participating in meaning making (Kibler, Walqui, & Bunch 2015). Rather, it tended to strengthen their need for teacher control, as the perceived deficient language skills and related difficulties in learning of the learners were taken as the pedagogical starting point and learning became something delivered by the teacher to be internalized by the student. Activities aiming to activate the learners were treated as a change from

the normal teacher-centred approach, and interaction more as a technical method than as a social contract (Dillenbourg, 1999).

Boundary-crossing between the disciplines of the Finnish language and ethics proved to be challenging. The majority of the planning time was invested in assessing the comprehensibility of texts, selecting relevant vocabulary, and simplifying the language, and language was explicitly perceived as subordinate to content knowledge, particularly by the Finnish language student teacher (for similar findings see, Arkoudis 2006; Creese 2002). It is noteworthy that the linguistic analysis of disciplinary language was not a straightforward or an easy task for the Finnish language teacher student, which probably hindered the negotiation of the role of language in content knowledge learning. The development of pedagogical language knowledge should be a mutual effort of both language and content knowledge experts.

## 4.2 Synthesis of the findings

The three sub-studies map the student teachers' approaches to pedagogical language knowledge and provide a perspective for the development of teacher education in order to better cater for pre-service teachers' needs. Overall, the study aimed to answer the following questions: 1. What characterizes pre-service teachers' pedagogical language knowledge? and 2. What characterizes pre-service teachers' collaborative practice construction across subject-boundaries in a multilingual setting? The findings provide a picture of the pedagogical language knowledge that the future subject teachers are able to draw on in their encounters with second language learners and in their pedagogical decisions. The findings are synthesized in the following in terms of pre-service teachers' orientation to language in general, to learners' language skills, to disciplinary language and literacies, and to their pedagogical approach. Thereafter, these findings are considered in relation to pre-service teachers' collaborative knowledge construction across subject boundaries.

Overall, the pre-service teachers' orientation to language and the learners' language skills reflects conventional, formalism-based views as well as sociocultural approaches. Their collaboration in the interventions represents both a contradiction and negotiation between customary approaches and more sociocultural pedagogical ideals. Nevertheless, the traditional approach to language as a code tended to have the foremost position.

The student teachers' assessments of a learner's writing skills echo a positive, constructive attitude. They value comprehensibility over accuracy in learner performance, although they mainly perceive language and language use through word-level conventionalized units. Their understanding of language thus reflects traditional perceptions, and it is seemingly challenging for them to perceive the challenges of the second language learner. The L1 tradition, familiar to them from their own school experience, seems to guide their attention to language. Their own learning experiences thus do not provide sufficient insight into learning in

a second language and, therefore, they are unable to identify different phases of language learning and relate them to the demands of content learning. A more analytical, textual, socio-cultural approach to language use was, however, observed among the student teachers of languages.

The student teachers also had no prior personal experience of language-sensitive subject teaching or learning. Consequently, although their attitude towards L2 learners' Finnish language skills was positive when assessing writing skills in isolation in a questionnaire, in the pedagogical planning of migrant integration education L2 learners were viewed largely in terms of deficiencies and difficulties in learning. L2 learners' existing language knowledge and experiences were thus not explicitly identified or exploited in a target-oriented way as a resource for learning.

The pre-service teachers were clearly aware of the two-fold role of language in subject learning. They saw the mediating role of language and considered it important to teach disciplinary language in connection with content knowledge. However, their ability to analyse the characteristics of disciplinary language use beyond vocabulary and terminology level tended to be restricted and they lacked sufficient pedagogical models for designing activities that in a target-oriented way employ language and other semiotic resources in the meaning-making process. The findings show that the student teachers viewed the interface of language and content knowledge solely in terms of vocabulary. Disciplinary language was perceived mainly as terminology, whereas other features of disciplinary language use were not explicitly acknowledged in the student teachers' planning discussions. Despite the fact that the subject provided a thematic context for the selection of vocabulary, terms were mainly dealt with in isolation.

The student teachers' approach to disciplinary meaning making was fairly teacher-centred and different modes were not employed in a way that complemented each other in the knowledge construction continuum. Disciplinary knowledge was to a large extent constructed through teacher explanation. In the science intervention, visualizations also played a big role. Different modes of meaning making were used in a rather technical manner. For instance, writing was mainly used for copying instead of employing it as a means of thinking and knowledge construction. The student teachers were aware of reading strategies as a core skill in disciplinary learning, but the teaching and practicing of reading strategies remained isolated from content learning. Speaking, for its part, was an invisible, taken for granted mode of language use. Overall, the student teachers' teaching approach did not explicitly make the learners aware of the linguistic and semiotic ways of constructing knowledge of the subject.

At the time of data collection, discussion of learners' multilingual language resources and the support of L1 skills was not as active as it is at the time of writing, yet it is noteworthy that the learners' multiple resources were not actively supported or valued. In short, the learners' L1s were not treated as tools for learning. The student teachers recognized the L1s almost exclusively in the context of dictionary use, when classroom activities required information searching or term checking.

The student teachers had ample discussions about the role of language in the disciplinary context, they set overall linguistic aims, and examined the core curriculum from the viewpoint of disciplinary literacies – possibly partly motivated by the research setting and the instructions given to the students (see Appendix). However, this consideration of linguistic aims and the analysis of the characteristics of the disciplinary language seemed to be difficult and remained somewhat unconnected from the actual pedagogical planning. Their lesson planning did not start from explicitly set linguistic and content-related learning goals, but rather focused on contents and activities and how to sort them into a logical and meaningful order. In both interventions, the learning aims for each lesson were set only at the end of each session when filling in the lesson plan form. Interestingly, perceiving the disciplinary language tended to be challenging for both student teachers of language subjects and student teachers of non-language subjects, although in the assessment task the future language teachers tended to have a better understanding of the textual level aspects of a language skill. Students of language subjects are likely to have been exposed to textual, socio-cultural approaches to language in their university studies (Bunch 2013). However, exploring language and literacy practices in a disciplinary context is far more challenging, and university studies may not have provided the necessary skills for this. In addition, the future Finnish language teachers had difficulty analysing the features of the disciplinary language, setting linguistic goals for learning, and supporting learning through explicit teaching of language skills.

The two contexts examined in this study appeared to differ in terms of the role of language in content learning. In the mainstream school classroom with a small minority of second language learners, language did not play a major determining role in the pedagogical planning. The student teachers focused on disciplinary terminology and strove to teach reading strategies that were relevant also to the native speakers of the language of schooling. Otherwise, language skills were more or less taken for granted, although the two second language learners' skills and performance were constantly observed. In the adult migrant integration education course, the sufficiency of the learners' language skills appeared to determine the planning of activities to a large extent.

It can be concluded that while the original function of sub-study 1 was to provide an initial mapping of student teachers' pedagogical language knowledge and direct the focus of the forthcoming sub-studies, it turned out that sub-studies 2 and 3 confirmed the student teachers' perceptions of language identified in sub-study 1. However, the findings of sub-studies 2 and 3 also complemented and enriched the perception of student teachers' pedagogical language knowledge.

In relation to the second research question, *What characterizes pre-service teachers' collaborative practice construction across subject boundaries in a multilingual setting*, the study indicated three main tendencies: 1) Student teachers' expertise areas and the integrated subjects tended to remain isolated. 2) Student teachers' perceptions of language tended to govern their development of pedagogical practice. 3) In collaborative negotiation of a shared goal and understanding, the student teachers had a mutual ideal but seemed to lack the necessary skills to

support learner engagement in a multilingual context. These tendencies are unfolded in the following.

The built-in knowledge asymmetry inherent to crossing subject boundaries led the student teachers to lengthy discussions on the pedagogical traditions and characteristics of each other's subjects. They also discussed the commonalities of their subject fields and, particularly, the linguistic nature of the subjects with respect to the core curriculum and customary pedagogical practices. It seemed that the student teachers of non-language subjects had a readiness to engage in novel initiatives, but needed more concrete and refined proposals for action from their language teacher peers. However, these general level discussions did not lead to more detailed analysis of disciplinary language use or the literacy practices needed for learning the subject in question. As the common area between the subjects remained vague, the student teachers were not capable of setting explicit linguistic and content aims for their study units. The student teachers' difficulty in defining disciplinary language and the role of language in content learning seemed to make it difficult to cross disciplinary boundaries, and the process of collaborative knowledge construction involved ambiguity, uncertainty and inconsistencies. They thus ended up connecting separate contents and working modes from each subject, but for an integrated study unit the subjects remained rather separate failing to form a unified whole. As teachers, the student teachers tended to stay in their own expertise areas without significantly crossing the subject boundary.

The study showed that language plays a major role in pedagogical practice development, particularly in teaching a multilingual migrant group, and that the student teachers' perceptions of language tended to govern their development of pedagogical practice. In the ethics intervention, the deficiencies of the learners' skills guided the planning process, whereas in the science intervention the language focus presumably resulted from the context of integration and the instructions provided in the setting. Second language learners were observed by the student teachers, but as the majority of the participants in the group were native speakers of Finnish, language skills were taken for granted, contrary to what would have been the case with a fully migrant group. Pedagogical action was clearly constricted due to the narrow perception of language as mainly word-level entities instead of viewing language use in relation to genres and situations and providing learners with the support needed to succeed in wider contexts.

The student teachers' collaboration reflected a negotiation between their pedagogical ideals and traditional, conventional approaches. They seemed to have a mutual ideal that drew from a more sociocultural view of (language) learning. In both interventions, the student teachers explicitly valued the enhancement of learners' agency by considering ways of activating and engaging the learners and making learning meaningful. In their discussions, they raised numerous ideas such as comparing everyday language and disciplinary language. However, many of these ideas were not elaborated further into concrete activities or recognized as pedagogical techniques that could be purposely used by the teacher. Despite the mutual ideal, the student teachers seemed to lack the



skills needed to provide affordances for learner engagement in the language of schooling context.

These findings are discussed in more detail and in relation to the conceptual framework and previous research in the discussion section.

## 5 DISCUSSION

The findings of this study indicate that pre-service teachers' pedagogical language knowledge echoes to a large extent the traditional understandings of language as merely grammar and vocabulary. Dynamic use of language as a social resource in varying contexts and situations is not employed in practice, despite being included to some extent in the student teachers' planning discussions and assessments of learner performance. This is not a particularly unexpected tendency, as it is well known from previous research that traditional understandings of language are persistent and hard to change (Tarnanen & Palviainen 2018). In the following sections, the student teachers' views of language are discussed in relation to their impact on how they can support learners' development of academic skills. Furthermore, the findings on student teacher collaboration are discussed in light of the conceptual background of this study and previous studies. Finally, the research process is reflected on and implications are made on the basis of the findings.

### 5.1 Developing learners' academic skills through pedagogical language knowledge

Language does not have an absolute value in the learning of content knowledge, but it is a means for making thinking and knowledge construction visible and for engaging all learners and supporting their equal opportunities for participation and learning. Through language use, learners are enabled to build their identities as participants in the school community and in society in general (Cummins 2001, 2006; Kibler et al. 2015). Therefore, teachers' pedagogical language knowledge is crucial for developing learners' academic skills. Language is a means and target of learning both for native speakers of the language of schooling and for second language learners. However, the increasing diversity in society highlights the importance of teachers' ability to adjust their practice, particularly in multilingual groups. Finnish educational policies and the research literature echo the

importance of learning language and content knowledge in tandem (Cummins 2001, 2006; Kibler et al. 2015; NBE 2014; Valdés et al. 2014). The intertwined nature of language and content underlines the idea of language use and the learning of language and content knowledge as a connected activity (Dufva 2013b; van Lier 2007).

In this study the pedagogical principles shared by Cummins' academic expertise framework (2001, 2006) and the pedagogical re-conceptualizations promoted by Stanford University (2013) and Kibler et al. (2015; see also Valdés et al. 2014) were adopted as cornerstones for pedagogical practice development that promote optimal and parallel learning of both language and content knowledge. In the following, the findings of this study are discussed in relation to how student teachers' perceptions and action acknowledge the key principles addressing the development of academic skills: 1) perception of learners' knowledge, skills and experiences and building on them, 2) engaging learners in meaningful and challenging disciplinary meaning-making practices, 3) enhancing learner agency and autonomy through providing scaffolds and strategies for participation and interaction in academic situations (see Figure 9). Student teachers' views of language play a crucial role in each of these aspects.

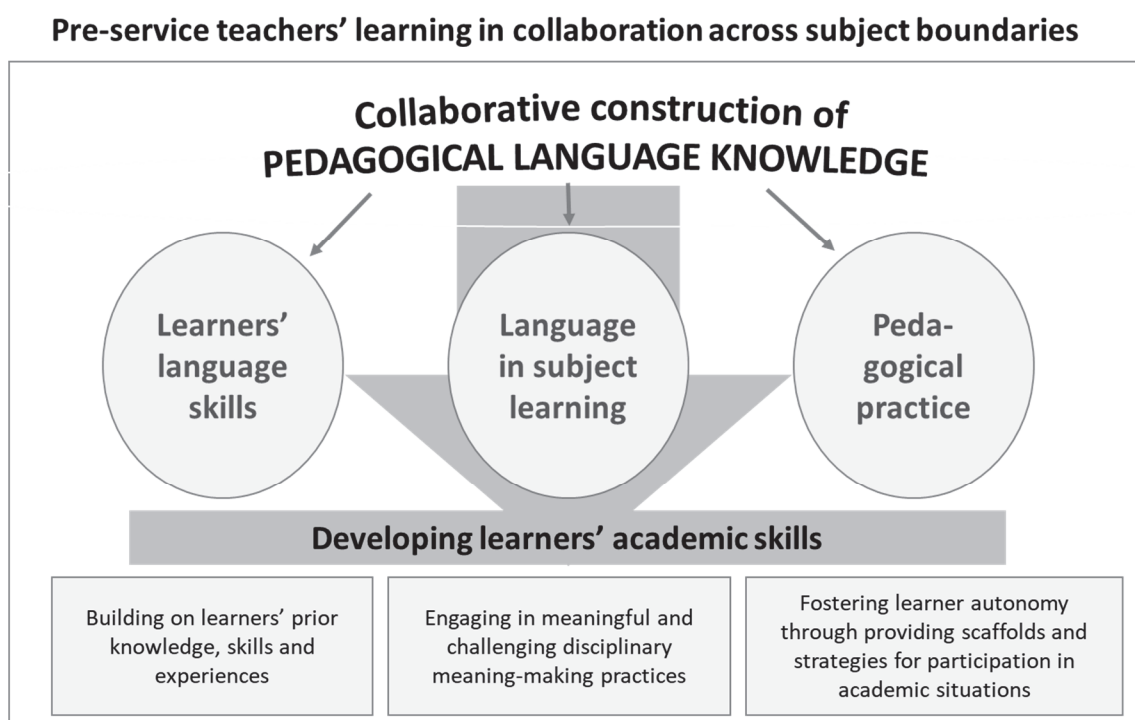


Figure 9 Pedagogical language knowledge as a tool for developing academic skills and creating spaces for second language learners' meaning making and learning

Drawing on the sociocultural approach to learning, learners build new knowledge upon their prior understanding, and this new knowledge is connected to conceptual structures in such a way that it leads to deep understanding

and extended language skills (Cummins 2001; Valdés et al. 2014). Therefore, instruction aiming to develop academic skills activates learners' prior knowledge, skills and experiences, and learners are viewed as intelligent and linguistically talented despite their limited access to the language of schooling (Cummins 2001; Walqui 2006). Teachers' orientation to learners' language skills therefore influences their attitude towards the learners.

This study showed that even though the student teachers had a positive attitude towards learner performance in both the questionnaire-based assessment task and in the classroom context, in their pedagogical practice they still viewed learner skills in terms of deficiencies and difficulties in learning, especially in the group of students with low Finnish language skills (ethics intervention). In the questionnaire, the student teachers' responses echoed a communicative approach to language learning (Article I) whereas, in practice, the learners' resources were not taken as a starting point for pedagogical planning. The student teachers acknowledged the learners' existing knowledge and explicitly sought to make learning meaningful to them by considering interesting aspects and activities related to the topic to be learned, varying the working modes and material selection, and activating the learners. However, they did not seem to explicitly analyse the learners' existing knowledge or plan how to extend it and make use of the learners' existing resources. For instance, although the student teachers recognized the learners' use of dictionaries and multilingual websites for information searching and other activities, the learners' first languages were not exploited in a planned way. Multilingual repertoires were largely neglected as learning resources, even though strong skills in L1 are known to promote learning of academic content (e.g. Lucas & Villegas 2011; see also Tarnanen & Palviainen 2018).

Evidently, then, learners' limited language skills easily become a determining factor in pedagogical planning, particularly in immigrant education, and language proficiency seems to be given a different role and meaning in a fully migrant group compared to a mainstream group with a migrant minority. The case studies in my research setting indicate that in an adult immigrant group, learners' limited access to the language of schooling has a major role in pedagogical planning. However, in the heterogeneous group with a small immigrant minority it was not possible to focus on individual learners and, therefore, language skills were more easily taken for granted, although the native speakers' varying literacy skills in the language of schooling were also acknowledged by the student teachers. In mainstream education, the challenge is therefore how to engage second language learners in activities and meaning making by supporting their understanding and use of emerging language. On the other hand, the deficiency approach involves a risk that learners are not treated as intelligent, imaginative and linguistically talented and are not seen as legitimate participants (Cummins 2001; Kramsch 1995). Walqui (2006) states that they may easily feel that they are not expected to contribute with their current resources, and may not be given full access to situations of mutual meaning making.

Prior research has reported on teachers' inability to identify phases of language development and locate and leverage relevant information about learners' linguistic and cultural histories within and beyond school (de Jong et al. 2013). Lack of information tends to hinder teachers' ability to identify the linguistic challenges that learners face when studying academic content (Faltis et al. 2010; de Jong et al. 2013; Pettit 2011). In line with previous studies, this study suggests that student teachers need better supervision in identifying the characteristics of learner performance that influence their learning of content knowledge. Valdés (2005) addresses that when teachers make a special effort to get to know their students' strengths and weaknesses and support multilingual learners' language development, e.g. by providing models of various genres and supervising reading, they foster the development of the academic language of all students in their classroom. Nevertheless, the focus should not be only on the language of schooling; teachers' awareness and support for learners' other meaning-making resources also need to be promoted.

The second cornerstone in the development of academic skills, engaging learners in meaningful and cognitively challenging disciplinary meaning-making practices, addresses the understanding that disciplinary language and literacy practices are learned through participation in challenging activities. Kuteeva et al. (2014) define disciplinary literacy skills as knowledge construction, negotiation and dissemination using a wide range of semiotic resources. Therefore, disciplinary language and literacies reflect the ways of constructing knowledge in the discipline: e.g. what role is given to language and other semiotic means, what levels of language are focused on, and how different modes of language use are employed to complement each other in the meaning-making continuum.

This study is in line with prior research on mainstream teachers' expertise in adopting language-sensitive pedagogy as it indicates teachers' limited understanding of the fundamental role of language in disciplinary learning. Many studies have reported on teachers' inability to deliberately address the specific language and literacy demands of their various learning contexts and the texts and textual practices they deploy in their teaching (Coady et al. 2011; de Jong et al. 2013; May & Smyth 2007; Valdés et al. 2005). Different modes of language use within disciplinary practices are seldom explicitly taught and, in particular, spoken language is typically invisible and used in an unconscious way in meaning making (e.g. Love 2009; Nikula 2017; Saario 2012; Valdés et al. 2005; Vollmer 2008;). Furthermore, subject teachers rarely set language learning objectives or address academic language use in a strategic way (Gleeson 2010; Koopman et al. 2014; Morton 2012; Nikula et al. 2016). All of these findings are supported by the present study.

However, as language plays a crucial role in content knowledge construction, teachers need to be aware of the meaning-making practices within their discipline in order to engage and support their learners. If, as is often the case, disciplinary language is limited to vocabulary and key terms alone (Creese 2005, 2010; Gleeson 2010; Zwiers 2007), learners are not supported in seeing how lan-

guage is used to achieve various social goals and to construct meanings in different situations and texts, and they may miss out on learning how to analyse texts at a deep level (Cummins 2001, 2006). As in many countries currently, also in Finland the core curriculum for basic education (NBE 2014) emphasizes the responsibility of teachers as teachers of the language of their subject, yet teachers apparently lack the tools to analyse disciplinary literacies and recognize how various means of meaning making are employed in their subject area. Terminology is therefore seen as the only straightforward and accessible means of perceiving disciplinary language without acknowledging, for instance, the discursive and textual aspects of the subject (see also Creese 2010; Zwiers 2006). This lack of understanding of the intertwined nature of language use and all learning hinders teachers' ability to view situated and contextual disciplinary practices as the learning goal and to develop learners' language awareness by fostering their ability to recognize and analyse different ways of making meaning in subject contexts (see e.g. Dufva 2013b; Larsen-Freeman 2013; van Lier 2007). Furthermore, language and content are likely to remain as separate reified entities and not as a unified process (Dalton-Puffer 2011) of engaging learners in developing language and content knowledge and skills in a target-oriented way. This study also indicates that a focus on vocabulary and terminology leads to a teacher-centred pedagogical approach and diminishes the active role of the learner in knowledge construction.

Disciplinary literacy skills and awareness cannot be taught in isolation from content knowledge teaching, although according to Moate (2011), teachers may sometimes construe language teaching as the domain of language, not subject, teachers. The subject teachers in Gleeson's study (2010), however, have a different stance, recognizing that writing explanations in science is a skill that needs explicit teaching, but they did not perceive it as a language-related skill but a subject-related skill. Similarly, in the present study the student teacher of science viewed visualizations as a separate skill from language use (see Article II). Gajo (2007), on the other hand, has discovered that in comparison to language teachers, subject content teachers may sometimes be more particular regarding the use of language in science lessons. Also in this study, non-language subject teacher students seemed to be open to new language-related initiatives, but as the approach was also new to the language teacher students, they were unable to propose concrete ideas for mutual elaboration.

Higher-order thinking, deep learning, and knowledge internalization require multi-layered interaction and use of different modes of language use, such as translanguaging (Blackledge, Creese, & Takhi 2013). Learners need exposure to the challenging academic conversations and language-rich disciplinary practices taking place in various content-area classrooms (Valdés et al. 2005; Valdés et al. 2014). Teachers are required to have the ability to perceive and plan the continuum of knowledge construction by seeing the potential of different modes of language use and various semiotic resources: How can learners be guided in knowledge construction through using everyday language, their L1s and other

language resources towards disciplinary language conventions? How is the subject matter processed through interaction (speaking and listening), reading and writing? How do graphs and visualizations add to meaning making? How are all the modes of meaning making used to complement each other and how are learners made aware of their multiple meaning-making resources?

Following the sociocultural idea of a learning community, engagement in challenging disciplinary meaning-making practices and multi-layered interaction is important for learners' opportunities to learn both content knowledge and disciplinary language conventions, but equally importantly, it expands learners' opportunities for identity development, as they are provided with the ability to generate knowledge themselves and act meaningfully with respect to social realities (Cummins 2001, 2006). Through interaction with peers and teachers, learners can socialize in the learning community and negotiate their identity as members of the community. According to Cummins (2001), optimal learning occurs when these interactions maximize both learners' cognitive engagement and their identity investment. Through an interactive process of apprenticeship, learners are encouraged and guided to actively and versatily use the language(s) to practice their skills in line with the specific demands set by the task (Kibler et al. 2015). When all learners have equal agency and ownership of the process and outcome of learning the schooling socializes them into active participation and guides them in their participatory identity development. The findings of the present study indicate that pre-service teachers recognize the goal of learner engagement, but their practices may rely on teacher-led instruction with traditional and rather technical group activities in which learner support and interaction are not particularly considered. Traditional school-oriented action may not induce learners toward identity investment in the learning community.

The third cornerstone, enhancing learner agency and autonomy through providing scaffolds and strategies for participation and interaction in academic situations, promotes explicit attention to the meaning-making resources employed in teaching. Sufficient vocabulary is not enough for participation; instead, systematic development of interaction and strategic skills are needed. Learners need to be made aware of language use and learning strategies in different subject areas.

Simplification is a frequent and often intuitively used approach in supporting learner achievement in developing language skills. The approach was employed by the student teachers in the ethics intervention. It seems that their inability to analyse disciplinary language use and their narrow view of language and language skills in general hindered their opportunities for considering ways of supporting learner participation in knowledge construction, both in interactive situations with peers and in learning from written materials. The student teachers would evidently have needed pedagogical models for guiding learners in using effective strategies to construct meaning from disciplinary talk and complex texts, actively participate in academic discussions, and construct knowledge through writing a variety of disciplinary genres (Gibbons 2003; Walqui & van Lier 2010). Simplified language and materials are likely to involve the view of the learner as

deficit and lead to the development of diminished rather than empowered identity. Learners may also be segregated into homogenous skill-based groups in the belief that this provides them the most appropriate and efficient instruction. However, the sociocultural view of learning promotes the idea that, instead of primarily using simplified language and materials, learners should be integrated into environments in which they are required to actively engage in challenging cognitive learning tasks that involve different academic language practices (Kibler et al. 2015; Valdés et al. 2014; Walqui 2006). The learners are guided to engage with complex, amplified texts that are enriched both linguistically and extra-linguistically in order to provide them with multiple clues and perspectives for constructing their understanding of the conceptual language. The ultimate purpose of these scaffolds is to foster learners' increasing independence and autonomy (Valdés et al. 2014; Walqui 2006; Walqui & van Lier 2010).

Scaffolding learners' active participation in challenging activities requires adjusting support to learners' individual needs. Awareness of these needs requires monitoring of the learners' growing understanding and developing academic skills. The scaffolds are intended to teach the learner how to take charge of their own learning process, to hand over the responsibility to the learners themselves as soon as possible (Kibler et al. 2015; Walqui 2006). In this study, the student teachers seemed to recognize a number of participatory challenges encountered by learners, but interactive activities were still carried out using a technical teaching approach. The student teachers did not strive to build learning communities or provide learners with scaffolds (e.g. appropriate phraseology needed in discussions). The idea of learning communities and social contracts is, naturally, a somewhat unrealistic aim in a short-term intervention where the student teachers do not know the learners well in advance, particularly if such an operational culture has not been previously established by the permanent teacher of the group. The student teachers might not have models of participatory pedagogy from their own school years to draw on. Saario (2012) reported a case study on literacy practices in learning social studies and concluded that literacy events can be divided into two activity types: in the classroom, learners were most part required to engage in teacher-led and largely mechanical literacy tasks, whereas in frequently employed individual work learners were left to construct meanings from various written sources on their own. However, teaching strategies for constructing meaning from disciplinary talk and texts and for participating in academic discussions should belong to the pedagogical toolkit of all teachers, as such support for learning is essential in all kinds of classes.

The student teachers' perceptions of language and language learning tend to have an explicit impact on their pedagogical approach. When language is viewed primarily as a system of grammatical structures and vocabulary, it is difficult to identify how essential disciplinary meanings are constructed or to examine language use as a meaning-making activity (van Lier & Walqui 2012). Furthermore, a narrow perception of language skills hinders the student teachers' ability to enhance the learners' broader and deeper engagement, agency and expertise within linguistic action (see also Dufva 2013a) and, consequently, they



may end up adopting teacher-driven approach. The traditional belief that language has to be acquired first before it can be used for content learning is persistent as it is still largely held to by the existing educational system. The language of schooling takes a long time to acquire and native-like proficiency is not achieved by all second language learners. Teachers are nevertheless required to develop pedagogical practices that enable the achievement of disciplinary standards in tandem with language and literacy skills (Valdés et al. 2014). Optimally, learners are offered both linguistic support in subject classrooms and adaptable focused language instruction that proactively reacts to learners' needs and challenges.

As this study demonstrates, language beliefs previously constructed during one's own school path and ingrained notions about language and language use are likely to remain unchanged after graduation (see also e.g. Peacock 2001). It is therefore crucial that teacher students' beliefs are challenged, reflected on and discussed during their pedagogical studies, and that they are provided with opportunities to examine the different ways language is used in constructing knowledge (see Galguera 2011). Without adequate understanding of learners' current skills and of the learning process, teachers are not able to consciously plan relevant and timely contexts for practicing language and achieving academically (see also Gibbons 2009).

## **5.2 Collaborative practice construction across subject boundaries in pre-service teacher education**

Drawing on Rochelle and Teasley's (1995) definition of collaboration, the student teachers' collaboration in this study can be characterized as a mutual process of constructing a shared pedagogical practice and understanding of teaching language and content in tandem. Following Dillenbourg (1999), student teachers' collaboration can be described as a kind of 'social contract' that requires the engagement and contribution of all participants. In the present study there was low division of labour, as the student teachers intensively negotiated both the outline and the details of their project. When they did divide work, they mutually outlined the content, and proposals made by individual participants were discussed and approved in collaboration. Interaction and action were interwoven. The research setting as a whole emphasized the need to work together to solve ill-structured problems with various possible solutions and produce and analyse ideas that go beyond subject traditions and build a new approach (King 2002). Participants represented different disciplines and were required to cross disciplinary borders in order to share, negotiate and co-construct knowledge. The task of integrating language and content learning was novel to all of them and could not have been conducted without the contribution of both subjects. They were assumed to learn and develop practices during their project (see also Damsa & Jor-

net 2016) in such a way that the outcome of their efforts exceeded what each single participant could have constructed on their own (Kuusisaari 2014). Furthermore, boundary crossing and different kinds of knowledge were required for completing the task, as there were no prior models or practices in none of the pedagogical subject traditions. It can therefore be assumed that the open-ended task invited the participants to negotiate, explain, clarify, mutually adjust, agree, and disagree on their viewpoints, and that these activities trigger learning mechanisms and enhance higher-order thinking and knowledge construction (Dillenbourg 1999).

In the context of knowledge asymmetry and boundary crossing across disciplines, it is relevant to consider what kinds of knowledge and shared understanding the student teachers co-constructed and how they dealt with the subject boundaries and the potential emerging tensions. In her study on in-service teacher collaboration Kuusisaari (2013) noticed that teachers' developmental ideas were not always fruitful, but remained rather unreflective and superficial. She wondered whether the aim of developing new pedagogical methods was too demanding for teachers and, therefore, in terms of the ZPD the distance between the actual developmental level of the teacher team and the level of potential was too far. The teachers' current understanding and tools for developing teaching were estimated to be too far from the demands of the task to design teaching from sociocultural and constructivist starting points. The same questions can be raised in relation to collaboration in the present study. In both interventions, the student teachers created and conducted a shared pedagogical practice that represented their understanding of teaching language and content in parallel. However, their negotiation of the relationship between language and content remained at a rather general level, and in the classroom practice, the common ground within the subject boundaries was hard to perceive and subject-related activities tended to remain separate. Most negotiation was carried out at the task level, although meta-communication was also used to regulate their collaboration and re-direct the focus of planning (Dillenbourg 1999). In the ethics intervention, in particular, the student teachers critically considered their existing practice and made efforts to transform it by re-directing the focus of their action. In line with Kuusisaari's findings (2013), their reflection on the existing practice did not reach deeper level analysis of the reasons for the problems experienced with their current practice. This study thus indicates that collaboration leads student teachers to redirect their focus, but does not necessarily help them to solve problems or optimize collaborative deep learning. Furthermore, the student teachers might have needed more effective learning-enhancing strategies for reflection and elaborative talk (Khosa et al. 2013; Roscelle & Teasley 1995).

The ethics intervention was significantly longer and larger than the science intervention and tensions between the participants were clearly evident. These tensions seemed to be related to epistemic, socio-relational and affective aspects (e.g. Sins & Andriessen 2012), as the task brought the student teachers' different understandings, perspectives and traditions into conflict. The student teachers did not avoid those issues, but discussed the tensions and made clear efforts to

resolve them. Two clear causes of tension were the student teachers' uncertainty about the task and the ambiguity of the process. The intervention required going into unfamiliar territory without clear or right answers to the problem at hand. The participants were expected to leave their subject traditions and create something new as, according to constructivist principles, learning is most likely to occur when learners' existing knowledge is challenged in collaborative work with others (Gash 2015). The student teachers' collaborative practice construction did not, however, result in particularly new knowledge or practices. The activities they planned reflected, for most part, the traditions of each subject, and they were carried out in separation. The student teachers tended to adhere to their disciplinary practices as in their discussions they did not perceive the common ground between them. For instance, in the science intervention the activity promoting efficient reading of science text remained unconnected to other science-related activities. The challenge of creating something new without a concrete model was too great.

It is notable that co-teaching itself generated a lot of speculation, especially in the student teachers' logs. The students seemed to consider their teaching to be successful if turn taking in the classroom took place easily and if they adapted their roles to each other. In their reflections on their lessons, the student teachers paid more attention to their co-teaching and mutual interaction than to learner support and the interplay between language and content learning. Clearly, co-teaching was a new experience for them and possibly more exciting and meaningful. Moreover, compared to abstract consideration of language, co-teaching was most probably more accessible to them to reflect on.

In her ethnographic study (2002), Creese observed that language and subject teachers are viewed as unequal within discourses of classroom communities, the subject specialist being considered as the expert and source of knowledge (see also Arkoudis 2006). The findings of that study even raised the question of whether collaboration between language specialists and subject specialists can meet the needs of bilingual pupils. In the present study, collaboration between the future language and non-language specialists led the participants to reflect on their teacher roles and subject fields in relation to each other. In particular, the future language teachers perceived language as subordinate to content knowledge. They addressed their lack of knowledge within fields of science and ethics, and even emphasized the priority of content knowledge. However, they all expressed appreciation towards each other's expertise and were open to each other's opinions even when they were critical towards each other's subject traditions.

Interestingly, the unequal position between language and subject content teachers might be related not only to teacher roles but also to the status of language subjects. Bovellan (2014) found that CLIL teachers perceived content learning as the primary goal, whereas achievement of foreign language competence was considered a by-product. In sum, the role of language in knowledge construction and learning is still largely unfamiliar to most teachers, irrespective of their background.

In line with previous research, this study shows that student collaboration and crossing subject boundaries does not automatically lead to innovative learning or the generation of new practices or knowledge (Barron 2003; Kuusisaari 2010; Meirink, Imants, Meijer, & Verloop 2010; Tillema & van der Westhuizen 2006). The student teachers' knowledge asymmetry ideally forms a zone of proximal development (Vygotsky, 1978) in which they can scaffold each other's personal development by co-constructing a shared practice (Lin 2015). However, particularly in short-term interventions, it is difficult to say to what extent the collaboration influences peers' cognitive processes or whether participants really engage in mutual negotiation and development without avoiding misunderstandings, tensions or even conflicts. The lasting effects of collaborative interventions are hard to trace without a longitudinal research setting, but it is assumed that meaningful experiences in which student teachers are required to make efforts to expand their view of teaching and learning into another subject area provide deeper understanding and lower the threshold for making similar initiatives in the future.

Paavola et al. (2004) compared the existing models of innovative knowledge communities and concluded that in all of them innovative learning and knowledge advancement are characterized as cyclical and iterative processes involving ambiguity and even chaotic elements. Knowledge creation is a longish process of transforming existing ideas and developing practices.

### **5.3 Reflections on the research**

In this section I look back at the study and discuss the quality aspects relevant to the research. In qualitative research, the trustworthiness of the research is often assessed by considering the following four aspects: 1) how confident the researcher is in the truth of the study's findings (credibility), 2) to what extent the findings are consistent and could be repeated (dependability), 3) are the findings applicable in other contexts (transferability), and 4) are the findings neutral in the sense that they are based on the participants' responses and do not reflect the researcher's own motivations or potential biases (confirmability) (Denzin & Lincoln 2000; Miles & Huberman 1994; Patton 2015).

The trustworthiness of the study has been addressed throughout the research process and ensured in a number of ways. The research setting has been designed to capture the multifaceted nature of the phenomenon under exploration. Various sources of data have been collected to provide a versatile view of various aspects of the research questions under study. The analysis has been conducted and reported using a systematic procedure. In the articles the analysis procedures are described in a summarized manner, therefore in this dissertation they are discussed more in detail to increase transparency. Data collection and analysis have both been carried out in interaction with the co-authors of the articles. Interpretations of the data excerpts and formulations of the coding schemes have been discussed in conjunction with the process of analysis. Ambiguities

have been acknowledged and, where needed, re-examined. Moreover, as a result of the article-based constitution of the dissertation, the articles have gone through a peer-review process, which contributes to the scientific quality of the research.

However, it is necessary to consider a number of issues that may have had an impact on the findings of the study. In the following, I aim to address some aspects that are especially relevant in assessing the trustworthiness of this study.

Firstly, the most apparent issue that might have influenced the data collection was my two-fold role as a teacher and as a researcher. My aim was to examine the phenomenon of pre-service teacher collaboration across disciplines and not to influence it. Therefore, as is typical of the chosen practitioner research approach (Heikkinen & al. 2016), my two-fold position was sometimes problematic as I did not want to get involved in or guide the student teachers' efforts. When asked, I supervised the participants regarding their specific questions. According to my own experience, the atmosphere in the classroom observations and group interviews was relaxed and comfortable. As I met the student teachers regularly and they knew the topic of my research, the research themes were raised and addressed naturally and the discussions were relaxed. According to my own estimation, the student teachers' audio-recorded planning sessions were very open and relaxed in nature. The student teachers also stated that recording was not distracting but a natural part of their meetings, although they always reported the date and time and participants at the beginning of each session and often said goodbye to me at the end of the recording. It seemed to me, as far as I could judge, that they also discussed problematic issues frankly. One participant wrote lengthy reflections in their learning diary, whereas the others were less comfortable reporting their experiences and thoughts in writing. This may have been due to individual preferences, but also to pronounced self-criticism or possibly negative awareness of being the object of investigation. Evidently, it is possible that my position as a teacher and researcher could have affected the nature of the planning sessions and group interviews as well as the students' reflection. However, my two-fold position can be perceived not only as a challenge but as a resource, as I had a good insight into the pre-service teachers' thinking and knowledge based on the classroom discussions and their assignments. According to the qualitative research approach, the researcher's participatory role and deep understanding of the research topic are considered as resources but also to involve risks (Patton 2015). I consider that the background knowledge that I was afforded enabled me to get closer to the socio-cultural processes that the student teachers were experiencing and to better direct their focus in considering the topic (see also Trondsen & Sandaunet 2009). Furthermore, close interaction with the student teachers provided me with a means of getting closer to perceiving what might be needed for creating new understandings and changes in practice (Cook 2006). Be that as it may, my dual role as a researcher and teacher should be regarded in assessing the trustworthiness of the study and, therefore, throughout the research process I analytically reflected upon my position and the phases of the research were validated by the co-authors of the articles.

Secondly, the study participants might not represent the majority of student teachers but exemplify students who at the outset were interested in learning more about teaching in multilingual groups and collaborating across subject borders. The student teachers participated voluntarily in the study and were therefore highly motivated. The findings might have been rather different if the participating students were less motivated to collaborate and to cross subject boundaries. Furthermore, two projects out of six were selected for investigation. Each project was conducted in a different class and in relation to various subjects, and therefore the whole planning and implementation process was fairly different. Had some other projects been selected for investigation, the emerging aspects, views of language and findings in general might also have been different. Originally, the two contexts of language of schooling education were selected for investigation as they were considered to complement each other and provide a fuller view of language and content integration in the Finnish educational reality. However, during the analysis process it became evident that the interventions were so different that it was difficult to combine the analysis of their relevant characteristics and furthermore report on both of them within the limited space of the article format. Therefore, Article III was limited to focus on the ethics intervention only, as its data was larger, covered a longer process and provided richer evidence of the characteristics of the collaborative endeavour.

Thirdly, the research setting as a whole emphasized the role of language in content learning. Particularly in the science intervention, the student teachers might not have paid so much attention to language and literacy skills without this explicit research focus. There were only two learners with a migrant background and their proficiency in Finnish was high enough to function in the group, although one of the learners clearly benefited from extra support. The instructions given for the teaching practice are likely to have guided the student teachers' performance and thinking to some degree, and the planning process might have differed without the research setting.

The fourth concern has to do with the article-based nature of the dissertation. The article format is compact and it was challenging to describe the collaborative processes in a compact way without losing the relevant aspects involved. In the third article, only the ethics intervention was analysed as the limited space of the journal article did not allow presentation of both of the somewhat different pedagogical planning paths. The science intervention remains to be reported later.

It is reasonable to ask to what extent the findings and conclusions of the study can be generalized and transferred to other settings and contexts (Miles & Huberman 1994; Silverman 2005). Overall, the findings of this study cannot be generalized to all pre-service teachers or other contexts. In addition, it is worth noting that the shortness of the teaching interventions had a direct impact on the pedagogical continuum that the pre-service teachers constructed. The intervention length did not allow long-lasting development of ideas or reconsideration of prior choices. This particularly concerns the science intervention, which was sig-

nificantly shorter than the ethics intervention. However, I believe that the findings nevertheless provide a realistic view of the understandings and collaborative practices that exist among many pre-service teachers, even though they do not apply to all pre-service teachers. This study proposes that the findings should be acknowledged and elaborated in teacher education.

Finally, I am aware that my background as an applied linguist may be seen as a bias. As Nikula et al. (2016) have pointed out, applied linguists have highly defined conceptualizations of 'language' but non-professional notions of 'content', and vice versa. My background in language education and my previous professional experience as an applied linguist also give me a certain perspective and may have influenced how the research setting was shaped. Furthermore, I interpret the data through the conceptual understanding of a language expert, particularly Finnish as a second language, whereas the same situations and interactions might be interpreted differently by, for instance, experts of science and ethics. Miles and Huberman (1994) emphasize the importance of the researcher's self-awareness of their personal assumptions, values, and biases. I have striven to be critically aware of the bias of mine in the analysis and interpreted the data carefully, trying to discern the true meanings each participant aims to express. It can be added that I have been co-teaching with my colleagues across disciplines for years and this might have helped me, at least to a degree, in widening my approach.

#### **5.4 Implications for teacher education and suggestions for future research**

Within the research-based development of teacher education prior research is naturally exploited; however, teacher educators also need to examine and reflect on their own practices and understandings. In order to prepare student teachers for the requirements of future working life and to enable them to develop their expertise according to emerging needs by adopting an investigative and developmental approach, we present the student teachers with current, real-life challenges with no clear right answers or prior models to follow (e.g. Säljö 2004). These contexts are, in many ways, also novel to us as teacher educators, and we do not know in advance through which process the student teachers will end up solving the open-ended problems or what kinds of outcomes they will achieve. Moreover, these types of activities are often carried out on a rather independent basis without close supervision from the teacher. Therefore, the teacher may not be able to follow the student teachers' collaboration thoroughly enough to identify the developmental needs raised by the activity. Student feedback may not provide sufficient information, either. For instance, the teaching interventions such as the ones investigated in this study have always received positive feedback from the student teachers. The cross-disciplinary projects have been depicted by the students as a meaningful and valuable supplement to traditional

teaching practice. Moreover, experience of multilingual groups with developing skills in the language of schooling has been seen by the students as important exposure that required throwing oneself into new situations with unforeseen elements. Students have also reported that the negotiation of meanings with L2 learners has been an important lesson to be learned and has taught them self-confidence and enabled them to act in unexpected circumstances.

Despite this positive student feedback, I had a need for deeper understanding of the student teachers' collaboration and learning in the interventions. Experience has proven that, often, we in teacher education succeed in raising awareness of the need for changes in pedagogical practices, but pre-service teachers do not learn the skills needed to put the theory into practice. Consequently, the student teachers slip back into the conventions employed during their own school years. My investigation of student teacher collaboration revealed to me the challenges of collaborative construction of pedagogical language knowledge across disciplines. Furthermore, this study confirmed my understanding that without the possibility to apply what is learned in practice in the classroom, my short pre-service teacher education course essentially serves only to raise student teachers' awareness of the role of language in disciplinary learning. Even though the course is fairly practical and models concrete practices, its capacity to provide student teachers with actual pedagogical skills is very limited.

On the basis of the findings of this study, some implications for teacher education can be made. Firstly, in the context of independent teacher practice where supervision resources are limited, pre-service teachers' independent collaborative work deserves to be examined at a deeper level than course assignments and feedback. There is a need for constant development of tools and practices for observing and learning from student collaboration. Teacher educators need to have a realistic view of students' existing understandings and of the challenges of collaboration in order to be able to build on this knowledge and effectively supervise reflection and examination of the students' prior thoughts and experiences. Student teachers always learn something of value through peer collaboration (see also Säljö 2003); however, teacher educators need to make sure that the students also learn what is specifically targeted by the activity. Presumably, too, the opposite may even occur; a collaborative teaching practice that requires boundary-crossing across disciplines may actually enlarge the disciplinary gap and thus lead in the opposite direction to that intended.

Secondly, tools for supervising the collaborative process need to be developed and disseminated among teacher educators. Teacher collaboration is largely promoted as a key dimension of future teacher expertise. Strategies for effective teacher collaboration should therefore be learned already in pre-service education (see e.g. Valdés et al. 2014). This study suggests that longer-term processes along with timely supervision practices and relevant supportive tools are needed to foster productive collaborative learning in teacher education. Furthermore, supervision mechanisms should provide students with theory-based conceptual tools for raising questions and examining and elaborating their ideas further and for reflecting on their action (see also Kuusisaari 2014).



Thirdly, pedagogical models for teacher collaboration across subject borders in facilitating the development of pedagogical language knowledge are needed. This study indicates that the transformation of current views of language and pedagogical understandings towards sociocultural perceptions has a long way to go. The student teachers' collaboration demonstrates internal inconsistencies and lack of ability to meet the current, previously unforeseen challenges in the school community. In working life, teachers are assumed to adapt to changes in society and modify their approach accordingly. However, on the basis of this study, the role of various pedagogical models cannot be understated. Collaboration across disciplines as such does not guarantee novel perspectives. Creating new practices and thinking is time-consuming and requires input that triggers the ability to consider customary practices from a novel perspective. Models are needed that exemplify how both disciplinary and linguistic learning objectives are set simultaneously and where disciplinary actions towards meaning making are perceived as a continuum of discourse events in which different modes of language use, genres and registers alternate (see e.g. Nikula et al. 2016). Here, mastery of a predictable, finite set of concepts and linguistic structures may not be enough to provide teachers with an adaptable ability to identify how essential disciplinary meanings are constructed and to analyse language use as meaning-making action (van Lier & Walqui 2012). Rather, teachers need relevant concepts and understanding of language structures in order to be able to perceive how knowledge is constructed through language and how knowledge construction can pedagogically be supported. As language and content are inherently interconnected, it is essential that subject-specific academic literacies are analysed in collaboration across subjects, both in schools and among teacher educators. Our understanding of language cannot be left to the linguists alone – content specialists' viewpoints are also needed in order for the language-sensitive approach to become meaningfully established in disciplinary practices. Moreover, the development of pedagogical language knowledge should not be the responsibility of an individual teacher. Varied expertise should be brought together and advance the whole-school approach. Pre-service education cannot provide teachers with sufficiently deep pedagogical language knowledge – the work should continue in teacher communities and be rooted in the challenges of every-day work in schools.

Internationally, language-sensitive pedagogical practices have been developed. For instance, Stanford University in collaboration with WestED has, drawing on the sociocultural view of learning, produced material units for linguistically diverse mainstream classrooms that demonstrate subject-specific pedagogical practices that meet the needs of second language learners and support their engagement (see e.g. Stanford University n.d.; Walqui, Koelsch, & Schmida 2012; WestEd n.d.). Also, Pauline Gibbons (2009, [2002] 2014) has long been developing and publishing materials that exemplify the principles of language-sensitive teaching. In the Finnish context, extensive work on language-sensitive approaches has been done for instance by Kuukka and Rapatti (2009) and Aalto, Mustonen, Järvenoja and Saario (2019). Valuable work has been done also within

the reading to learn approach (see e.g. Shore & Rapatti 2014) and various other projects, such as DivED (n.d.). However, on the broader scale, language-sensitive practices have not become established as a well-known and largely acknowledged approach in subject content teaching.

Finally, it is noteworthy that linguistic analysis of disciplinary language does not seem to be straightforward even for language teacher students. This is a challenge that should gather teacher educators from language departments and departments of teacher education to jointly consider how views of language and language learning can be transformed towards a socio-cultural perspective and taken into practice, and how student teachers' linguistic analysis abilities can be extended to multiple content subject contexts. This research suggests that further exploration is needed of pre-service teacher collaboration and how it can be used to promote both deeper learning in schools and more adaptive expertise in teacher education.

## 5.5 Conclusion

In the introduction to this dissertation, I described my study as practitioner research (Heikkinen et al. 2016) and stated its joint purposes to be greater professional understanding and transformed practice. It might therefore be reasonable to ask how this study has guided me in developing my own understanding and pedagogical practice. I can conclude that this research process has enabled me to view my own practice from a distance and has provided me with deeper understanding of pre-service teachers' collaborative efforts in constructing a shared practice and new knowledge. As Säljö (2003) puts it, people clearly cannot avoid learning, but it is what they learn from different practices that is of key interest in developing teacher education. My study indicates that pre-service teachers learn what they can appropriate and make meaningful to themselves. However, without timely and apt supervision this may fall short of meeting the particular aims of the education or helping them to develop the novel skills and practices that the changing environment demands. Therefore, in line with constructivist notions, as teacher educators we constantly need to balance our guidance by also creating opportunities for students to reflect on and self-direct their understanding and actions and challenges that enable them to grow (see also Kaufman 2004; Loughran 2005). We need to examine our practices on regular basis and develop our supervision tools and practices in collaboration with other teacher education communities.

The findings of my study demonstrate that learning in collaboration across subject borders is not easy. The subject divisions, each with their customary aims, contents and practices, have been established over decades, even centuries, and thus have deep roots. Furthermore, in the traditional Finnish school culture, teachers are accustomed to working autonomously and our current pre-service teachers have also grown into this mindset. They have no model or supporting tradition of teacher collaboration or integrated learning to draw from. The

needed transformation out of persistent understandings in today's changing environment is therefore a long-lasting and multifaceted process in which people often do not learn through experience alone (see also Dinkelman 2003). Professional growth is promoted most effectively through partnerships between teacher educators and both pre- and in-service teachers. However, following Damsa and Jornet (2016, 43), 'collaborative knowledge construction is not just jointly knowing but also being uncertain and still engaged in professional practices for which students have not yet developed expertise'. When pursuing something new we cannot expect it to be grasped immediately. Therefore, longer sequences of collaborative work are needed and engagement and collaborative effort are required also in phases of uncertainty, difficulty and even failure. It is a crucial task of teacher education to convey this message to pre-service teachers.

The findings of this study encourage my work as a teacher educator in two important ways. Firstly, crossing subject boundaries benefits the development of disciplinary practices among teacher educators as well as in communities of pre- and in-service teachers. I aim to increase collaboration across the curriculum with my various subject content colleagues as we continue developing new patterns of interdisciplinary collaboration and rethinking the knowledge base for future teachers. Pre-service teachers' epistemic agency as knowledge constructors is a crucial element of teacher expertise. Furthermore, conceptual tools for guided reflection on student collaboration need to be enhanced.

Secondly, the continuing growth of ethnic and linguistic diversity in schools is not only a challenge but also an opportunity to re-conceptualize the primary aims and core contents of subject learning and develop pedagogical practices for integrated learning and inclusion and engagement of all learners. Diverse classrooms help us reconsider our perceptions of how knowledge is constructed in subject areas and how the process of meaning making could be facilitated in a way that supports all learners' inclusion and engagement. We can no longer close our eyes to the various means of support that also native students need for better academic achievement.

The challenge of becoming reflective, thoughtful, critical and generative thinkers applies to in-service teachers, pre-service teachers and teacher educators alike. Developing pedagogical practices and considering the core of learning remains demanding and requires negotiation and collaboration within educational communities. In all our efforts and pedagogical choices across all educational levels, it is good to draw on Jerome Bruner's (1996; see also Kibler et al. 2015) idea that students not only learn about, they also learn to be.

## YHTEENVETO

### **Aineenopettajaopiskelijat rakentamassa pedagogista kielitietoa kollaboratiivisesti**

Tämä tutkimus on toteutettu opettajankoulutuksen kontekstissa, jossa aineenopettajaopiskelijat ohjataan jo perustutkintovaiheessa ratkomaan kansallisesti ja kansainvälisesti ajankohtaisia pedagogisia kehittämishaasteita, joihin ei alalla vielä ole valmiita vastauksia tai malleja joita seurata. Tavoitteena ei siis ole vain siirtää tietoa ja asemoida opiskelijoita valmiin tiedon vastaanottajiksi vaan ohjata heitä opintojen alusta asti identifioitumaan aktiivisiksi toimijoiksi tiedon rakentamisessa ja kehittämään työtään yhteistyössä yli oppiainerajojen vastaamaan kulloinkin aktuaalisiin koulun uudistustarpeisiin. Tutkimus kohdentui koulujen kasvavaan kielelliseen ja kulttuuriseen diversiteettiin ja kaikkien opettajien vastuuseen monikielisten oppijoiden osallistamisessa ja opiskelukielitaidon ja sisälötiedon limittäisen oppimisen tukemisessa.

Tutkimuksen tavoitteena oli syventää ymmärrystä siitä, miten aineenopettajaopiskelijat näkevät kielen roolin eri tiedonalojen oppimisessa ja miten he kollaboratiivisesti puntaroivat monikielisten oppijoiden opetusta ja oppimista eri tiedonalojen opetuksessa ja rakentavat jaettua ymmärrystä kielitietoisesta opetuksesta yhteistä opintojaksoa suunnitellessaan. Tähän pyrittiin tarkastelemalla opettajaopiskelijoiden tapaa arvioida ja eritellä monikielisen oppijan kirjoittamisen taitoa sekä heidän tapaansa kollaboratiivisesti suunnitella kielen ja sisältötiedon oppimista yhdistävää pedagogiikkaa oppijaryhmälle, jossa on monikielisiä oppijoita. Tutkimuksen perimmäisenä tavoitteena oli tuottaa tietoa, joka auttaa kehittämään opettajankoulutuksen käytänteitä kielitietoisien opetuksen edistämiseksi. Tutkimuksen taustalla on huoli siitä, miten opettajien peruskoulutuksessa valmennetaan tulevia opettajia monikielisen ja -kulttuurisen koulun haasteisiin. Tutkimusaihe on kansainvälisestikin ajankohtainen, sillä Suomen tapaan myös monien muiden maiden opetussuunnitelmat korostavat kielitietoisuutta keinona tukea kaikkien oppijoiden osallisuutta koulussa. Lisäksi erilaiset opettajankoulutusta koskevat selvitykset osoittavat, että kentällä toimivien opettajien suurimmat täydennyskoulutustoiveet ja -tarpeet liittyvät monikielisen ja -kulttuurisen koulun haasteisiin.

Käsitteellisesti tutkimus ankkuroituu sosiokulttuuriseen lähestymistapaan. Se ei ole yhtenäinen teoreettinen paradigma, mutta sen lähtökohtana on ajatus oppimisesta ensisijaisesti sosiaalisena ilmiönä, joka toteutuu, kun tiettyyn yhteisöön (esimerkiksi tietyn tiedonalan yhteisöön) kuuluvat ihmiset ovat vuorovaikutuksessa keskenään osallistuessaan yhteisön toimintaan. Kulttuurisena prosessina hahmotettuna oppiminen ei siis rajoitu yksilöihin vaan tietoa rakennetaan vuorovaikutuksessa osallistuttaessa kulttuurisesti ja historiallisesti muotoutuneisiin käytänteisiin. Yhteisön jäseneksi kasvetaan vuorovaikutuksessa ja osavampien tuella. Tässä prosessissa kieli ja muut semioottiset järjestelmät toimivat keskeisinä välittäjinä. Kieli ei kuitenkaan ole pelkässä välittäjäroolissa vaan se

myös muokkaa todellisuutta ja ymmärrystämme siitä. Tämän tutkimuksen kontekstissa yhtäältä opettajaopiskelijat itse muodostavat oppivan yhteisön, jossa he jakavat omaa asiantuntijuuttaan ja oppivat toisiltaan rakentaessaan yhteistä opetuskokonaisuutta. Toisaalta he myös rakentavat omaan opetukseensa oppimisympäristöä, jossa monikielisten oppijoiden tulisi oppia kielitaitoa ja tiedonalan sisältöjä limittäin ja päästä siten osallisiksi tiedonalan yhteisöissä.

Sosiokulttuurisen lähestymistavan kehyksessä tutkimuksen pääkäsitteinä ovat pedagoginen kielitieto (*pedagogical language knowledge*) ja kollaboratiivinen oppiminen. Opettajaopiskelijat rakentavat pedagogista kielitietoa tutkimukseen kytkeytyvässä opettajankoulutuksen opintojaksossa ja tutkimuksen kohteina olevissa opetuskokeiluissa. Tässä tutkimuksessa pedagogisen kielitiedon käsite määritellään opettajan kykynä 1) orientoitua oppijoiden kielellisiin taitoihin, 2) eritellä tiedonalan kielenkäytön tapoja ja 3) suunnitella ja toteuttaa pedagogiikkaa, joka tukee kaikkien oppijoiden oppimista ja osallisuutta tiedonrakentelussa. Aineenopettajan pedagogista kielitietoa ei nähdä itseisarvoisena sinänsä vaan välineenä oppijoiden osallisuuden tukemisessa ja opiskelutaitojen kehittämisessä tiedonalayhteisöissä.

Tässä tutkimuksessa aineenopettajaopiskelijat rakentavat pedagogista kielitietoaan kollaboratiivisesti yli oppiainerajojen. Yhteisen ymmärryksen ja pedagogisen käytänteen rakentelun ajatellaan olevan opettajaopiskelijoiden kehittymisen väline, jossa opiskelijat toimivat metaforisella lähikehityksen vyöhykkeellä, kun he ratkaisevat itselleen uudenlaista pedagogista haastetta edustaen eri asiantuntijuusalueita. Kielen asiantuntijat ovat sisällön noviiseja ja sisällön asiantuntijat taas kielen noviiseja, mutta yhteisessä opetuskokonaisuudessa tarvitaan molempien osapuolten osaamista. Kielitietoisien opetuskokonaisuuden toteuttamiseen ei ole tarjolla valmiita sovellettavia malleja eikä kumpikaan osapuoli pysty suoriutumaan haasteesta yksin vaan heidän välillään on keskinäinen riippuvuussuhde tehtävään nähden. Oletuksena on, että opettajaopiskelijat oppivat, kun he kollaboraation avulla ratkovat itselleen uudenlaisia haasteita ja ylittävät oman osaamisensa rajoja.

Tutkimuksen lähestymistapana on toimintatutkimuksen paradigmalle läheinen *practitioner research*, jossa tutkija tarkastelee omaa työtään ja toimii siis kahtalaisessa roolissa, tutkijana ja tutkimuksen kohteena olevan opintojakson opettajana. Tutkijan perimmäisenä tavoitteena on ymmärtää aineenopettajaopiskelijan näkökulmaa koulutuksen pedagogiseen käytänteeseen, arvioida käytänteen toimivuutta ja kartuttaa näkemystä sen kehittämiseksi.

Tutkimus koostui kolmesta kansainvälisestä artikkelista sekä käsitteellisen viitekehyksen, metodit ja tulokset kokoavasta ja niistä keskusteleavasta yhteenvedosta. Kukin artikkeli lähestyy opettajaopiskelijoiden pedagogista kielitietoa eri näkökulmista. Tutkimuksessa hyödynnetään kahta aineistoa: 221 aineenopettajaopiskelijalle suunnatussa kyselyssä oli soveltava tehtävä, jossa opettajaopiskelijoiden tuli arvioida yläkouluikäisen monikielisen oppijan kirjoittamaa kahta suomenkielistä tekstiä. Kyselyyn vastanneet opiskelijat edustivat 16:ta koulun oppiainetta. Kyselyaineiston analyysissä hyödynnettiin pääosin laadullista sisäl-

lönanalyysia, joka oli aineistolähtöistä ja teoriaohjaavaa. Laadullista tutkimusotetta täydennettiin määrällisellä analyysillä, jonka tehtävänä oli luoda kattavampaa kuvaa opettajaopiskelijajoukon orientaatiosta oppijan kirjoittamisen taidon arviointiin. Kyselyaineiston analyysi on raportoitu tutkimuksen ensimmäisessä artikkelissa. Kahdessa jälkimmäisessä artikkelissa aineistona on kaksi opetuskokeilua, joissa opettajaopiskelijat suunnittelivat ja toteuttivat suomen kieltä ja uskontotietoa/fysiikkaa integroivat opintokokonaisuudet oppijaryhmille, joissa oli monikielisiä oppijoita. Toinen opetuskokeilu toteutettiin yläkoulun fyysiikan opetuksessa ja toinen aikuisille maahanmuuttajille suunnatulla suomalaisen uskontotiedon kurssilla. Opetuskokeiluaineisto koostuu kahden opettajaopiskelijatiimin ääninauhoitetuista suunnittelupalaverista, ryhmähaastattelusta, videoiduista oppitunneista, opettajaopiskelijoiden yksilöpäiväkirjoista ja tutkijan tekemistä kenttämuistiinpanoista. Aineisto on analysoitu laadullisen sisällönanalyysin ja temaattisen analyysin menetelmin.

Tutkimuksen pääkysymykset olivat:

1. Mikä on luonteenomaista aineenopettajaopiskelijoiden pedagogiselle kielitiedolle?
  - a. Miten he orientoituvat oppijoiden kielellisiin taitoihin?
  - b. Miten he käsittävät tiedonalan kielen ja kielelliset käytänteet?
  - c. Miten he kollaboratiivisesti opetusta suunnitellessaan osallistavat oppijoita tiedon rakenteluun ja edistävät sekä kielitaidon kehittymistä että sisältötiedon oppimista?
2. Mikä on luonteenomaista aineenopettajaopiskelijoiden tavalle rakentaa yhteistä, oppiainerajat ylittävää pedagogista käytännettä monikieliselle oppijaryhmälle?

Tulokset osoittivat, että aineenopettajaopiskelijoiden pedagoginen kielitieto heijastelee sekä formalistiseen perinteeseen pohjaavaa ajattelua että sosiokulttuurisen tradition ihannetta. Kuitenkin perinteinen näkökulma kieleen sanastona ja rakenteina oli selvästi hallitseva. Opettajaopiskelijoiden asenne toisen kielen oppijan kirjoittamisen taitoon oli positiivinen ja ensisijaisesti tekstin ymmärrettävyyttä painottava, mutta teksteistä tehdyt huomiot keskittyivät sanatason kielellisiin ilmiöihin. Sosiokulttuuriseen viitekehykseen nojaavia ja analyttisemmin tekstin tasolta oppijan tekstejä arvioivia huomioita tekivät lähinnä kieltenopettajaopiskelijat. Opettajaopiskelijoille oli myös haasteellista hahmottaa S2-oppijan kehittyvää kielitaitoa ja suhteuttaa sitä eri oppiaineiden oppimisen haasteisiin. Oppijan tekstien arvioinnissa kaikuivatkin vahvasti omat koulukokemukset äidinkielen kirjoittamisen arvioinnista. Kiinnostavaa oli, että vaikka kyselyn arviointitehtävässä asenne oppijan tuotosta kohtaan oli positiivinen, aikuisten maahanmuuttajaryhmän opetusta suunnitellessa lähtökohtana olivat kuitenkin oppijoiden kielitaidon puutteet ja vaikeudet. Opetusta ei niinkään rakennettu oppijoiden olemassa olevien resurssien varaan vaan pedagogisena lähtökohtana oli oppimateriaalin kielellinen yksinkertaistaminen.

Aineenopettajaopiskelijat tunnustivat kielen roolin oppimisen kohteena ja välineenä, ja tiedonalan kielen opetus nähtiin tärkeänä. Kuitenkin tiedonalan kielenkäytön jäsentäminen laajemmin kuin oppiaineen käsitteiden osalta osoittautui haastavaksi niin kieli- kuin muiden aineiden opettajaopiskelijoille. Tiedonalan kieli nähtiin siis ensisijaisesti terminologiana.

Tutkimuksessa toteutetut kaksi opetuskokeilua erosivat toisistaan melkoisesti oppijoiden kielitaidon osalta: Yläkoululuokassa oli vain kaksi S2-oppijaa, joiden kielitaito oli jo melko hyvä, joten oppijoiden kielitaito ei noussut keskeiseksi opetuksen suunnittelua ohjaavaksi tekijäksi. Aikuisten maahanmuuttajien suomalaisen uskontotiedon kurssilla puolestaan oppijoiden suomen kielen taito määritteli vahvasti opetuksen suunnittelua. Kielitietoisuuden opetuksen näkökulmasta opetuskokeiluissa oli kuitenkin paljon yhtäläisyyksiäkin. Kummassakaan opetuskokeiluissa opiskeltavan ilmiön käsittely eri merkityksen rakentelun tavoilla ei muodostanut tavoitteellista pedagogista jatkumoa. Esimerkiksi visuaalistaminen nähtiin erilliseksi kielenkäytöstä, vaikka kuvia kuitenkin selitettiin kielellisesti. Puhuminen oli siis pitkälti näkymätön ja tiedostamaton merkitysten rakentelun väline. Kirjoittamista hyödynnettiin enimmäkseen teknisenä muihinpanojen kopioimisena eikä tiedonrakentelun ja ajattelun välineenä. Opettajaopiskelijat olivat tietoisia esimerkiksi lukustrategioiden opettamisen tärkeydestä ja fyysikkoprojektissa niihin käytettiinkin aikaa. Kuitenkin kaikkiaan oppijoiden osallisuutta tukevien strategioiden taitojen opetus jäi vähäiseksi ja irralliseen sisälötiedon rakentelusta.

Opetuskokeilujen suunnittelussa opettajaopiskelijat keskustelivat laajasti kielen roolista tiedonalojen oppimisessa. He myös asettivat kielelliset yleistavoitteet opintojaksoilleen ja tutkivat opetussuunnitelmatekstejä tiedonalan kieli- ja tekstitaitojen näkökulmasta. Tämä oli toki pitkälti tehtävänannon virittämää. Kielelliset tavoitteet eivät kuitenkaan sidostuneet pedagogiseen suunnitteluun, sillä spesifimpien, kunkin tunnin aiheeseen ja toimintaan kytkeytyvien kielellisten tavoitteiden asettaminen osoittautui vaikeaksi niin kieli- kuin ei-kieliaineiden opettajaopiskelijoille, vaikka kieliaineiden opettajaopiskelijat olivat kyselyaineistonkin valossa oletettavasti altistuneet sosiokulttuuriseen viitekehykseen osana yliopisto-opintojaan. Eri tiedonalojen kontekstissa kielellinen analyysi oli heillekin kuitenkin uutta ja haastavaa.

Tutkimuksessa selvitettiin myös, mikä on luonteenomaista aineenopettajaopiskelijoiden tavalle rakentaa yhteistä, oppiainerajat ylittävää pedagogista käytännettä monikieliselle oppijaryhmälle. Opettajaopiskelijoiden kollaboratiivisessa työskentelyssä hahmottui kolme päätendenssiä: 1) Opettajaopiskelijoiden tiedonalat ja osaamisalueet jäivät erillisiksi toisistaan. 2) Opettajaopiskelijoiden käsitykset kielestä näyttivät ohjaavan heidän tapaansa suunnitella yhteistä pedagogista käytännettä. 3) Opettajaopiskelijoiden keskustelu jaetusta tavoitteesta ja ymmärryksestä ilmensi, että heillä oli yhteinen ihanne opetuksesta mutta ei pedagogisia taitoja tukea kaikkien oppijoiden osallisuutta monikielisessä kontekstissa.

Tutkimusasetelmaan rakennettu opettajaopiskelijoiden tiedollinen asymmetria ja vaade ylittää oppiaineiden rajat ohjasi opiskelijat vertaamaan oppiaineiden pedagogisia perinteitä. He myös etsivät oppiaineita yhdistäviä piirteitä ja kielellisyyden ilmenemistä opetussuunnitelmissa ja opetustraditiossa. Nämä keskustelut eivät kuitenkaan johtaneet syvempään tiedonalojen kielenkäytön analyysiin, ja siten kielellisten käytänteiden rooli tiedonalan oppimisessa jäi epämääräiseksi ja eksplisiittisten kielellisten tavoitteiden asettaminen oli haasteellista. Samoin opetus näyttäytyi enemmän kahden oppiaineen sisältöjen ja työtapojen yhdistämisenä kuin kahta oppiainetta integroivana kokonaisuutena. Opettajaopiskelijat myös pysyttelivät pitkälti omilla asiantuntijuusalueillaan. Ei-kieliaineiden opettajaopiskelijat olivat keskusteluissa aloitteellisia ja valmiita uusiin kokeiluihin, mutta olisivat tarvinneet konkreettisempia ja elaboroidumpia ehdotuksia suomen kielen opettajaopiskelijakollegoiltaan.

Molemmissa opetuskokeiluissa opettajaopiskelijoiden kollaboraatio heijasteli kamppailua oppiainetraditioiden ja pedagogisten ideaalien välillä. Pedagogiset ihanteet kaiuttivat sosiokulttuurista ja oppijakeskeistä lähestymistapaa. Oppijoiden aktivoimisesta ja oppimisen mielekkyydestä kannettiin huolta. Keskusteluissa nostettiin esiin monia kielitietoisien opetuksen kannalta relevantteja ideoita esimerkiksi tiedonalan kielen ja arkikielen vertailusta, mutta ideoita ei kehitelty eteenpäin eivätkä ne jalostuneet konkreettisiksi aktiviteeteiksi tai opettajan pedagogisiksi käytänteiksi tiedonalojen sisältötiedon rakentelussa. Opettajaopiskelijoilta näytti puuttuvan taitoja, joilla tukea oppijoiden osallisuutta kielen ja sisältötiedon oppimista integroidessa.

Tutkimuksen tuloksiin ovat vaikuttaneet monet asiat aina opetuskokeiluiden verrattaisesta lyhydestä niihin valikoituneiden opettajaopiskelijoiden motivaatioon. Tuloksia ei voi yleistää kuvaamaan kaikkia aineenopettajaopiskelijoita, mutta ne kuitenkin antavat realistisen kuvan opettajaopiskelijajoukossa ilmenevästä pedagogisesta kielitiedosta ja opiskelijoiden kollaboratiivisen työskentelyn piirteistä ja haasteista.

Tutkimuksen johtopäätöksenä esitetään, että syvempi ymmärrys opettajaopiskelijoiden kollaboratiivisesta työskentelystä on tarpeen opettajankoulutuksen käytänteiden kehittämiseen, minkä vuoksi koulutusta tulee tutkia systemaattisesti. Opettajaopinnot pohjautuvat pitkälti opiskelijoiden itsenäiselle ryhmätyölle, jonka tukemiseen tulee kehittää lisää pedagogisia työkaluja, joilla kollaboratiivista prosessia ja opiskelijoiden itsereflektiota ohjataan. Kielellinen ja kulttuurinen diversiteetti on jo nyt normi eikä poikkeus suomalaisessa yhteiskunnassa ja koulussa. Opettajankoulutuksessa on yhtäältä tarpeen tuottaa tuleville opettajille pedagogisia malleja kielitietoisesta, oppiainerajat ylittävästä opetuksesta ja toisaalta sen on ohjattava heitä kollaboratiivisesti tutkimaan ja ratkomaan tätäkin pedagogista haastetta, joka on myös mahdollisuus nähdä oppiaineperinteitä uusista kulmista ja kehittää pedagogiikkaa aidosti kaikkien oppimista tukeväksi.



## REFERENCES

- Aalto, E., Mustonen, S. & Tukia, K. 2009. Funktionalisuus toisen kielen opetuksen lähtökohtana. [Functionalism as a premise of second language teaching.] *Virittäjä*, 113 (3), 402–423.
- Aalto, E., Mustonen, S., Järvenoja, M. & Saario, J. 2019. Monikielisen oppijan matkassa. [On a journey with a multilingual student]. University of Jyväskylä. Department of Teacher Education. Retrieved from <https://monikielisenoppijanmatkassa.fi>. (30.9.2019.)
- Achinstein, B. 2002. Conflict amid community: The micropolitics of teacher collaboration. *Teachers College Record*, 104 (3), 421–455.
- Agvei, D. & Voogt, J. 2012. Developing technological pedagogical content knowledge in pre-service mathematics teachers through collaborative design. *Australasian Journal of Educational Technology*, 28 (4), 547–564.
- Akkerman, S. F. & Bakker, A. 2011. Boundary crossing and boundary objects. *Review of Educational Research*, 81 (2), 132–169.
- Alho, I. & Korhonen, R. 2006. Kielioppia kieliopin vuoksi. [Grammar for the sake of grammar.] In M. Harmanen & M. Siirainen (Eds.) *Kielioppi koulussa. [Grammar in school.] Äidinkielen opettajain liiton vuosikirja XLX*. Helsinki: Äidinkielen opettajain liitto, 71–92.
- Alvunger, D. & Wahlström, N. 2018. Research-based teacher education? Exploring the meaning potentials of Swedish teacher education. *Teachers and Teaching*, 24 (4), 332–349.
- Andrews, S. 2003. Teaching language awareness and the professional knowledge base of the L2 Teacher. *Language Awareness*, 12 (2), 81–95.
- Arkoudis, S. 2006. Negotiating the rough ground between ESL and mainstream teachers. *International Journal of Bilingual Education and Bilingualism*, 9 (4), 415–433.
- Atkinson, D. 2011. Introduction: Cognitivism and second language acquisition. In D. Atkinson (Ed.) *Alternative approaches to second language acquisition*. London: Routledge, 1–23.
- Bachman, L. & Palmer, A. 1996. *Language testing in practice*. Oxford: Oxford University Press.
- Bailey, F., Burkett, B. & Freeman, D. 2008. The mediating role of language in teaching and learning: A classroom perspective. In B. Spolsky & F. Hult (Eds.) *The handbook of educational linguistics*. Oxford: Blackwell Publishing, 606–625.
- Barron, B. 2003. When smart groups fail. *Journal of the Learning Sciences*, 12 (3), 307–359.
- Barton, K. C. & Levstik L. S. 2009. *Teaching history for the common good*. New York: Routledge.
- Blackledge, A., Creese, A. & Takhi, J. 2013. Beyond multilingualism: Heteroglossia in practice. In S. May (Ed.), *The multilingual turn: Implications for SLA, TESOL and bilingual education*. London/New York, Routledge, 191–215.

- Borg, S. 2011. The Impact of In-Service Teacher Education on Language Teachers' Beliefs. *System*, 39, 370–380.
- Boud, D., Cohen, R. & Sampson, J. (Eds.) 2001. *Peer learning in higher education: learning from & with each other*. London: Routledge.
- Bovellan, E. 2014. Teachers' beliefs about learning and language as reflected in their views of teaching materials for content and language integrated learning (CLIL). *Jyväskylä Studies in Humanities* 231. Jyväskylä: University of Jyväskylä.
- Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77–101.
- Breidbach, S., Elsner, D. & Young, A. (Eds.) 2011. *Language awareness in teacher education. Cultural-political and social-educational perspectives*. Frankfurt am Main: Peter Lang.
- Brozo, W. G., Sulkunen, S. & Veijola, A. 2018. Participation as a pathway to content knowledge: Engaging all students in disciplinary literacy practices. *International Journal of Education and Social Science*, 5 (8), 27–35. Retrieved from <http://www.ijessnet.com/wpcontent/uploads/2018/09/3..pdf> (26.4.2019.)
- Bruffee, K. A. 1995. Sharing our toys: Cooperative learning versus collaborative learning. *Change*, 27 (1), 12–18.
- Bruner, J. 1996. *The culture of education*. Cambridge, MA: Harvard University Press.
- Bunch, G. 2013. Pedagogical language knowledge: Preparing mainstream teachers for English learners in the new standards era. *Review of Research in Education*, 37, 298–341.
- Cajkler, W. & Hall, B. 2011. Teacher education and English as an additional language (EAL) in primary schools: Perspectives from new teachers. In S. Breidbach, D. Elsner & A. Young (Eds.), *Language awareness in teacher education. Cultural-political and social-educational perspectives*. Frankfurt am Main: Peter Lang, 221–238.
- Canale, M. & Swain, M. 1980. Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics*, 1, 1–46.
- Carr, W. & Kemmis, S. 1986. *Becoming critical: Education knowledge and action research*. London: Falmer.
- Chaiklin, S. 2003. The zone of proximal development in Vygotsky's analysis of learning and instruction. In A. Kozulin, B. Gindis, V.S. Agseyev & S.M. Miller (Eds.) *Vygotsky's educational theory in cultural context*. Cambridge: Cambridge University Press, 15–38.
- Chan, C. & Pang, M. 2006. Teacher collaboration in learning communities. *Teaching Education*, 17 (1), 1–5.
- Chi, M., De Leeuw, N., Chiu, M-H. & LaVancher, C. 1994. Eliciting self-explanations improves understanding. *Cognitive Science*, 18, 439–477.
- Coady, M. Harper, C. & de Jong, E. 2011. Preservice to practice: Mainstream elementary teacher beliefs of preparation and efficacy with English

- language learners in the state of Florida. *Bilingual Research Journal*, 34, 223-239.
- Cook, T. 2006. Collaborative action research within developmental evaluation: Learning to see or the road to Myopia. *Evaluation*, 12 (4), 418-436.
- Council of Europe 2001. *Common European framework of reference for languages: Learning, teaching, assessment (CEFR)*. Cambridge: Cambridge University Press.
- Creese, A. 2002. The discursive construction of power in teacher partnerships: Language and subject specialists in mainstream schools. *TESOL Quarterly*, 36 (4), 597-616.
- Creese, A. 2005. Is this content-based language teaching? *Linguistics and Education*, 16, 188-204.
- Creese, A. 2010. Content-focused classrooms and learning English: How teachers collaborate. *Theory into practice*, 49 (2), 99-105.
- Creese, A. & Blackledge, A. 2015. Translanguaging and identity in educational settings. *Annual Review of Applied Linguistics*, 35, 20-35.
- Cummins, J. 1984. *Bilingualism and special education: Issues in assessment and pedagogy*. Clevedon, England: Multilingual Matters.
- Cummins, J. 2001. *Negotiating identities: Education for empowerment in a diverse society*. 2<sup>nd</sup> ed. Los Angeles: California Association for Bilingual Education.
- Cummins, J. 2006. Identity texts: The imaginative construction of self through multiliteracies pedagogy. In O. Garcia, T. Skutnabb-Kangas & E. M. Torres-Guzmán (Eds.) *Imagining multilingual schools. Language in education and globalization*. Clevedon: Multilingual Matters, 51-68.
- Cummins, J. 2008. Teaching for transfer: Challenging the two solitudes assumption in bilingual education. In J. Cummins & N. Hornberger (Eds.), *Encyclopedia of Language and Education*, 2nd edn. (Volume 5: Bilingual Education). New York: Springer, 65-75.
- Cummins, J. 2009. Pedagogies of choice: Challenging coercive relations of power in classrooms and communities. *International Journal of Bilingual Education and Bilingualism*, 12 (3), 261-271.
- Cummins, J. & Early, M. 2015. *Big ideas for expanding minds: Teaching English language learners across the curriculum*. Pearson Education.
- Dalton-Puffer, C. 2011. Content-and-Language Integrated Learning: From Practice to Principles? *Annual Review of Applied Linguistics*, 31, 182-204.
- Dalton-Puffer, C., Llinares, A., Lorenzo, F. & Nikula, T. 2014. "You Can Stand Under My Umbrella": Immersion, CLIL and Bilingual Education. A Response to Cenoz, Genesee & Gorter (2013). *Applied Linguistics*, 35 (2), 213-218.
- Damşa, C. 2013. *Knowledge co-construction and object-oriented collaboration. A study of learning through collaborative construction of knowledge objects in higher education*. Dissertation submitted for the degree of PhD Department of Education Faculty of Educational Sciences, University of Oslo.

- Damsa, C. & Jornet, A. 2016. Revisiting learning in higher education – Framing notions redefined through an ecological perspective. *Frontline Learning Research*, 4 (4), 39–47.
- Darling-Hammond, L. 2006. Constructing 21st-century teacher education. *Journal of Teacher Education*, 57, 300–314.
- de Jong, E., Harper, C. & Coady, M. 2013. Enhanced knowledge and skills for elementary mainstream teachers of English language learners. *Theory into Practice*, 52, 89–97.
- DelliCarpini, M. 2009. Dialogues across disciplines: Preparing English-as-a-second-language teachers for interdisciplinary collaboration. *Current Issues in Education*, 11 (2), 1–17.
- Denzin, N. K. & Lincoln, Y. S. (Eds.) 2000. *Handbook of qualitative research*. Thousand Oaks: Sage.
- Dillenbourg P. 1999. What do you mean by collaborative learning? In Pierre Dillenbourg (ed.), *Collaborative-learning: Cognitive and computational approaches*. Oxford: Elsevier, 1–19.
- Dinkelman, T. 2003. Self-study in teacher education: A means and ends tool for promoting reflective teaching. *Journal of teacher Education*, 54 (1), 6–18.
- DivEd (n.d.) Dive in education. Retrieved from <http://dived.fi/>. (10.4.2019.)
- Duff, P. A. & Kobayashi, M. 2010. The intersection of social, cognitive, and cultural processes in language learning. In R. Batstone (Ed.), *Sociocognitive perspectives on language use and language learning*. Oxford, UK: Oxford University Press, 75–93.
- Dufva, H., Suni, M., Aro, M. & Salo, O-P. 2011. Languages as objects of learning: Language learning as a case of multilingualism. *Apples – Journal of Applied Language Studies*, 5 (1), 109–124.
- Dufva, H. 2013a. Kognitio, kieli ja oppiminen. Hajautettu näkökulma. [Cognition, language and learning. A distributed perspective.] In T. Keisanen, E. Kärkkäinen, M. rauniomaa, P. Siitonen & M. Siromaa (Eds.) *AFinLA-e Soveltavan kielitieteen tutkimuksia 2013*, 5, 57–73.
- Dufva, H. 2013b. Language learning as dialogue and participation. In E. Christensen, L. Kuure, A. Mörch, & B. Lindström (Eds.) *Problem-based learning for the 21st century. New practices and learning environments*. Aalborg: Aalborg University Press, 51–72.
- Edwards, A. & Mutton, T. 2007. Looking forward: Rethinking professional learning through partnership arrangements in initial teacher education. *Oxford Review of Education*, 33 (4), 503–519.
- European core curriculum for inclusive academic language teaching (IALT): An instrument for training pre- and in-service teachers and educators 2010. <http://www.eucim-te.eu/>
- Faltis, C., Arias, M. B. & Ramírez-Marín, F. 2010. Identifying relevant competencies for secondary teachers of English language learners. *Bilingual Research Journal*, 33, 307–328.

- Fang, Z. & Pace, B. G. 2013. Teaching with challenging texts in the disciplines. Text complexity and close reading. *Journal of Adolescent & Adult Literacy*, 57 (2), 104–108.
- Finnish Advisory Board of Research Integrity 2012. Responsible conduct of research and procedures for handling allegations of misconduct in Finland. Helsinki: Finnish Advisory Board of Research Integrity. Retrieved from: [http://www.tenk.fi/sites/tenk.fi/files/HTK\\_ohje\\_2012.pdf](http://www.tenk.fi/sites/tenk.fi/files/HTK_ohje_2012.pdf). (15.4.2019.)
- Fox, M., Martin, P. & Green, G. 2007. *Doing practitioner research*. London: SAGE Publications Ltd.
- Franson, C. 2007. Challenges and Opportunities for the Teaching Profession: English as an Additional Language in the UK. In J. Cummins & C. Davison (Eds.), *International handbook of English language teaching*. New York: Springer, 1101–1112.
- Gajo, L. 2007. Linguistic knowledge and subject knowledge: How does bilingualism contribute to subject development? *International Journal of Bilingual Education and Bilingualism*, 10 (5). 563–581.
- Galguera, T. 2011. Participant structures as professional learning tasks and the development of pedagogical language knowledge among pre-service teachers. *Teacher Education Quarterly*, 38, 85–106.
- Garcia, O. 2008. Multilingual language awareness and teacher education. In J. Cenoz & N. Hornberger (Eds.), *Encyclopedia of language and education*, 2nd edition Vol 6. Knowledge about Language. Berlin: Springer, 385–400.
- García, O. & Sylvan, C. 2011. Pedagogies and practices in multilingual classrooms; singularities in pluralities. *The Modern Language Journal*, 95, 385–400.
- Gash, H. 2015. Knowledge construction: A paradigm shift. *New Directions for Teaching and Learning*, 143, 5–23.
- Gee, J. & Handford, M. 2012. Introduction. In P. Gee & M. Handford (Eds.), *The Routledge handbook of discourse analysis*. London & New York: Routledge, 1–6.
- Gibbons, P. 2003. Mediating language learning: Teacher interactions with ESL students in a content-based classroom. *TESOL Quarterly*, 37, 247–273.
- Gibbons, P. 2007. Mediating academic language learning through classroom discourse. In J. Cummins & C. Davidson (Eds.), *International handbook of English language teaching*. New York: Springer, 701–718.
- Gibbons, P. 2009. *English language learners, academic literacy and thinking: Learning in the challenge zone*. Portsmouth NH: Heinemann.
- Gibbons P. 2014. *Scaffolding language, scaffolding learning*. Portsmouth NH: Heinemann.
- Gleeson, M. 2010. Language AND content? How do curriculum teachers of year 12 English language learners combine two disciplines? Victoria University of Wellington dissertation.

- <http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/1637/thesis.pdf?sequence=1> (accessed 25 November 2016).
- Gorodetsky, M. & Barak, J. 2008. The educational-cultural edge: A participative learning environment for co-emergence of personal and institutional growth. *Teaching and Teacher Education*, 24, 1907–1918.
- Haenen, J., Schrijnemakers, H. & Stufkens, J. 2003. Sociocultural theory and the practice of teaching historical concepts. In A. Kozulin, B. Gindis, V.S. Ageyev & S.M. Miller (Eds.) *Vygotsky's educational theory in cultural context*. Cambridge: Cambridge University Press, 246–266.
- Harju-Luukkainen, H., Nissinen, K., Sulkunen, S., Suni, M. & Vettenranta, J. 2014. Avaimet osaamiseen ja tulevaisuuteen. Selvitys maahanmuuttajataustaisten nuorten osaamisesta ja siihen liittyvistä taustatekijöistä PISA 2012 -tutkimuksessa. [Keys to competence and future. A report on PISA 2012 results and related underlying factors for students with an immigrant background.] Jyväskylän yliopisto: Koulutuksen tutkimuslaitos.
- Harju-Luukkainen, H., Tarnanen, M., Nissinen, K. & Vettenranta, J. 2018. Economic, social and cultural status (ESCS) and mathematics performance of immigrant students' in the Finnish metropolitan area in PISA 2012. In S. Garvis & E. Eriksen Ødegaard (Eds.) *Nordic dialogues on children and families*. Cornwall: Routledge, 108–125.
- Havnes, A., Christiansen, B., Torunn Bjørk, I. & Hessevaagbakke, E. 2016. Peer learning in higher education: Patterns of talk and interaction in skills centre simulation. *Learning, Culture and Social Interaction*, 8, 75–87.
- Hawkins, E. 1984. *Awareness of language*. Cambridge: Cambridge University Press.
- Hawkins, E. 1999. Foreign language study and language awareness. *Language Awareness*, 8 (3-4), 124–141.
- Heikkinen, H. 2019. Developing pedagogical practices under umbrellas of different colours. *Estonian Journal on Educational Research*, 7 (2), 23–39.
- Heikkinen, H., de Jong, F. & Vanderlinde R. 2016. What is (good) practitioner research? *Vocations and Learning*, 9, 1-19.
- Hesse, F., Care, E., Buder, J., Sassenberg, K. & Griffin, P. 2015. A framework for teachable collaborative problem solving skills 2015. In Patrick Griffin & Esther Care (Eds.), *Assessment and teaching of 21st century skills*. Springer Science+Business Media Dordrecht, 37–56.
- Hmelo-Silver, C. E. 2003. Analyzing collaborative knowledge construction: Multiple methods for integrated understanding. *Computers and Education*, 41, 397–420.
- Hornberger, N. H. 2009. Multilingual Education Policy and Practice: Ten Certainties (Grounded in Indigenous Experience). *Language Teaching*, 42 (2), 197–211.
- Hsieh, H. & Shannon, S. E. 2005. Three approaches to qualitative content analysis. *Qualitative Health Research*, 15 (9), 1277–1288.

- Hökkä, P. 2012. Teacher educators amid conflicting demands. Tensions between individual and organizational development. *Jyväskylä Studies in Education, Psychology and Social Research* 433. Jyväskylä: University of Jyväskylä.
- Jaakkola, H. 1997. Kielitieto kielitaitoon pyrittäessä. Vieraiden kielten opettajien käsityksiä kieliopin oppimisesta ja opettamisesta. [Language knowledge and language ability: Teachers' conceptions of the role of grammar in foreign language learning and teaching.] *Jyväskylä Studies in Education, Psychology and social research* 128. Jyväskylä: University of Jyväskylä.
- Jalkanen, J. 2015. Development of pedagogical design in technology-rich environments for language teaching and learning. *Jyväskylä studies in humanities* 265. Jyväskylä, Finland: University of Jyväskylä.
- Kaufman, D. 2004. Constructivist issues in language learning and teaching. *Annual Review of Applied Linguistics*, 24, 303–319.
- Kaufman, D. & Brooks, G. 1996. Interdisciplinary collaboration in teacher education: A constructivist approach. *TESOL Quarterly*, 30 (2), 231–25.
- Kauppinen, M., Tarnanen, M. & Aalto, E. 2014. "Voisin pyytää oppilaita alleviivaamaan kaikki adjektiivit" – luokanopettajaopiskelija kielitietoisena aineenoppimisen ohjaajana. [‘I could ask pupils to underline all the adjectives’ – pre-service primary school teacher as a guide of language aware content learning.] In M. Mutta, P. Lintunen, I. Ivaska & P. Peltonen (Eds.) *AFinLA-e. Soveltavan kielitieteen tutkimuksia*, 7, 81–100. Retrieved from <https://journal.fi/afinla/article/view/48161>. (29.9.2019.)
- Kemmis, S. 2006. Participatory action research and the public sphere. *Educational Action Research*, 14 (4), 459–476.
- Kemmis, S. 2009. Action research as a practice-based practice. *Educational Action Research*, 17 (3), 463–474.
- Kemmis, S. & Smith, T. J. 2008. Personal praxis: Learning through experience. In S. Kemmis & T. J. Smith (Eds.), *Enabling praxis: Challenges for education*, 15–35. Rotterdam, the Netherlands: Sense Publishers, 15–36.
- Khosa, D. K. & Voleit, S. E. 2013. Promoting effective collaborative case-based learning at university: a metacognitive intervention. *Studies in Higher Education*, 38 (6), 870–889.
- Kibler, A., Walqui, A. & Bunch, G. 2015. Transformational opportunities: Language and literacy instruction for English language learners in the common core era in the United States. *TESOL Journal*, 6 (1), 9–35.
- Kilpi-Jakonen, E. 2011. Continuation to upper secondary education in Finland: children of immigrants and the majority compared. *Acta Sociologica*, 54 (1), 77–106.
- Kilpi-Jakonen, E. 2012. Does Finnish educational equality extend to children of immigrants? Examining national origin, gender, and the relative importance of parental resources. *Nordic Journal of Migration Research*, 2 (2), 167–181.
- King, A. 2002. Structuring peer interaction to promote high-level cognitive processing. *Theory Into Practice*, 41 (1), 33–39.

- Kleyn, T. & Valle, J. 2014. Modeling collaborative teaching in teacher education: Preparing pre-service teachers to teach all students. In Y. Freeman & D. Freeman (Eds.), *Research on preparing preservice teachers to work effectively with emergent bilinguals*. Bingley, UK: Emerald Group Publishing Limited, 137–164.
- Komppa, J. 2012. *Rakenne, tilanne ja kohteliaisuus: Pyynnöt S2-oppikirjoissa ja autenttisissa keskusteluissa*. [Linguistic structures, situation and politeness: requests in Finnish as a second language textbooks and in authentic service encounters.] Helsinki: University of Helsinki, Faculty of Arts, Department of Finnish, Finno-Ugrian and Scandinavian Studies.
- Korhonen, R. & Alho, I. 2014. EI kielioppia kieliopin vuoksi – kuusi toivetta. [NO grammar for the sake of grammar – six wishes.] *Kieli, koulutus ja yhteiskunta*, 5 (3). Retrieved from <https://www.kieliverkosto.fi/fi/journals/kieli-koulutus-ja-yhteiskunta-toukokuu-2014/ei-kielioppia-kieliopin-vuoksi-kuusi-toivetta>. (15.9.2019.)
- Kozulin, A. 2003. Psychological tools and mediated learning. In A. Kozulin, B. Gindis, V.S. Ageyev & S.M. Miller (Eds.), *Vygotsky's educational theory in cultural context*. Cambridge: Cambridge University Press, 39–64.
- Kozulin, A., Gindis, B. Ageyev, A. & Miller S. 2003. Introduction: Sociocultural theory and education: students, teachers, and knowledge. In A. Kozulin, B. Gindis, V.S. Ageyev & S.M. Miller (Eds.) *Vygotsky's educational theory in cultural context*. Cambridge: Cambridge University Press, 1–11.
- Kramsch, C. 1995. The cultural component of language teaching. *Language, Culture and Curriculum*, 8 (2), 83–92.
- Kravchenko, A. V. 2009. The experiential basis of speech and writing as different cognitive domains. *Pragmatics & Cognition*, 17 (3), 527–548.
- Kreijns, K., Kirschner, P. A. & Jochems, W. 2003. Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: A review of the research. *Computers in Human Behavior*, 19, 335–353.
- Kuteeva, M. & Airey, J. 2014. Disciplinary differences in the use of English in higher education: reflections on recent language policy developments. *Higher Education*, 67, 533–549.
- Kuukka, I. & Rapatti, K. (Eds.) 2009. *Yhteistä kieltä luomassa - Suomea opetteleva opetusryhmässäni*. [Creating a shared language – the Finnish learner in my classroom.] Helsinki: FinnLectura.
- Kuukka, K. & Metsämuuronen, J. 2016. Finnish as a second language syllabus learning outcomes in the 9th grade of basic education in 2015. Helsinki: Finnish Education Evaluation Centre (FINEEC).
- Kuukka, K., Ouakrim-Soivio, N., Paavola, H. & Tarnanen, M. 2015. Kulttuurisen monimuotoisuuden edistäminen ja kehittämistarpeet. In T. Pirinen (ed.), *Maahanmuuttajataustaiset oppijat suomalaisessa koulutusjärjestelmässä – koulutuksen saavutettavuuden ja opiskelun aikaisen tuen arviointi*. [Learners with immigrant backgrounds within the Finnish education system – Evaluation on the access to education and the support during



- studies.] Helsinki: Finnish Education Evaluation Centre (FINEEC), 181–199.
- Kuusisaari, H. 2010. Yhteisen tiedon tuottamisen prosessi – teoretiedon ja opettajien kokemustiedon kohtaaminen kehittämisspuheessa. [The process of knowledge co-construction - the encounter of theoretical knowledge and experience knowledge in developing talk.] *Kasvatus*, 41 (3), 226–239.
- Kuusisaari, H. 2013. Teachers' collaborative learning – development of teaching in group discussions. *Teachers and Teaching*, 19 (1), 50–62.
- Kuusisaari, H. 2014. Teachers at the zone of proximal development – Collaboration promoting or hindering the development process. *Teaching and Teacher Education*, 43, 46–57.
- Kyndt, E., Raes, E., Lismont, B., Timmers, F., Cascallar, E. & Dochy, F. 2013. A meta-analysis of the effects of face-to-face cooperative learning. Do recent studies falsify or verify earlier findings? *Educational Research Review*, 10, 133–149.
- Kärkkäinen, M. 1999. Teams as breakers of traditional work practices. A longitudinal study of planning and implementing curriculum units in elementary school teacher teams. Doctoral dissertation. Research bulletin 100. Helsinki: Department of Education, University of Helsinki.
- LaBoskey, V. K. 2004. The methodology of self-study and its theoretical underpinnings. In J. J. Loughran, M. L. Hamilton, V. L. LaBoskey & T. Rusell (Eds.), *International handbook of self-study of teaching and teacher education practices*. Dordrecht: Kluwer, 817–870.
- Lankshear, C. & Knobel, M. 2004. *A handbook for teacher research. From design to implementation*. London: Open University Press.
- Lantolf, J. & Thorne, S. 2006. *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.
- Larsen-Freeman, D. 2013. Chaos/complexity theory for second language acquisition. In C. A. Chapelle (Ed.), *The encyclopedia of applied linguistics*. Blackwell Publishing Ltd. DOI: 10.1002/9781405198431.wbeal0125.
- Lee, O., Quinn, H. & Valdés, G. 2013. Science and language for English language learners in relation to next generation science standards and with implications for common core state standards for English language arts and mathematics. *Educational Researcher*, 42 (4), 223–233.
- Lemke, J. L. 1990. *Talking science: Language, learning, and values*. Norwood, New Jersey: Ablex Publishing Corporation
- Lin, L. 2015. Exploring collaborative learning: Theoretical and conceptual perspectives. In *Investigating Chinese HE EFL Classrooms. Using Collaborative Learning to Enhance Learning*. Berlin Heidelberg: Springer-Verlag, 11–28.
- Lonka, K. 2018. *Phenomenal learning from Finland*. Helsinki: Edita Publishing.
- Loughran, J. 2005. Researching teaching about teaching: Self-Study of teacher education practices. *Studying Teacher Education*, 1 (1), 5–16.

- Loughran, J. 2006. Developing a pedagogy of teacher education. *Understanding teaching and learning about teaching*. London: Routledge.
- Loughran, J. 2007. Researching teacher education practices: Responding to the challenges, demands, and expectations of self-Study. *Journal of Teacher Education*, 58 (1), 12–20.
- Love, K. 2009. Literacy pedagogical content knowledge in secondary teacher education: Reflecting on oral language and learning across the disciplines. *Language and Education*, 23 (6), 541–560.
- Lucas, T. & Grinberg, J. 2008. Responding to the linguistic reality of mainstream classrooms. Preparing all teachers to teach English language learners. In M. Cochran-Smith, S. Feiman-Nemser, & D. J. McIntyre (Eds.), *Handbook of Research on Teacher Education. Enduring Questions in Changing Contexts*. New York: Routledge, 606–636.
- Lucas, T. & Villegas, A.M. 2013. Preparing linguistically responsive teachers: laying the foundation in preservice teacher education. *Theory Into Practice*, 52 (2), 98–109.
- Lucas, T. & Villegas, A. M. 2011. A Framework for preparing linguistically responsive teachers. In T. Lucas (Ed.), *Teacher preparation for linguistically diverse classrooms: A Resource for teacher educators*. New York: Routledge, 55–72.
- Luukka, M.-R., Pöyhönen, S., Huhta, A., Taalas, P. & Tarnanen, M. 2008. *Maailma muuttuu – mitä tekee koulu? Äidinkielen ja vieraiden kielten tekstikäytänteet koulussa ja vapaa-ajalla*. [The world changes – how does the school respond? Mother tongue and foreign language literacy practices in school and in free-time.] Jyväskylä: Centre for Applied Language Studies, University of Jyväskylä.
- Ma, F. 2016. Underachievement and its causes in EFL learning in China's non-government universities. *Journal of Language Teaching and Research*, 7 (4), 808–818.
- Markauskaite, L. & Goodyear, P. 2014. Professional work and knowledge. In S. Billett, C. Harteis & H. Gruber (Eds.), *International handbook of research in professional and practice-based learning*. Dordrecht, Netherlands: Springer, 79–106.
- Martin, M., Mustonen, S., Reiman, N. & Seilonen, M. 2010. On becoming an independent user. In I. Bartning, M. Martin & I. Vedder (Eds.), *Communicative proficiency and linguistic development, intersections between SLA and language testing research. EUROSLA Monograph Series 1*. European Second Language Association, 57–80.
- Matikka, A., Luopa, P., Kivimäki, H., Jokela, J. & Paananen, R. 2014. *Maahanmuuttajataustaisten 8. ja 9.-luokkalaisten hyvinvointi: Kouluterveyskysely 2013*. [The well-being of eighth-year and ninth-year pupils with a migrant background. School Health Promotion study 2013.] Report 26/2014. National Institute for Health and Welfare, Helsinki. Retrieved from

- [http://www.julkari.fi/bitstream/handle/10024/116720/URN\\_ISBN\\_978-952-302-297-3.pdf?sequence=1](http://www.julkari.fi/bitstream/handle/10024/116720/URN_ISBN_978-952-302-297-3.pdf?sequence=1). (4.4.2019.)
- May, S. & Smyth, J. 2007. Addressing literacy in secondary schools: Introduction. *Language and Education*, 21 (5), 365–369.
- Meirink, J. A., Imants, J., Meijer, P. C. & Verloop, N. 2010. Teacher learning and collaboration in innovative teams. *Cambridge Journal of Education*, 40 (2), 161–181.
- 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.
- Mercer, N. & Sams, C. 2006. Teaching children how to use language to solve math problems. *Language and Education*, 20 (6), 507–528.
- Meyer, O. & Coyle, D. 2017. Pluriliteracies teaching for learning: conceptualizing progression for deeper learning in literacies development. *European Journal of Applied Linguistics*, 5 (2), 199–222.
- Meyer, O., Coyle, D., Halbach, A., Schuck, K. & Ting, T. 2015. A pluriliteracies approach to content and language integrated learning – mapping learner progressions in knowledge construction and meaning-making. *Language, Culture and Curriculum*, 28 (1), 41–57.
- Miles M. & Huberman, A. 1994. *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, CA: Sage.
- Moate, J. 2011. The impact of foreign language mediated teaching on teachers' sense of professional integrity in the CLIL classroom. *European Journal of Teacher Education*, 34 (3), 333–346.
- Mohan, B., C. Leung & C. Davison (Eds.) 2001. *English as a second language in the mainstream: Teaching, learning and identity*. New York: Longman.
- Moje, E. B. 2007. Developing socially just subject-matter instruction: A review of the literature on disciplinary literacy teaching. *Review of Research in Education*, 31, 1–44.
- Moje, E. B. 2015. Doing and teaching disciplinary literacy with adolescent learners: A social and cultural enterprise. *Harvard Educational Review*, 85 (2), 254–279.
- Moll, L. 1990. Introduction. In L. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of socio-historical psychology*. Cambridge: Cambridge University Press, 1–28.
- Monte-Sano, C. 2010. Disciplinary literacy in history: An exploration of the historical nature of adolescents' writing. *The Journal of the Learning of Sciences*, 19 (4), 539–568.
- Mortimer, E. & Scott, P. 2003. *Meaning making in secondary science classrooms*. Maidenhead: Open University Press.
- Mousa, W. 2012. Collaboration between English as a second language teachers and content area teachers; Implications for working with English language learners. ETD Archive. Paper 214. Retrieved from: <https://engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?referer=htt>

- ps://www.google.fi/&httpsredir=1&article=1213&context=etdarchive. (18.4.2018.)
- Moyer, M. G. 2008. Research as practice: Linking theory, method, and data. In L. Wei & M. G. Moyer (Eds.), *The Blackwell guide to research methods in bilingualism and multilingualism*. Oxford, England: Blackwell, 18–31.
- Mustonen, S. 2015. Käytössä kehittyvä kieli. Paikat ja tilat suomi toisena kielenä -oppijoiden teksteissä. [How language develops through use]. *Jyväskylä studies in humanities* 255. Jyväskylä: University of Jyväskylä.
- National Advisory Board on Research Ethics 2009. Ethical principles of research in the humanities and social and behavioural sciences and proposals for ethical 55 review. Retrieved from <http://www.tenk.fi/sites/tenk.fi/files/ethicalprinciples.pdf>. (19.4.2019.)
- NBE (Finnish National Board of Education) 2014. National core curriculum for basic education 2004. Helsinki: Opetushallitus.
- The New London Group 1996. A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66 (1), 60–93.
- Niemi, H. 2011. Educating student teachers to become high quality professionals. A Finnish case. *CEPS Journal*, 1 (1), 43–66.
- Nikula T. 2017. 'What's the moment thingy?' – On the emergence of subject-specific knowledge in CLIL classroom interaction. In J. Langman & H. Hansen-Thomas (Eds.), *Discourse analytic perspectives on STEM education*. Cham: Springer, 11–29.
- Nikula, T., Dalton-Puffer, C., Llinares, A. & Lorenzo, F. 2016. More than content and language: The complexity of integration in CLIL and bilingual education. In T. Nikula, E. Dafouz, P. Moore & U. Smit (Eds.), *Conceptualising Integration in CLIL and Multilingual Education*. Bristol: Multilingual Matters, 1–28.
- O'Brien, D., Stewart, R. & Moje, E. 1995. Why content literacy is difficult to infuse into the secondary school: Complexities of curriculum, pedagogy and school culture. *Reading Research Quarterly*, 30, 442–463.
- OECD 2013. *PISA 2012 Results: Excellence Through Equity: Giving Every Student the Chance to Succeed (Volume II)*, PiSa, OECD Publishing.
- Olsen, O. E. & Lindøe, P. 2004. Trailing research based evaluation; phases and roles. *Evaluation and Program Planning*, 27 (4), 371–380.
- Orland-Barak, L. & Tillema, H. 2006. The 'dark side of the moon': A critical look at teacher knowledge construction in collaborative settings. *Teachers and Teaching: Theory and Practice*, 12 (1), 1–12.
- Paavola, S., Lipponen, L. & Hakkarainen, K. 2004. Models of innovative knowledge communities and three metaphors of learning. *Review of Educational Research*, 74(4), 557–576.
- Paavola, S. & Hakkarainen, K. 2005. The knowledge creation metaphor – an emergent epistemological approach to learning. *Science and Education*, 14, 535–557.
- Patton, M. 2015. *Qualitative research & evaluation methods. Integrating theory and practice*. Thousand Oaks, CA: Sage.

- Pawan, F. & Ortloff, J. 2011. Sustaining collaboration: English-as-a-second-language, and content-area teachers. *Teaching and Teacher Education*, 27 (2), 463–471.
- Peacock, M. 2001. Pre-service ESL teachers' beliefs about second language learning: A Longitudinal study. *System*, 29 (2), 307–332.
- Peterson, J. M. & Hattie, M. 2010. *Inclusive teaching. The journey towards effective schools for all learners.* Boston: Allyn & Bacon.
- Pettit, S. 2011. Teachers' beliefs about English language learners in the mainstream classroom: A review of the literature. *International Multilingual Research Journal*, 5 (2), 123–147.
- Pirinen, T. 2015. *Maahanmuuttajataustaiset oppijat suomalaisessa koulutusjärjestelmässä – koulutuksen saavutettavuuden ja opiskelun aikaisen tuen arviointi. [Learners with immigrant backgrounds within the Finnish education system – Evaluation on the access to education and the support during studies.]* Helsinki: Finnish Education Evaluation Centre (FINEEC).
- Popp, J. & Goldman, S. 2016. Knowledge building in teacher professional learning communities: Focus of meeting matters. *Teaching and Teacher Education*, 59, 347–359.
- Probyn, M. 2015. Pedagogical translanguaging: bridging discourses in South African science classrooms. *Language and Education*, 29 (3), 218–234.
- Quinn H., Lee, O. & Valdés, G. 2012. *Language demands and opportunities in relation to next generation science standards for English language learners: what teachers need to know.* Stanford: Stanford University, Understanding Language Initiative at Stanford University.
- Ramsden, P. 2003. *Learning to teach in higher education.* New York: Routledge.
- Rapatti, K. & Shore, S. (Eds.) 2014. *Tekstilajitaidot. Lukemisen ja kirjoittamisen opetus koulussa. [Literacy skills. Reading and writing instruction in school.] Äidinkielen opettajain liiton vuosikirja 2014.* Helsinki: Laatusana.
- Rearick, M. & Feldman, A. 1999. Orientations, purposes and reflection: a framework for understanding action research. *Teaching and Teacher Education*, 15, 333–349.
- Reiman, N. & Mustonen, S. 2010. Yläkoulun suomi toisena kielenä -oppilaiden kirjoittamistaito. [The writing skill of Finnish as L2 learners in comprehensive school grades 7–9]. *Kasvatus*, 2, 143–153.
- Robinson, P. 2005. Teaching key vocabulary in geography and science classrooms: An analysis of teachers' practice with particular reference to EAL pupils' learning. *Language and Education*, 19 (5), 428–445.
- Rojas-Drummond, S. & Mercer, N. 2003. Scaffolding the development of effective collaboration and learning. *International Journal of Educational Research*, 39 (1–2), 99–111.
- Roschelle J. & Teasley S. 1995. The construction of shared knowledge in collaborative problem solving. In C. O'Malley (Ed.), *Computer supported collaborative learning.* NATO ASI Series, vol. 128. Berlin, Heidelberg: Springer, 69–97.

- Ruys, I., Van Keer, H. & Aelterman, A. 2010. Collaborative learning in pre-service teacher education: an exploratory study on related conceptions, self-efficacy and implementation. *Educational Studies*, 36 (5), 537–553.
- Ryen, A. 2007. Ethical issues. In C. Seale, G. Gobo, J. F. Gubrium & D. Silverman (Eds.) *Qualitative research practice*. London: Sage, 218–235.
- Saario, J. 2012. Yhteiskuntaopin kieliympäristö ja käsitteet Toisella kielellä opiskelevan haasteet ja tuen tarpeet. [The language environment and concepts in social studies – challenges and need of support for a second language learner.] *Jyväskylä Studies in Humanities* 172. Jyväskylä: University of Jyväskylä.
- Safford, K. & T. Costley 2008. 'I didn't speak for the first year': Silence, self-study and student stories of English language learning in mainstream education. *Innovation in Language Learning and Teaching*, 2 (2), 136–151.
- Sawyer, R. K. 2006. Analyzing collaborative discourse. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences*. Cambridge: Cambridge University Press, 187–204.
- Scardamalia, M. & Bereiter, C. 2006. Knowledge building: Theory, pedagogy, and technology. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences*. New York: Cambridge University Press, 97–118.
- Schreier, M. 2014. Qualitative content analysis. In Flick, U. (Ed.), *The SAGE handbook of qualitative data analysis*. London: SAGE Publications Ltd, 170–183.
- Seedhouse, P., Walsh, S. & Jenks, C. (Eds.) 2010. *Conceptualising “learning” in applied linguistics*. Houndmills, England: Palgrave Macmillan.
- Schleppegrell, M. J. & O'Hallaron, C. L. 2011. Teaching academic language in L2 secondary settings. *Annual Review of Applied Linguistics*, 31, 3–18.
- Shanahan, T. & Shanahan, C. 2008. Teaching disciplinary literacy to adolescents: Rethinking content-area literacy. *Harvard Educational Review*, 78 (1), 40–59.
- Seilonen, M. 2013. Epäsuora henkilöön viittaaminen oppijansuomessa. [Indirect references in Finnish learner language.] *Jyväskylä studies in Humanities* 197. Jyväskylä: University of Jyväskylä.
- Silverman, D. 2001. *Interpreting qualitative data. Methods for analysing text, talk and interaction*. London: Sage.
- Silverman, D. 2005. *Doing qualitative research*. London: Sage.
- Sins, P. & Andriessen, J. 2012. Working within knowledge communities as a context for developing knowledge practices. In A. Moen, A. I. Mørch & S. Paavola (Eds.), *Collaborative knowledge creation: Practices, tools, concepts*. Rotterdam: Sense Publishers, 233–248.
- Skinnari, K. & Nikula, T. 2017. Teachers' perceptions on the changing role of language in the curriculum. *European Journal of Applied Linguistics*, 5 (2), 223–244.
- Skutnabb-Kangas, T. 1984. *Bilingualism or not – the education of minorities*. Clevedon, UK: Multilingual Matters.

- Stahl, G. 2006. *Group Cognition. Computer Support for Building Collaborative Knowledge*. Cambridge, MA: MIT Press.
- Stanford University n.d. *Understanding language: Language, literacy, and learning in the content areas*. Retrieved from <https://ell.stanford.edu/>. (13.3.2019.)
- Stanford University 2013. *Key principles for ELL instruction*. Retrieved from [https://ell.stanford.edu/sites/default/files/Key%20Principles%20for%20ELL%20Instruction%20with%20references\\_0.pdf](https://ell.stanford.edu/sites/default/files/Key%20Principles%20for%20ELL%20Instruction%20with%20references_0.pdf). (13.3.2019.)
- Statistics Finland 2017. *Migration*.  
[http://www.stat.fi/til/muutl/index\\_en.html](http://www.stat.fi/til/muutl/index_en.html) (accessed 17 May 2017).
- Summers, M. & Volet, S. 2010. *Group work does not necessarily equal collaborative learning: Evidence from observations and self-reports*. *European Journal of Psychology of Education*, 25, 473–92.
- Suni, M. 2008. *Toista kieltä vuorovaikutuksessa: kielellisten resurssien jakaminen toisen kielen omaksumisen alkuvaiheessa*. [Second language in interaction: sharing linguistic resources in the early stage of second language acquisition.] *Jyväskylä Studies in Humanities* 94. Jyväskylä: University of Jyväskylä.
- Suni, M. & Latomaa, S. 2012. *Dealing with increasing linguistic diversity in schools: the Finnish example*. In J. Blommaert, S. Leppänen, P. Pahta & T. Räisänen (Eds.), *Dangerous multilingualism: Northern perspectives on order, purity and normality*. Basingstoke: Palgrave Macmillan, 67–95.
- Swain, M. 2006. *Languaging, agency and collaboration in advanced second language proficiency*. In H. Byrnes (Ed.), *Advanced language learning: the contribution of Halliday and Vygotsky*. London: Continuum, 95–108.
- Swain, M., Kinnear, P. & Steinman, L. 2015. *Sociocultural theory in second language education: An introduction through narratives*. Bristol: Multilingual Matters.
- Säljö, R. 2003. *From transfer to boundary crossing*. In T. Tuomi-Gröhn & Y. Engeström (Eds.), *Between school and work: New perspectives on transfer and boundary crossing*. Amsterdam: Elsevier Science, 311–321.
- Säljö, R. 2004. *Learning and technologies, people and tools in co-ordinated activities*. *International Journal of Educational Research*, 41, 489–494.
- Säljö, R. 2010. *Digital tools and challenges to institutional traditions of learning: Technologies, social memory and the performative nature of learning*. *Journal of Computer Assisted Learning*, 26, 53–64.
- Säävälä, M., Turjanmaa, K. & Alitolppa-Niitamo, A. 2017. *'Immigrant home-school information flows in Finnish comprehensive schools'*. *International Journal of Migration, Health and Social Care*, 13 (1), 39–52.
- Tarnanen, M., Aalto, E., Kauppinen, M. & Neittaanmäki, R. 2013. *Luokanopettajaopiskelijoiden käsityksiä äidinkielestä oppiaineena*. [Pre-service primary school teachers' perceptions of mother tongue as a school subject.] *AFinLA-E: Soveltavan Kielitieteen Tutkimuksia*, 5, 163–180. Retrieved from <https://journal.fi/afinla/article/view/8745>. (29.9.2019.)

- Tarnanen, M. & Palviainen, Å. 2018. Finnish teachers as policy agents in a changing society. *Language and Education*, 32 (5), 428–443.
- Terenzini, P., Cabrera, A., Colbeck, C., Parente, J. & Bjorklund, S. 2001. Collaborative Learning vs. Lecture/Discussion: Students' Reported Learning Gains. *Journal of Engineering Education*, 90 (1), 123–130.
- Thurman, J., Volet, S. & Bolton, J. 2009. Collaborative, case-based learning: how do students actually learn from each other? *Journal of Veterinary Medical Education*, 36 (3), 297–304.
- Tillema, H. & van der Westhuizen, G. 2006. Knowledge construction in collaborative enquiry among teachers. *Teachers and Teaching: Theory and Practice*, 12 (1), 51–67.
- Tilley-Lubbs, G. & Kreye, B. 2013. Collaboration for authentic preservice teacher experiences: mathematics and English as a second language. *International Journal of Teaching and Learning in Higher Education*, 25 (3), 316–323.
- Toom, A., Kynäslähti, H., Krokfors, L., Jyrhämä, R., Byman, R., Stenberg, K., Maaranen, K. & Kansanen, P. 2010. Experiences of a research-based approach to teacher education: suggestions for future policies. *European Journal of Education*, 45, 331–344.
- Trondsen, M. & Sandaunet, A-G. 2009. The dual role of the action researcher. *Evaluation and Program Planning*, 32, 13–20.
- Tsui, A. B. M. & Law, D. Y. K. 2007. Learning as boundary-crossing in school-university partnership. *Teaching and Teacher Education*, 23, 1289–1301.
- Unsworth, L. 2001. *Teaching multiliteracies across the curriculum. Changing contexts of text and image in the classroom practice.* Buckingham: Open University Press.
- Valdés, G. 2015. Latin@s and the intergenerational continuity of Spanish: The challenges of curricularizing language. *International Multilingual Research Journal*, 9, 253–273.
- Valdés, G., Bunch, G., Snow, C. & Lee, C. 2005. Enhancing the development of students' language(s): An introduction for teachers. In L. Darling-Hammond, J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do.* San Francisco, CA: John Wiley, 126–67.
- Valdés, G., Kibler, A. & Brooks, M. n.d. Families, schools and communities. Developing beginning English language learners' strategies and stamina for academic success in English. NYC Department of Education. Retrieved from <http://schools.nyc.gov/NR/ronlyres/238E5C38-8544-41E4-9449-78028C376EBB/0/FamiliesSchoolCommunitiesUnit1.pdf>. (18.4.2019.)
- Valdés, G., Kibler, A. & Walqui, A. 2014. Changes in the expertise of ESL professionals: Knowledge and action in an era of new standards. TESOL International Association. *Advancing excellence in English language teaching.* Retrieved from <https://ell.stanford.edu/sites/default/files/professional-paper-26-march-2014.pdf>. (13.3.2019.)



- Van den Bossche, P., Gijsselaers, W., Segers, M. & Kirschner, P. 2006. Social and cognitive factors driving teamwork in collaborative learning environments: Team learning beliefs and behaviours. *Small Group Research*, 37, 490–521.
- van Lier, L. 1995. *Introducing language awareness*. Harmondsworth, UK: Penguin Books.
- van Lier, L. 2000. From input to affordance: social-interactive learning from an ecological perspective. In James P. Lantolf (ed.), *Sociocultural theory and second language learning*. Oxford: Oxford University Press, 155–177.
- van Lier, L. (2007). Action-based teaching, autonomy and identity. *Innovation in Language Learning and Teaching*, 1 (1), 46–65.
- van Lier, L. & Walqui, A. 2012 (cited in Bunch 2013). How Teachers and Educators Can Most Usefully and Deliberately Consider Language. Paper presented at the Understanding Language Conference, Stanford, CA.
- Volet, S.E., Summers, M. & Thurman, J. 2009. High-level co-regulation in collaborative learning: How does it emerge and how is it sustained? *Learning and Instruction*, 19 (2), 128–143.
- Vollmer, H. 2008. Constructing tasks for content and language integrated learning and assessment. In J. Eckerth & S. Siekmann (Eds.), *Task-based language learning and teaching. Theoretical, methodological, and pedagogical perspectives*. Frankfurt am Main: Peter Lang, 227–290.
- Vygotsky, L. S. 1978. *Mind in society: The development of higher psychological functions*. Cambridge: Harvard University Press.
- Vygotsky, L. S. 1981. The genesis of higher mental functions. In J. V. Wertsch (Ed. & Trans.), *The concept of activity in Soviet psychology*. Armonk, NY: M. E. Sharpe, 144–188.
- Väljjarvi, J., Kupari, P., Linnakylä, P., Reinikainen, P., Sulkunen, S., Törnroos, J. & Arffman, I. 2007. *The Finnish success in PISA – and some reasons behind it 2*. Jyväskylä: Institute for Educational Research.
- Waitoller, F. & Kozleski, E. B. 2013. Understanding and dismantling barriers for partnerships for inclusive education: A cultural historical activity theory perspective. *International Journal of Whole Schooling*, 9 (1), 23–42.
- Walqui, A. 2006. Scaffolding instruction for English language learners: A conceptual framework. *International Journal of Bilingual Education and Bilingualism*, 9 (2), 159–180.
- Walqui, A. & Heritage, M. 2012. Instruction for diverse groups of English language learners. Paper presented at the Understanding Language Conference, Stanford, CA. Retrieved from [https://ell.stanford.edu/sites/default/files/pdf/academic-papers/09-Walqui%20Heritage%20Instruction%20for%20Diverse%20Groups%20FINAL\\_0.pdf](https://ell.stanford.edu/sites/default/files/pdf/academic-papers/09-Walqui%20Heritage%20Instruction%20for%20Diverse%20Groups%20FINAL_0.pdf). (15.3.2019.)
- Walqui, A., Koelsch, N. & Schmida, M. 2012. Persuasion across time and space: Analyzing and producing complex texts. Retrieved from [http://ell.stanford.edu/teaching\\_resources/ela](http://ell.stanford.edu/teaching_resources/ela). (13.3.2019.)

- Walqui, A. & van Lier, L. 2010. *Scaffolding the academic success of adolescent English language learners: A pedagogy of promise*. San Francisco, CA: WestEd.
- Wenger, E. 1998. *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- Wertsch, J. V. 1991. *Voices of the mind. A sociocultural approach to mediated action*. London: Harvester Wheatsheaf.
- WestEd n.d. *Quality Teaching for English Learners (QTEL)*. Retrieved from <https://www.qtel.wested.org/>. (10.4.2019.)
- Willegems, V., Consuegra, E., Struyven, K. & Engels, N. 2017. Teachers and pre-service teachers as partners in collaborative teacher research: A systematic literature review. *Teaching and Teacher Education*, 64, 230–245.
- Wong Fillmore, L. & Snow, C. 2002. What teachers need to know about language. In C. T. Adger, C. E. Snow & D. Christian (Eds.), *What teachers need to know about language*. Washington: Center for Applied Linguistics; McHenry, IL: Delta Systems, 7–54.
- Zheng, D. & Newgarden, K. 2012. Rethinking language learning: virtual worlds as a catalyst for change. *International Journal of Learning and Media*, 3 (2), 13–36.
- Zwiers, J. 2006. Integrating academic language, thinking, and content: Learning scaffolds for non-native speakers in the middle grades. *Journal of English for Academic Purposes*, 5 (4), 317–332.

## APPENDIX

### Intervention instructions for student teachers

#### Aims

- To gain experience of teaching in a multilingual and multicultural group
  - to perceive the linguistic challenges of your own subject and see their impact on planning the instruction and the pedagogical approach
  - to learn to analyse learners in terms of their Finnish language proficiency, their background knowledge, experiences, skills, and resources and pedagogically build on that information
  - to learn the skills needed in teaching in a heterogeneous group: diagnosing learning, pedagogical means for supporting learning, solving unexpected situations
- To gain experience of subject integration and teacher collaboration across disciplines

1. **Get to know** your learner group and the topic of your study unit. Consider particularly,

- What kinds of linguistic or cultural challenges might be involved in learning the topic? (tip: examine texts and materials)
- What kind of background knowledge do you get from learners through observing their lessons, and what other background knowledge should you obtain and by what other means?
- How do you explore learners' language and communication skills, various resources and other relevant background knowledge?

Draw up a plan of how to obtain the background information on the learner group and then carry it out in practice.

Based on the background information obtained, select **two different kinds of learners to follow in more depth throughout the teaching intervention** (you should both follow your own learners, but one of them can be the same). The learners (nimikko-oppilaat) can be selected to represent varying skills, learning styles, personalities, etc.

2. **Plan** a study unit on the selected topic. Consider in particular,

- how you make use of your background knowledge of the learners' language and communication skills and what kind of impact this has on the planning and enacting of teaching
- what the learners should learn linguistically and communicatively

- what content and language and communication skills are relevant to be learned within the topic of your choice.

Set concrete **learning goals** for the whole of your study unit and plan the course contents and activities (see the separate planning form). Plan also the individual lessons using the **lesson plan** form. Set goals for content learning as well as linguistic goals for each lesson. Write down the phases and activities of the lessons and compile the **material package**. Agree jointly on the distribution of work. Ponder also how and what kind of feedback you want to gather from the learners.

Plan also how you will observe the two learners you selected (nimikko-oppilaat). What would you like to learn from their learning process and in what ways can you observe them?

→ Sketch out their learning profiles:

- What kind of learners are they?
- What is meaningful and motivating for them?
- What do they themselves think they are learning in terms of content and language?
- What does their learning look like to an observer? What can you infer on the basis of their performance in tasks, activities and various learning products?
- What shape do their learning paths seem to take during the course of the study unit?

3. **Reflect** on the project and ponder the issues and ideas raised in an informal way in your learner log, focusing on *What was I wondering today?* → What did you realize today? What issues do you want to learn more about? What are you learning from your partner(s)? What inspires you in your planning? What issues are you uncertain about?





## ORIGINAL PAPERS

### I

#### APPROACHING PEDAGOGICAL LANGUAGE KNOWLEDGE THROUGH STUDENT TEACHERS: ASSESSMENT OF SECOND LANGUAGE WRITING

by

Eija Aalto & Mirja Tarnanen, 2015

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## Approaching pedagogical language knowledge through student teachers: assessment of second language writing

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The article examines student teachers' pedagogical language knowledge. The analysis is based on data from an applied task in which Finnish student teachers ( $n = 221$ ) of 16 school subjects assessed second language (SL) learners' writing skills. First, we briefly discuss subject teachers' role in language and literacy teaching in the multilingual and multicultural classroom. Our findings indicate that the student teachers use a range of criteria but focus mainly on word-level assessment when assessing writing samples, and that their assessment orientation varies from technical to analytical. Finally, we discuss the challenges of developing teacher education to promote pedagogical language knowledge across the curriculum.

**Keywords:** pedagogical language knowledge; second language writing; teacher education

### Introduction

Mainstreaming is a growing pedagogical tendency in multilingual and multicultural schools (Mohan, Leung, and Davison 2001; European Core Curriculum 2010; Bunch 2013; for critical views, see, e.g., Franson 2007; Gibbons 2009, 9). There seems to be a widely shared understanding that the education of second language (SL) learners must be seen as a shared responsibility by all teachers, not separated from content learning. From this perspective, language is not a skill to be learnt first and then used as a means to communicate content, but the learning of language should be integrated with the learning of content (e.g. Lucas and Grinberg 2008; Bunch 2013; Moje 2007). Furthermore, literacy engagement is a strong predictor of academic success, and the low educational outcomes of language-minority students and also native-speaker students have been identified largely as resulting from inadequate academic language skills (e.g., Guthrie 2004; European Core Curriculum 2010, 29–30). Finally, engagement in disciplinary practices and interaction with peers and teachers in joint activities are regarded as key elements for both content and language learning (Walqui 2006; Gibbons 2007), and these conditions should be provided in the mainstream classroom. Consequently, mainstreaming requires language-related expertise from all teachers, but many teachers still lack preparation for working with SL learners (Mora 2000; Nieto 2000; Bunch 2013).

Relatively little is known about teachers' language awareness, language learning experiences and their understanding of language learning in the mainstream classroom (Cajkler and Hall 2011), and research on teacher education for linguistic diversity is also scarce (Lucas and Grinberg 2008; Bunch 2013). It is notable, however, that subject teachers' (also referred to as *secondary teachers* and *mainstream teachers*) role in

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language and literacy teaching has been increasingly recognized in line with the increasing diversity in classrooms (e.g., Gibbons 2007; Walqui 2006; García 2008).

It has been argued that teaching language learners requires more than just good teaching (De Jong and Harper 2005) and that subject teachers' language expertise differs fundamentally from the knowledge needed in SL teaching and also from the pedagogical content knowledge that teachers adopt in disciplinary instruction (Bunch 2013, 326). For this reason, the knowledge and skill base for all teachers should be conceptualized, as subject teachers are called to provide SL learners with full access to academic language and subject-area content, and the instruction should not be limited to vocabulary or language decontextualized from disciplinary contents and meanings (Robinson 2005; Schleppegrell and O'Hallaron 2011). In this article, we focus on subject teacher students studying to be subject specialists (hereafter student teachers) and explore their approaches to assessing SL learners' writing skills during their pedagogical studies in Finland.

### Subject teachers' pedagogical language knowledge

Over the past decades a number of approaches have been adopted to develop teachers' abilities and understanding for coping in multilingual and multicultural settings (for reviews, see Lucas and Grinberg 2008; Faltis, Arias, and Ramírez-Marín 2010; Schleppegrell and O'Hallaron 2011; Pettit 2011; Bunch 2013). Concepts proposed vary considerably, for example, *educational linguistics* (Fillmore and Snow 2002), *pedagogical language knowledge* (Galguera 2011; Bunch 2013), *linguistically responsive teacher* (Lucas and Villegas 2011), *language-sensitive teaching* (Bailey, Burkett, and Freeman 2008), *teacher language awareness* (Breibach, Elsner, and Young 2011; Andrews 2003 in the context of language teaching) and *language-intensive tasks and practices* (Quinn, Lee, and Valdés 2012; Lee, Quinn and Valdés 2013).

Although the approaches toward subject teachers' language knowledge and skill base vary, scholars seem to share many fundamental understandings. Broadly taken, various frameworks and conceptualizations aim to describe, first, subject teachers' beliefs, knowledge and understanding of language and language use, and, second, the pedagogical skills needed in multilingual and multicultural classrooms (Faltis, Arias, and Ramírez-Marín 2010; Bunch 2013). The appropriateness and relevant aspects of linguistics and SL acquisition as a foundational knowledge base have been prioritized differently, but generally knowledge and understandings of SL acquisition, the role of L1 in promoting learning in academic language, and language and culture as a medium of learning and as a goal of instruction are built into various conceptualizations (García 2008; Faltis, Arias, and Ramírez-Marín 2010). Furthermore, the ability to monitor language use both in the classroom and more broadly in different situations and for different purposes has been promoted (e.g. Walqui 2006; Gibbons 2007). In terms of pedagogical skills, effective practices to provide adaptable support for engagement and scaffold learning, ability to draw on linguistic and cultural diversity in teaching, and using talk as a tool for enhancing learners' reasoning and understanding are often included in the conceptualizations (Cummins 2000; Gibbons 2007; Lee, Quinn and Valdés 2013).

In this article, we use the term *pedagogical language knowledge* to refer to 'knowledge of language directly related to disciplinary teaching and learning and situated in particular (and multiple) contexts in which teaching and learning take place' (Bunch 2013, 307). That approach leads us to treat language rather as an action than as a structure (see also van Lier and Walqui 2012; Bunch 2013). As language forms and functions are considered subordinate to action, the approach to teachers' language expertise moves

away from traditional, customary conceptualizations of language. Furthermore, teachers' language-related understanding is determined from the viewpoint of the knowledge and skills needed in developing meaningful activities that engage students' interest and foster both language growth and content learning (see also Canale and Swain 1980; Bunch 2013). The foundation for subject teachers' pedagogical language knowledge lies in developing abilities to observe the role and characteristics of talk versus written language and variation in language use in accordance with the situation, audience and genre in disciplinary learning (e.g., Mortimer and Scott 2003).

In this study, we are interested particularly in student teachers' ability to analyse learners' language skills, as that knowledge is needed in planning and supporting learning. In order to build on learners' prior skills, teachers should have the ability to monitor their language use and identify relevant characteristics that either influence their comprehension in learning situations or require teaching (see also de Jong and Harper 2005; Gibbons 2009, 159; Pettit 2011; Lee, Quinn and Valdés 2013). Many scholars and pedagogical models emphasize scaffolding and building on learners' prior skills, knowledge and cultures, which provides evidence and arguments for specifying teachers' ability to identify learners' language skills in academic language use (see also Canale and Swain 1980). However, the main focus of current research seems to be on disciplinary sense-making and language use/knowledge and how to prepare teachers for the language demands of their subject (e.g., Gibbons 2007; Schleppegrell and O'Hallaron 2011; Jones and Chen 2012). Research literature has also provided evidence that in-service subject teachers do not always know enough of the process of SL acquisition. Furthermore, they often do not consider it important to be able to interpret SL learners' language proficiency exams, and their expectations of learners' ability to master the curriculum may be low (Faltis, Arias, and Ramírez-Marín 2010; Pettit 2011). The connection between language proficiency and content areas is particularly crucial when assessing SL learners. Subject teachers should be able to distinguish between underachievement due to mainstream reasons (e.g., motivation, subject knowledge, commitment) and underachievement due to multilingual and multicultural reasons (e.g., the phase of SL learning, cultural expectations). To be able to validly assess and support the learning of diverse students, the ability to track learners' SL development should be embedded in subject teachers' pedagogical language knowledge (see Cummins 2000; Canale and Swain 1980).

The pedagogical language knowledge requirement of all teachers is a current issue in Finnish educational policy. Teacher language awareness is one of the underpinning principles of the new comprehensive school National Core Curriculum to be launched in 2016. This poses a challenge for teacher education too, and at the Jyväskylä University Teacher Education Department, where the present study was conducted, disciplinary language and scaffolding learning has been recognized as a key issue since 2006. Teachers in Finnish schools are still largely unprepared to encounter and deal with plurilingual students in their classrooms, and it is clear that some students are not provided with the support needed for quality learning. Despite the national policy, students do not seem to be equal in terms of the amount of SL instruction they receive and the assessment practices applied by teachers (Korpela 2006; Suni and Latomaa 2012). Lower educational achievement of children of immigrants in comprehensive school tends to have a large effect on their final educational attainment (e.g., Kilpi-Jakonen 2011; Kuusela et al. 2008). These problems may partly be based on teachers' inability to assess their pupils' language skills and to adjust their teaching accordingly with respect to learning tasks and assessment practices. Moreover, as there is evidence that teachers tend to overestimate their students' language skills

(Suni and Latomaa 2012), there is a clear need to specify the pedagogical language knowledge that subject teachers need to acquire.

In this study, we aim to add to the literature on subject teachers' pedagogical language knowledge by exploring student teachers' approaches to assessing SL writing samples.

## Methods

### *Research questions*

This study explored the following questions:

- (1) How do subject teacher students assess samples of L2 writing?
- (2) What do their assessments reveal of their pedagogical language knowledge?

### *Participants and data*

The informants in the study were Finnish fourth-year subject teacher students who were being trained to teach in the nine-year Finnish comprehensive school system, mainly grades 7–9, and the upper secondary school (grades 1–3). To qualify as subject teachers, all students across the curriculum need to complete a Master's degree, which includes at least 60 ECTS (European Credit Transfer and Accumulation System) of teachers' pedagogical studies offered by departments of teacher education. A total of 221<sup>1</sup> students participated in the study, representing 16 school subjects: history and philosophy (HP) ( $n = 20$ ), Finnish language and literature (F) ( $n = 31$ ), foreign languages (FL) (English, Swedish, German, French, and Russian) ( $n = 62$ ), physics and chemistry (PC) ( $n = 18$ ), mathematics, biology and environmental science and ICT (MBEI) ( $n = 30$ ), sports and health education (SH) ( $n = 51$ ), and music (M) ( $n = 9$ ).

Within their pedagogical studies, the students completed a study unit on subject-specific pedagogical practices from the viewpoint of linguistic and cultural diversity in the classroom: how to build on learners' prior skills and scaffold learning and develop language-sensitive pedagogical practices. As part of these studies, the students were requested to fill in a questionnaire with built-in applied tasks. The aim of the enquiry was to explore the student teachers' pedagogical language knowledge and, specifically, to determine their ability to assess SL learners' language proficiency in relation to the perceived linguistic challenges in their own discipline.

In this article, we focus on an applied task in which student teachers assessed SL learners' writing skills from two short text samples written by a 14-year-old pupil with migrant background (see Appendix 1). The texts represented a message to an online shop and an argumentative text. Texts were graded as A2 on the Common European Framework Reference scale<sup>2</sup> by three trained raters. Writing skills were selected as the core of the data, as Finnish school pedagogical practices rest significantly on the written tradition, for instance, with regard to assessment and course fulfilment. The assumption was that the student teachers' analysis of pupils' writing performance reflects their pedagogical language knowledge and understanding of language.

The data consist of open-ended verbal assessments and Likert scale assessments completed by the participants. Table 1 shows the instructions given and the continuum so formed.

The main focus was on qualitative data to deepen the understanding of student teachers' pedagogical language knowledge in this context. Quantitative data were used

Table 1. Data setting: two types of data elicited by a questionnaire.

Assessing samples of writing (research question [RQ] in focus)	No. of participants
• <i>Open-ended verbal assessment 1</i> : What is the pupil's writing skill like? Describe as diversely as possible and give reasons for your observations. (RQ 2)	203
• <i>Likert scale assessments</i> : assess the same samples of writing on the basis of the following criteria: comprehensiveness, grammatical complexity, grammatical accuracy, lexical variation and textual coherence. (RQ 1)	221
• <i>Open-ended verbal assessment 2</i> : Which of the criteria used in the multiple-choice questions is most important in your opinion? Why? (RQ 2)	221

for gaining descriptive information on a larger scale. Content analysis (Miles and Huberman 1994; Patton 2002; Hsieh and Shannon 2005) was used to comb through the student responses (open-ended verbal assessments) to identify emerging elements of assessment criteria used by the student teachers. The students' opinions of the quality of the text were not treated as an issue of interest. ATLAS.ti 7 was used as an analytical tool in data processing. The goal was to establish categories which provide a more detailed understanding of how prospective teachers view writing as a skill. The categories were constructed, compared and refined through cycles of analysis empirically on the basis of students' formulations in the data. Thereafter, the criteria were grouped and reduced to three major clusters: word related, sentence related and text related. Finally, the analysis was quantified by counting the frequencies of each category. The assessments of different subject groups were contrasted with each other. Having elicited the set of assessment instruments, we went on to explore the orientations that the assessments reflected.

## Findings

### *Student teachers' assessment: the big picture*

The student teachers assessed the text samples on a Likert scale after having verbally assessed the pupil's writing performance independently, without guiding questions (open-ended assessment). They were asked to assess the samples in terms of comprehensibility, grammatical complexity and accuracy, coherence and lexical variation. Their assessments proved fairly consistent (Figure 1). Most considered the texts to be completely or fairly comprehensible and fairly coherent. Grammatically, the texts were assessed to be relatively simple and inaccurate, and lexically rather simple. There were no major differences between subject groups, but future language teachers tended to consider the pupil's writing performance more comprehensible and more accurate than future non-language subject teachers.

Analysis of the open-ended verbal assessments revealed further assessment criteria employed by the student teachers, as shown in quantified form in Figure 2. Based on qualitative categorization of the responses, comprehensibility formed a criterion of its own and the remaining criteria occurring in the student teachers' answers were grouped into word-related, sentence-related and text-related assessments. Compared to the Likert scale assessment, the responses to the open-ended verbal assessments varied more: a large number of student teachers commented on the comprehensibility and accuracy of the text, while vocabulary use and coherence were much less in focus. Most of the criteria were used by less than 30% of the participants and only comprehensibility, spelling and punctuation, and word inflection were commented on by more than 50% of the participants.

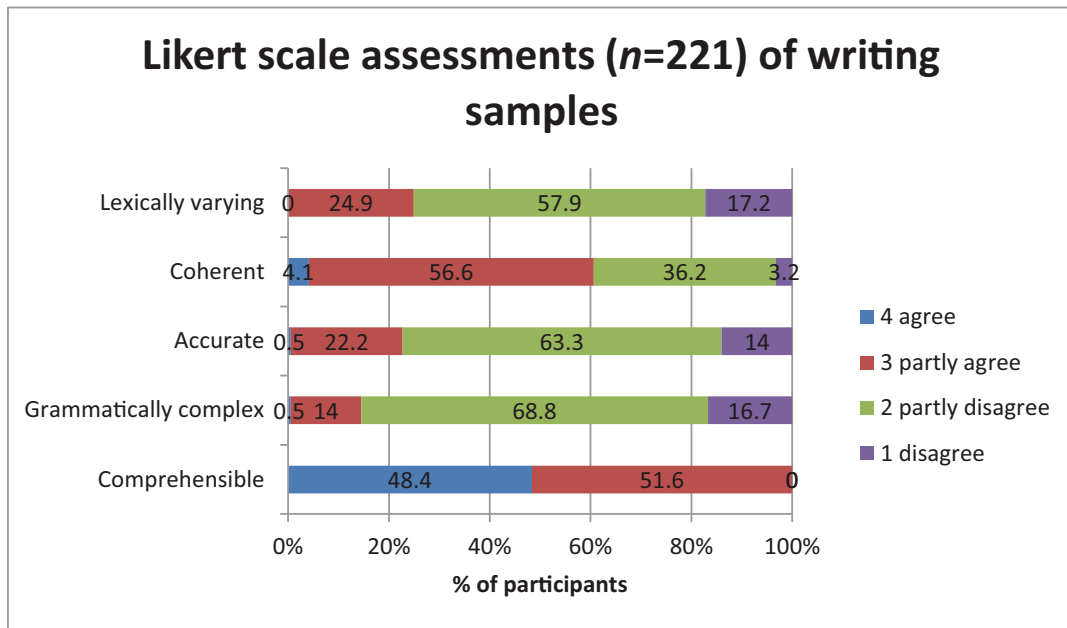


Figure 1. Student teachers' Likert scale assessments of the writing samples.

**Comprehensibility as the main criterion**

Comprehensibility was the most frequently used criterion (80% of participants referred to it in open-ended verbal assessment 1, and 87% used it as the main criterion for writing in open-ended verbal assessment 2). However, the majority did not specify what makes the text comprehensible in terms of linguistic or textual features. The comprehensibility of

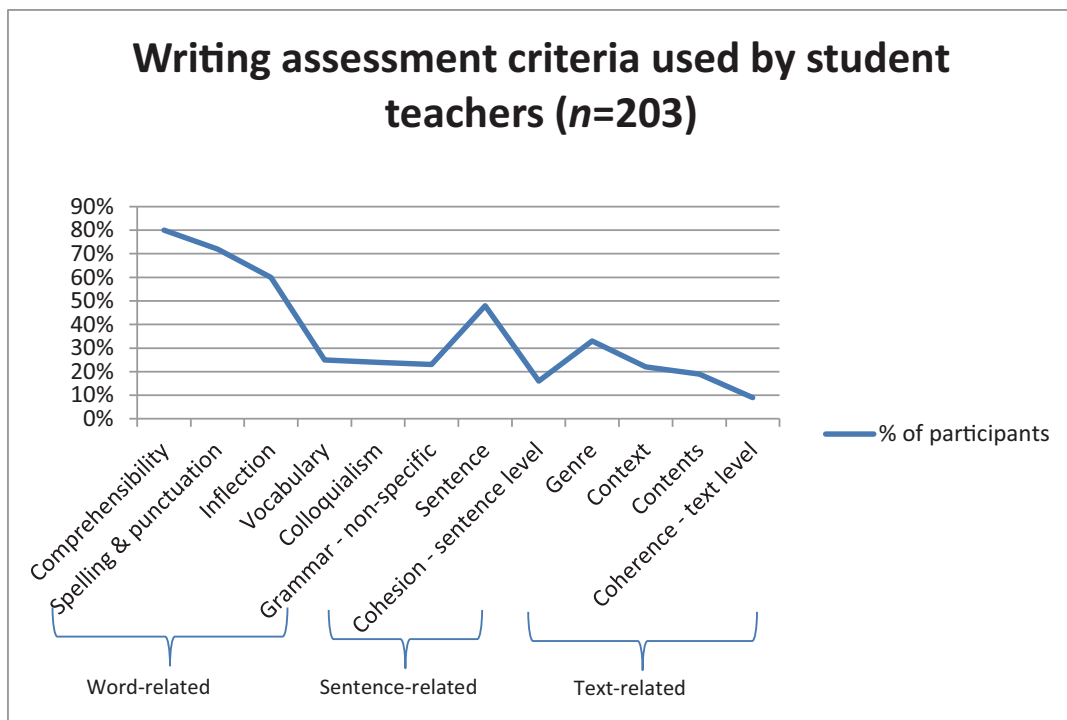


Figure 2. Writing assessment criteria used by student teachers in open-ended verbal assessments.

the text was commented on either on a rather general level (e.g. *comprehensible without problems; opaque; comprehensible as a whole, although individual utterances vague*) or from the point of view of expressiveness, for example, what the writer is able to say, express or do with their text (*the message comes over; content and the aims of the writer are comprehensible; the issue is dealt with, nothing unclear*).

The students typically considered the text to be comprehensible despite the lack of accuracy. They listed numerous errors, but did not regard them to be serious or to affect comprehensibility:

There's not much linguistic variety in the pupil's writing but nevertheless it's comprehensible. There are a lot of spelling mistakes, but they're so small that they don't interfere with comprehension. (ID33 HP<sup>3</sup>)

Many students who indicated comprehensibility as the major criterion for writing in open-ended verbal assessment 2 still concentrated on analysing inflection, spelling and punctuation in their own free assessment. Text genre or contents were not analysed to the same extent.

Of all students, 20% made no reference to comprehensibility in open-ended verbal assessment 1. A closer look at their responses revealed that their approaches varied, but most typically they concentrated on discrete language features (sometimes even at length), as in the following example:

writing skill is rather simple. The sentences of the text are loose, as connectors (pronouns, particles, etc.) are missing. Word inflections and 'emphases' are occasionally wrong (kiini-kiinni). Vocabulary is not very rich, and the same words are repeated. Word inflections seem to be challenging (e.g. cases). (ID105 MBEI)

It is noteworthy that even those participants who did not mention comprehensibility in their free assessments usually selected comprehensibility as the main criterion for writing ability.

### ***Word-, sentence- and text-related assessments***

The criteria used by student teachers in their open-ended verbal assessments were classed into three groups according to their level of language description: word, sentence or textual level (Figure 3). In practice, all participants analysed the pupil's writing ability at the word level, whereas sentence- and text-level analyses were much fewer.

#### *Word-level assessments*

Finnish is a synthetic language that uses suffixes to express grammatical relations and to derive words. Finnish is also characterized by a rich system of word inflection, for example, 15 cases for nouns and a wide set of verb forms. Finnish phonemes (vowels and consonants) have two lengths, short or long: short sounds are spelt with one letter and long sounds with two. The student teachers' word-level assessments focused largely on these characteristics of Finnish: spelling and punctuation (72%), word inflection (60%) and also vaguely, without specification, on grammar or grammatical mistakes (23%), while 25% commented on vocabulary use.

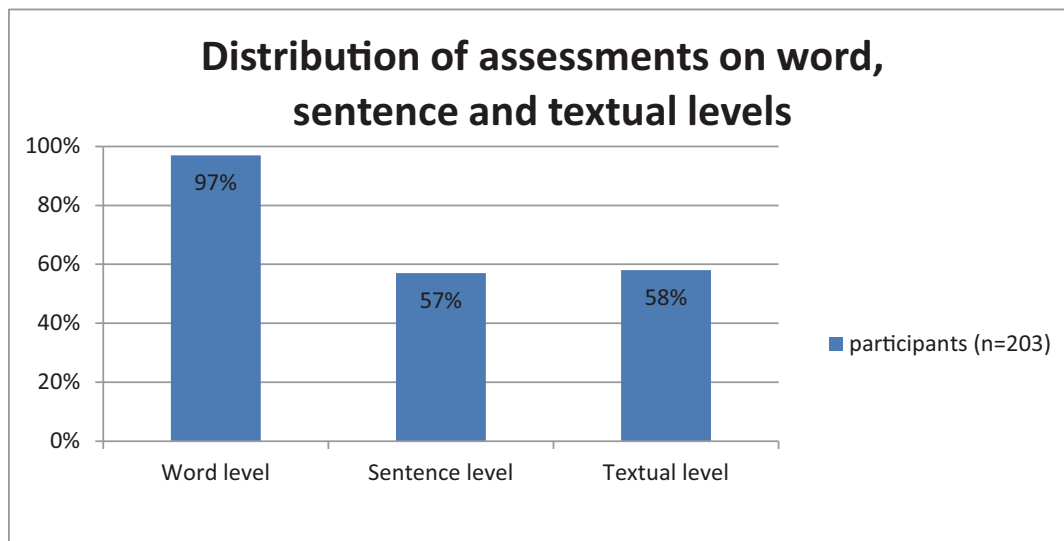


Figure 3. Student teachers' references to word-, sentence- and textual-level phenomena in pupil's writing.

Most of the word-level references focused on **spelling and punctuation**, e.g., correct use of single and double vowels and consonants, capital letters and punctuation. These features were typically listed but not further analysed or specified.

There are some spelling mistakes and he seems to have difficulty identifying when to use capitals. Also double letters are problematic for him. (ID177 FL)

The pupil knows Finnish words, but there are letters missing from some words, which hinders clear reading. (ID74 SH)

As with spelling and punctuation, most references to **inflection** were on a rather general level:

... inflection is incorrect or completely missing. (ID148 FL)

Some student teachers were familiar with basic concepts such as *pronoun*, *genitive* and *perfect tense*. However, many lacked the concepts needed to describe writing skills, thus making their comments somewhat vague and likely raising the number of **non-specific grammar references** (23% of participants).

... writing is occasionally good and the endings are right, but what he can't manage especially is the change from t to d in the possessive structure. Actually, it seems he can't manage any of the words where body letters have to be changed. (ID120 MBEI)

There are lots of spelling mistakes and grammatical mistakes and commas are here and there. (ID202 M)

In general, the student teachers related morphological issues to comprehensibility and the use of correct forms of individual words was not given high importance:

Word inflection (although not a very significant issue) occasionally goes wrong. (ID70 SH)

While many student teachers reflected on inflectional phenomena in relation to comprehensibility, they seemed to lack the idea of progression in learning to express grammatical relations. Word forms were mostly described technically in terms of form (*they don't go right*), but there were no indicators of considering the significance of one grammatical category in relation to another. Word-level inaccuracies seemed to be considered of equal value. When related to comprehensibility, the students did not clarify whether one linguistic category was regarded as more significant than another.

Only 25% of participants commented on the **vocabulary** used in texts. Their focus was mainly on the breadth and depth, and thus the writer's vocabulary was mostly described as insufficient, limited and simple.

... his vocabulary is so limited that the content comes across as naive, as the same words are repeated ... (ID193 FL)

Finally, **colloquialism** was commented on by a quarter of the participants (24%). Most of these referred to the colloquial word form such as *tärkeetä* instead of *tärkeää* (meaning 'important'). Colloquialism was sometimes treated neutrally without value judgement; when it was valued, the judgement varied from disapproval to being described as a strength or valuable resource.

In summary, word-related assessments accumulated considerably under the spelling and punctuation, and inflection categories, and the participants differed in their attitudes towards learner performance.

#### *Sentence-level assessments*

Compared to the word-level assessments, sentence-level assessments were few in number. In total, 57% of participants commented on sentences or how clauses were connected to each other. Cohesion between clauses was categorized as a sentence-level assessment, because participants did not treat it as a textual issue. Student teachers commented on the sentence structure somewhat unanimously from three distinct points of view: (1) How clear, functional or simple versus complex are they? (2) Has the writer used subordinate clauses? (3) How are clauses connected to each other?

Sentence structure is simple and grammatically imperfect. (ID36 HP)

Each clause is separate and there are also single subordinate clauses. (ID77 SH)

In conclusion, the student teachers' sentence-level assessment was limited to three distinct common aspects. This can be considered predictable as the texts were very short, consisting of only a few sentences (see Appendix 1).

#### *Textual-level assessments*

The numbers of text- and sentence-related assessments were approximately equal. Most textual comments came from future language teachers, 73% of whom commented on the writings from a textual point of view, compared with 45% of non-language subject students. The fact that differences between subject groups were minimal (only 2–3%) in references to word or sentence levels makes this finding especially notable.

The text-related assessment category contains four comment types concerning the text: genre, content, context and coherence.



Characteristics of the requested **genre** of the task (semi-formal message and argumentative text) were commented on by 33% of participants (51% of future language teachers and 17% of student teachers of other subjects). Comments mostly addressed the conventions of formulating a message (structure, salutation, introducing oneself, ending and politeness), as in the following examples:

The pupil knows how to begin and end a message, although the ending probably isn't the most appropriate for the situation. (ID69 SH)

... the text is a bit aggressive, as he hasn't really got the hang of linguistic formalities ... (ID100 SH)

The **context** category refers to comments that did not treat the text samples plainly as technical, autonomous performances but saw them in terms of a wider context and explicitly sought to assess the sufficiency and limits of the pupil's writing skills in regard to requirements in real situations. In total, 22% of participants made context-related assessments and focused on the scope of situations that the writer might encounter, the continuum of everyday versus abstract and formal topics, and the roles of age and task instructions in the performance of the writer.

The pupil's writing skills were usually considered sufficient for dealing with familiar, everyday topics closely related to the writer's own life. More abstract and formal topics and situations were expected to exceed the limits of their ability.

You'd probably get by with this level of writing for basic everyday purposes, but difficulties may arise in more official situations. (ID106 MBEI)

For example, this pupil would have real difficulty with science and social science subjects at school. I'd say the pupil is at the level where he can write intelligibly about familiar things related to his own life. (ID165 FL)

Some participants tried to place the writing performance in a real situation and assess it with respect to the requirements of getting by with a real audience.

In an online shop they'd definitely understand what the client wants ... (ID92 SH)

The **content** of the text was commented on by 19% of the student teachers. The focus was mainly on quality and credibility of the content: how clear, versatile, repetitious and consistent it is. Students also reflected on the pupil's ability to express their ideas.

In one of the texts, in terms of content, the issues are dealt with in a relatively versatile way, although in terms of structure it isn't as skillful. (ID5 F)

The factual contents of the texts are clear, simple and snappy. (ID57 SH)

Written performance often came up in relation to the writer's ability to express himself, e.g.:

Again, the pupil stretches his writing skill excellently so that he can express what he wants to say. (ID94 SH)

As indicated in the previous section, student teachers made observations on the use of connectors and conjunctions and commented on separate clauses. However, the overall

**coherence** of the text was focussed on much less, being referred to by only 9% of participants.

The text is consistent and there is also synthesis in that sentences following each other do not seem separate at all. (ID10 F)

Less than half of the participants made text-related assessments. However, they incorporated rather diverse aspects of writing, ranging from genre and context to text coherence. Next, we discuss some orientations revealed by the student teachers' assessments and analyse them in relation to their pedagogical language knowledge.

### ***Orientations in pedagogical language knowledge***

Overall, many student teachers had difficulties orienting towards SL learning. They were unused to perceiving their own mother tongue as an SL to be learnt. Therefore, they were confused by the characteristics of the SL pupil's language use:

In text 2 I initially took notice of one thing. 'Mobile' is spelt inaccurately in the heading, but in the text once completely accurately and another time again wrong. It's a bit surprising how spelling can change like that in the middle of the text. (ID180 FL)

Students' notions of the pupil's texts often reflected their own school experiences, as seen in the following quotation:

In written text, in my opinion, technical requirements take priority over comprehensibility. To some extent linguistic skill covers coherence, readability and grammatical and lexical skills. If the text is linguistically skilful, it is also comprehensible. I've hardly taught mother tongue, so my opinion is based solely on my own experiences and on the feedback me and my classmates have received on our texts. (ID201 M)

On the basis of the analysis, the student teachers seem to have two kinds of orientation towards the pupil's texts. The first orientation can be described as *technical* as it refers to considering language as language knowledge and approaching it technically by listing and naming distinct features of it, whereas the second, more *analytical* orientation seeks to perceive the process of language learning and to interpret learner performance in a wider context of language use and learning as understood from a socio-cultural perspective. These approaches are elaborated and discussed in the following.

Those with a technical orientation typically described the writing samples as good or rather good without reference to whether they were successful in any particular context:

In my opinion, the pupil's writing skill is good. (ID48 HP)

The pupil writes really fluently. (ID88 SH)

Technically oriented assessment tended to be based on criteria typically used in the L1 tradition. As colloquial Finnish differs substantially from the written register, keeping those registers separate is one of the key issues in teaching Finnish as a mother tongue. Student teachers frequently raised colloquialism without explicitly considering whether it is an important consideration with respect to A2-level writing performance.

'Tärkeetä' *'important'* the last word of the second message is spoken language, which the person presumably hears all the time around him. These kinds of words also pop up in Facebook postings, text messages and e-mail messages. As many native speakers of Finnish don't care about the accurate writing of these words, it becomes even more challenging to teach the correct forms to migrants. (ID46 HP)

In contrast, some student teachers adopted a more analytical orientation that did not plainly list linguistic features but anchored the language forms used and the mistakes made in the texts to the writer's ability to express meanings. Those participants typically put themselves in the SL learner's place and tried to envisage the pupil's current phase of learning, predict their future progress, and find grounds for the characteristic features and inaccuracies in their writing. They speculated about the pupil's mother tongue, the difficulty of the Finnish language, inexperience in writing and difficulty perceiving Finnish sounds by listening. The student teacher behind the following quotation seems to be able to identify phases in language learning in their reference to partial skills (knowing the rule but lacking the ability to apply it with new words):

The pupil can produce both main and subordinate clauses, but the connection between them still isn't perfect. There's room for improvement in using commas and full stops, but the text was comprehensible. The main point was made clear to the reader although there were spelling mistakes. The pupil knows how to use grammatical cases although occasionally the inflections go wrong. In the inflection of difficult words like *paita*, *paidan* 'shirt', 'shirt's' you can see that the pupil knows the grammatical rule but still can't apply it properly. The pupil can write words familiar to him accurately, but there's room for practising the new words. Occasionally vowels are wrong and there are especially mistakes with double consonants. (ID56 SH)

There are no clear-cut borders between these orientations and even the same student teacher may represent both orientations in different parts of their response. However, the orientations provide a synthesis of the open-ended verbal assessments and bring the separate criteria into a wider context.

## Discussion

The findings of this study provide a picture of the pedagogical language knowledge that future subject teachers are able to draw on in their encounters with SL learners and in their pedagogical decisions. The findings indicate that while student teachers' orientations to pupil performance varied, many made a notable effort to analyse the performance in a wider context. However, it is seemingly difficult for student teachers to perceive the challenges of the SL learner, as their own learning experiences often do not provide sufficient insight into learning in an SL.

As earlier studies indicate, previously constructed language beliefs and knowledge about language and use are likely to remain unchanged after graduation (Peacock 2001). According to the findings of this study, student teachers' pedagogical language knowledge echoes both traditional and socio-cultural approaches to language. Student teachers mainly perceive language as small, conventionalized units, but also value comprehensibility highly as a major criterion for SL performance. The fact that most text-related assessments were made by student teachers of languages might tell us about the change in pedagogical culture: while language teaching in schools in the participants' school years still rested on emphasizing word- and sentence-related language knowledge, textual, socio-cultural approaches to language are gradually gaining ground. Students of

language subjects have probably been exposed to them in their university studies (cf. Bunch 2013).

The technical orientation to language may pose the biggest challenge within teacher education. Ability to identify the relevant features in both disciplinary language and student performance does not primarily require mastery of a predictable, finite set of concepts and linguistic systems, but rather an adaptable ability to analyse language as action (van Lier and Walqui 2012; Walqui and van Lier 2010) and to identify key constructions that convey essential meanings.

In addition to becoming aware of beliefs, the findings of this study implicate that pedagogical language knowledge could be developed by enhancing future teachers' ability to identify learners' current proficiency and skills in academic language in order to be able to build on their prior skills in disciplinary teaching. Although the student teachers valued comprehensibility highly in their open-ended verbal assessment, appropriately per se, also the ability to give more emphasis to the significance of linguistic deficiencies in relation to each other and to the challenges of the disciplinary language could provide them an insight to support learning more effectively. This is relevant, as without an adequate understanding of learners' current skills and the learning process teachers are not able to consciously plan relevant and timely contexts in which to practise language (see also Gibbons 2009).

According to Pettit (2011), a major factor affecting teachers' beliefs is training in working with language learners. In other words, during pedagogical studies, students' beliefs should be challenged and discussed and, based on this, students should be provided with opportunities to examine the ways language is used to represent knowledge (see Galguera 2011). This seems to be the case also in light of the findings of this study. Student teachers' own experiences accompanied by analysis, reflection and discussion should be an organic element of pedagogical studies in order to promote their pedagogical language knowledge, and to enable them help SL learners achieve academically.

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### **Notes**

1. Students of physics and chemistry did not answer the open-ended verbal assessment task, so the number of informants is 203.
2. More information on the CEFR and the assessment scale is available here: [http://www.coe.int/t/dg4/linguistic/cadre1\\_en.asp](http://www.coe.int/t/dg4/linguistic/cadre1_en.asp).
3. Abbreviations in quotations refer to school subjects (see the 'Participants and data' section).

## References

- Andrews, S. 2003. "Teaching Language Awareness and the Professional Knowledge Base of the L2 Teacher." *Language Awareness* 12 (2): 81–95.
- Bailey, F., B. Burkett, and D. Freeman. 2008. "The Mediating Role of Language in Teaching and Learning: A Classroom Perspective." In *The Handbook of Educational Linguistics*, edited by B. Spolsky, and F. Hult, 606–625. Oxford: Blackwell Publishing.
- Breidbach, S., D. Elsner, and A. Young, eds. 2011. *Language Awareness in Teacher Education. Cultural-Political and Social-Educational Perspectives*. Frankfurt am Main: Peter Lang.
- Bunch, G.C. 2013. "Pedagogical Language Knowledge: Preparing Mainstream Teachers for English Learners in the New Standards Era." *Review of Research in Education* 37: 298–341.
- Cajkler, W., and B. Hall. 2011. "Teacher Education and English as an Additional Language (EAL) in Primary Schools: Perspectives from New Teachers." In *Language Awareness in Teacher Education. Cultural-Political and Social-Educational Perspectives*, edited by S. Breidbach, D. Elsner, and A. Young, 221–238. Frankfurt am Main: Peter Lang.
- Canale, M., and M. Swain. 1980. "Theoretical Bases of Communicative Approaches to Second Language Teaching and Testing." *Applied Linguistics* 1: 1–46.
- Cummins, J. 2000. *Language, Power, and Pedagogy: Bilingual Children in the Crossfire*. Clevedon: Multilingual Matters.
- de Jong, E.J., and C.A. Harper. 2005. "Preparing Mainstream Teachers for English-Language Learners: Is Being a Good Teacher Good Enough?" *Teacher Education Quarterly* 32 (2): 101–124.
- European Core Curriculum for Inclusive Academic Language Teaching (IALT): An Instrument for Training Pre- and In-Service Teachers and Educators. 2010. <http://www.eucim-te.eu/>
- Faltis, C., M.B. Arias, and F. Ramírez-Marín. 2010. "Identifying Relevant Competencies for Secondary Teachers of English Language Learners." *Bilingual Research Journal* 33: 307–328.
- Fillmore, L.W., and C.E. Snow. 2002. "What Teachers Need to Know about Language." In *What Teachers Need to Know about Language*, edited by C.T. Adger, C.E. Snow, and D. Christian, 7–54. Washington, DC: Center for Applied Linguistics; McHenry, IL: Delta Systems.
- Franson, C. 2007. "Challenges and Opportunities for the Teaching Profession: English as an Additional Language in the UK." In *International Handbook of English Language Teaching*, edited by J. Cummins, and C. Davison, 1101–1112. New York: Springer.
- Galguera, T. 2011. "Participant Structures as Professional Learning Tasks and the Development of Pedagogical Language Knowledge among Pre-Service Teachers." *Teacher Education Quarterly* 38: 85–106.
- García, O. 2008. "Multilingual Language Awareness and Teacher Education." In *Encyclopedia of Language and Education* (2nd ed.), edited by J. Cenoz, and N.H. Hornberger, 385–400. New York: Springer.
- Gibbons, P. 2007. "Mediating Academic Language Learning Through Classroom Discourse." In *International Handbook of English Language Teaching*, edited by J. Cummins, and C. Davidson, 701–718. New York: Springer.
- Gibbons, P. 2009. *English Learners' Academic Literacy and Thinking. Learning in the Challenge Zone*. Portsmouth: Heinemann.
- Guthrie, J.T. 2004. "Teaching for Literacy Engagement." *Journal of Literacy Research* 36 (1): 1–30.
- Hsieh, H-F., and S.E. Shannon. 2005. "Three Approaches to Qualitative Content Analysis." *Qualitative Health Research* 15 (9): 1277–88.
- Jones, P., and H. Chen. 2012. "Teachers' Knowledge about Language: Issues of Pedagogy and Expertise." *Australian Journal of Language and Literacy* 35 (1): 147–168.
- Kilpi-Jakonen, E. 2011. "Continuation to Upper Secondary Education in Finland: Children of Immigrants and the Majority Compared." *Acta Sociologica* 54 (1): 77–106.
- Korpela, H. 2006. *Suomi tai ruotsi toisena kielenä -opetuksen järjestäminen perusopetuksessa 2005. Opetushallituksen selvitys* [The Instruction of Finnish or Swedish as a Second Language in Basic Education in 2005. A Report of the National Board of Education]. Helsinki: Opetushallitus.
- Kuusela J., A. Etelälähti, Å. Hagman, R. Hievanen, K. Karppinen, L. Nissilä, U. Rönnerberg, and M. Siniharju. 2008. *Maahanmuuttajaoppilaat ja koulutus – tutkimus oppimistuloksista, koulutusvalinnoista ja työllistämisestä* [Migrant Students and Education – A Study of Learning Outcomes, Educational Choices and Employment]. Helsinki: Opetushallitus.

- Lee, O., H. Quinn, and G. Valdés. 2013. "Science and Language for English Language Learners in Relation to Next Generation Science Standards and with Implications for Common Core State Standards for English Language Arts and Mathematics." *Educational Researcher* 42 (4): 223–233.
- Lucas, T., and J. Grinberg. 2008. "Responding to the Linguistic Reality of Mainstream Classrooms. Preparing All Teachers to Teach English Language Learners." In *Handbook of Research on Teacher Education. Enduring Questions in Changing Contexts*, edited by M. Cochran-Smith, S. Feiman-Nemser, D.J. McIntyre, and K.E. Demers, 606–636. New York: Routledge.
- Lucas, T., and A.M. Villegas. 2011. "A Framework for Preparing Linguistically Responsive Teachers." In *Teacher Preparation for Linguistically Diverse Classrooms: A Resource for Teacher Educators*, edited by T. Lucas, 55–72. New York: Routledge.
- Miles M.B., and A.M. Huberman. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*. Thousand Oaks, CA: Sage.
- Mohan, B., C. Leung, and C. Davison, eds. 2001. *English as a Second Language in the Mainstream: Teaching, Learning and Identity*. New York: Longman.
- Moje, E.B. 2007. "Developing Socially Just Subject-Matter Instruction: A Review of the Literature on Disciplinary Literacy Teaching." *Review of Research in Education* 31: 1–44.
- Mora, J.K. 2000. "Staying the Course in Times of Change. Preparing Teachers for Language Minority Education." *Journal of Teacher Education* 51 (5): 345–357.
- Mortimer, E., and P. Scott. 2003. *Meaning Making in Secondary Science Classrooms*. Maidenhead: Open University Press.
- Nieto, S. 2000. "Placing Equity Front and Center. Some Thoughts on Transforming Teacher Education for a New Century." *Journal of Teacher Education* 51 (3): 180–187.
- Patton, M.Q. 2002. *Qualitative Research and Evaluation Methods*. 3rd ed. Thousand Oaks, CA: Sage.
- Peacock, M. 2001. "Pre-Service ESL Teachers' Beliefs about Second Language Learning: A Longitudinal Study." *System* 29 (2): 307–332.
- Pettit, S.K. 2011. "Teachers' Beliefs about English Language Learners in the Mainstream Classroom: A Review of the Literature." *International Multilingual Research Journal* 5: 123–147.
- Quinn, H., O. Lee, and G. Valdés. 2012. *Language Demands and Opportunities in Relation to Next Generation Science Standards for English Language Learners: What Teachers Need to Know*. Stanford, CA: Stanford University, Understanding Language Initiative at Stanford University.
- Robinson, P.J. 2005. "Teaching Key Vocabulary in Geography and Science Classrooms: An Analysis of Teachers' Practice with Particular Reference to EAL Pupils' Learning." *Language and Education* 19 (5): 428–445.
- Schleppegrell, M.J., and C.L. O'Hallaron. 2011. "Teaching Academic Language in L2 Secondary Settings." *Annual Review of Applied Linguistics* 31: 3–18.
- Suni, M., and S. Latomaa. 2012. "Dealing with Increasing Linguistic Diversity in Schools: The Finnish Example." In *Dangerous Multilingualism: Northern Perspectives on Order, Purity and Normality*, edited by J. Blommaert, S. Leppänen, P. Pahta, and T. Räisänen, 67–95. Basingstoke: Palgrave Macmillan.
- van Lier, L., and A. Walqui. 2012 (cited in Bunch 2013). "How Teachers and Educators Can Most Usefully and Deliberately Consider Language." Paper presented at the Understanding Language Conference, Stanford, CA.
- Walqui, A. 2006. "Scaffolding Instruction for English Language Learners: A Conceptual Framework." *The International Journal of Bilingual Education and Bilingualism* 9 (2): 159–180.
- Walqui, A., and L. van Lier. 2010. *Scaffolding the Academic Success of Adolescent English Language Learners. A Pedagogy of Promise*. San Francisco, CA: WestEd.

**Appendix 1. Writing samples**

Sample 1. Message to the online shop

Hei!  
 olen Maija N.  
 Minä olen ostanut teidän verkosta + paitan, paita  
 on minulle liian pieni, ja sen väri ei ole sama  
 väri jossa teidän mainoksessa oli.  
 Haluaisin uusi paitan ja saman värin jossa mainoksessa on, kiitos  
 Hyvää jatkoo!!!

Hello!

I am Maija N.

I bought a T shirt from your website, the shirt  
 is too small for me, and its colour isn't the same  
 colour that was in your advertisement.

I would like a new shirt and the same colour that's in the advertisement, thank you

All the best!!!

Sample 2. Argumentative text

Kännykät koulussa pois.  
 Jos luokassa soi kännykkä se  
 häiritsee muita lapsia. On tärkeä  
 että kännykät on kiinni. Siksi että  
 on rauha luokassa, Tai että saa  
 täähtä. Se on tärkeää.

Mobile off at school.

If the mobile rings in the classroom it  
 disturbs other children. It's important  
 that the mobile is switched off. So that  
 it's peaceful in the classroom. Or so that you get  
 stars. It's important.



## II

### **NEGOTIATING LANGUAGE ACROSS DISCIPLINES IN PRE-SERVICE TEACHER EDUCATION**

by

Eija Aalto & Mirja Tarnanen, 2017

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Eija Aalto\* and Mirja Tarnanen

## Negotiating language across disciplines in pre-service teacher collaboration

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**Abstract:** In multilingual learning settings, in order to provide optimal learning conditions for all learners and support both disciplinary and language knowledge development, subject teachers need knowledge on and understanding of how language is used to construct meanings in their discipline and how to scaffold learning from the premise of learners' current skills. In this article, we report a descriptive case study of two teaching interventions carried out in pre-service subject teacher practice. Student teachers of science and ethics collaborated with student teachers of Finnish language and literature to plan and implement thematic units that focused on particular disciplinary phenomena and the language and project skills needed in exploring those phenomena in a multilingual and multicultural teaching setting. Audio-recorded planning sessions and interviews of teacher students were analysed using thematic analysis and discourse analysis to identify emerging discourses reflecting their pedagogical language knowledge. The student teachers seemed to approach language mainly as bounded sets of linguistic resources, and various means for meaning-making were used to a large extent separately without strategic consideration. Spoken language in particular was unconscious, unanalysed, and considered a self-explanatory means for meaning-making.

**Keywords:** literacy education, teacher education, disciplinary language, multilingual education, language across curriculum, content and language integrated learning

**Zusammenfassung:** Um in multilingualen Lernsettings allen Lernenden optimale Lernbedingungen zu ermöglichen und sowohl die fachliche als auch sprachliche Wissensentwicklung zu unterstützen, benötigen Fachlehrkräfte einerseits Wissen und Verständnis darüber, wie Sprache verwendet wird, um Bedeutungen in ihrem Fach zu konstruieren, aber andererseits auch darüber, wie Lernen unter der Prämisse der gegenwärtigen Kompetenzen der Lernenden aufgebaut wird. In

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diesem Artikel berichten wir über eine deskriptive Fallstudie von zwei Unterrichtsversuchen, die in der Fachlehrerausbildung durchgeführt wurden. Lehramtsstudierende der Naturwissenschaft und Ethik arbeiteten mit Lehramtsstudierenden der finnischen Sprache und Literatur zusammen, um thematische Einheiten zu planen und umzusetzen, die sich auf bestimmte fachliche Phänomene und solche Sprach- und Projektfertigkeiten konzentrierten, die für die Erforschung dieser Phänomene im mehrsprachigen und multikulturellen Unterrichtsrahmen erforderlich waren. Planungssitzungen und Interviews der Lehramtsstudierenden wurden aufgenommen und anhand thematischer Analyse und Diskursanalyse analysiert, um aufkommende Diskurse zu erkennen, die ihr pädagogisches Sprachwissen widerspiegeln. Die Lehramtsstudierenden schienen sich der Sprache hauptsächlich im beschränkten Rahmen sprachlicher Ressourcen zu nähern und die verschiedenen Mittel für die Bedeutungsbildung wurden größtenteils ohne gezielte Betrachtung getrennt verwendet. Speziell die gesprochene Sprache war ein unbewusstes, nicht analysiertes und sich selbsterklärendes Mittel für die Bedeutungsbildung.

**Resumen:** En entornos de aprendizaje multilingües, el proveer condiciones óptimas de aprendizaje para todos los alumnos y el apoyar tanto el desarrollo de conocimientos disciplinarios como los de lenguaje, requiere que los profesores posean conocimiento y comprensión acerca de cómo se usa el lenguaje para construir significados en su asignatura y cómo andamiar el aprendizaje partiendo de las habilidades actuales de los alumnos. Este artículo funge como reporte de un estudio descriptivo de caso de dos intervenciones pedagógicas realizadas por estudiantes de magisterio en la práctica docente. Futuros profesores de ciencias y ética colaboraron con otros de lengua finesa y literatura para planificar e implementar unidades temáticas que se enfocaron en ciertos fenómenos disciplinarios y en las habilidades lingüísticas y de elaboración de proyectos requeridas para explorar esos fenómenos en un marco multilingüe y multicultural. Las sesiones de planificación grabadas en audio y las entrevistas de los estudiantes de magisterio fueron analizadas usando el análisis temático y el análisis del discurso con la finalidad de identificar discursos emergentes que reflejaran su conocimiento del lenguaje pedagógico. Los estudiantes de magisterio parecían considerar el lenguaje principalmente como conjuntos limitados de recursos lingüísticos, y se usaban varias maneras de construcción de significados en gran medida aisladas de consideración estratégica. La lengua hablada, en particular, fue una manera inconsciente, no analizada y autoexplicativa para construir significados.

**Palabras clave:** educación de lectoescritura, formación docente, lenguaje disciplinar, educación multilingüe

## 1 Introduction

As a result of mobility in recent times, multilingual, multicultural, and multi-modal classes seem to be the norm rather than the exception in most contemporary societies (see e.g., Hornberger 2009). In this article, we focus on teacher education in Finland and investigate what kind of readiness pre-service subject teachers have based on their understanding of language for teaching in multilingual settings and consider how they could be better prepared to promote learning for all students across the curriculum.

As a consequence of the increased number of migrant students, especially during the 2010s (see Statistics Finland 2017), Finnish schools currently face new challenges and opportunities in integrating students with migrant backgrounds and implementing good pedagogy for all. The need for language and culture sensitive pedagogy also received attention in the recently revised National Core Curriculum for Basic Education in which cultural diversity and language awareness is introduced as one of seven cornerstones for the development of school culture (NBE 2014; also Skinnari & Nikula in the same publication). Furthermore, support for pupils' linguistic and cultural identities and the development of their mother tongues have been set as explicit aims (NBE 2014). At the same time, a recent national evaluation report (Pirinen 2015) shows that only about half of education providers set objectives (e.g., orderliness of language education or promoting multiculturalism) in their educational strategies, and slightly less than half were exercising such practices (e.g., teaching Finnish/Swedish as a second language or teaching learners' native/heritage languages). In addition, the PISA 2012 assessment on achievement in mathematics indicated that students with migrant backgrounds achieve significantly lower results than other students. On average, when translating the test scores on to an educational timescale, first-generation immigrants lag approximately two school years behind, and second-generation immigrants are still slightly less behind other students (Harju-Luukkainen, Nissinen, Sulkunen, Suni and Vettenranta 2014). As in-service teachers have themselves expressed the need to improve their expertise in teaching in culturally and linguistically diverse settings at all educational levels (Kuukka, Ouakrim-Soivio, Paavola, and Tarnanen 2015), it is obvious that teacher expertise should be developed in a systematic way to enhance teachers' language awareness and abilities to use diverse linguistic resources for meaning-making and to negotiate abstract academic contents with students by building on their diverse language practices (García and Sylvan 2011).

## 2 Promoting learning across disciplines

### 2.1 Meaning-making through translanguaging and collaborative learning

This study draws on Vygotsky's (1978) insight into the dialectical relationship and interrelatedness of language and thought. Vygotsky argued that the development of mental processes is mediated and that language is the key mediating tool of the human mind. When we use language—spoken or written—we do not only convey a message, rather language use mediates our cognition of experience and knowledge, i.e., it serves as a tool of mind and thus, the very material of thought. Through language, we make sense of our meanings both to ourselves and to others. According to Vygotsky, a cognitive problem can be solved through collaborative dialogue by speaking with another person or through private speech—when a person speaks aloud, writes or whispers to themselves. In all these cases, language is used to make meaning and mediate a solution to the problem (Vygotsky 1978).

In this study, we are particularly interested in the interplay between language and content in subject teaching and the spaces for meaning-making that student teachers create for learners to promote the learning of language and content. In other words, what kind of opportunities do student teachers provide in their lessons for learners to make sense of their understandings, negotiate meanings and construct knowledge. Research evidence suggests that language and content are inseparable and learned in parallel, and that verbalizations play a crucial role in content learning (e.g., Cummins 2001; Swain 2006; Gajo 2007; Mortimer and Scott 2003; Chi, Leeuw, Chiu, and LaVancher 1994; see also Dalton-Puffer 2011; Meyer, Coyle, Halbach, Schuck, and Ting 2015; Nikula, Dalton-Puffer, Llinares, and Lorenzo 2016). Indeed, from a sociocultural perspective language and content cannot be separated as subject knowledge is bound to and expressed in particular terminology (Mortimer and Scott, 2003; Gajo, 2007). Therefore, for pedagogical practice to be effective it should provide opportunities for learners to negotiate meaning and knowledge construction as individuals and as a learning community. We approach this issue of disciplinary language learning and content meaning-making through two concepts, *translanguaging* and *collaborative learning*, which both originate from Vygotsky's work (1978). We introduce these concepts in more detail in the following section.

The term *translanguaging* refers to linguistic practices in which meaning is made by using signs flexibly and 'meaning making is not confined to the use of languages as discrete, enumerable, bounded sets of linguistic resources' (Blackledge, Creese and Takhi 2013: 192). The term has been used particularly in the

fields of bilingual performance and bilingual pedagogy (the origin of the term is traced in Canagarajah 2011 and Lewis, Jones, and Baker 2012). Translanguaging, however, can also refer to the way in which scientific concepts can be introduced in everyday language and then reframed in scientific talk (Lemke 1989; Mortimer and Scott, 2003). As a concept, translanguaging does not treat language as a distinct code in use but rather points to the heterogeneity of signs and forms in meaning-making and their nature as a social resource used to socially identify self and others (García and Kano 2014). The multiple competencies of multilingual learners are seen as the foundation to efficient learning across the curriculum. Pedagogically, the crucial issue is, how are individuals engaged in using, creating, and interpreting various signs for communication.

García (2009: 2011) defines translanguaging as ‘engaging in bilingual or multilingual discourse practices’. In the multilingual classroom those discourse practices may cover, for instance, use of languages, registers, varieties, and modes (written, spoken). Other semiotic resources such as visualizations and various artefacts (materials, textbooks and instruments) can also be used in meaning-making with different modes being combined to present and explore different concepts (for collaboration and the use of artefacts as a means of mutual meaning-making, see Vygotsky 1978). These different semiotic resources, including different languages, comprise linguistic repertoires that can be drawn on flexibly in the classroom and offer a potential for meaning-making and student engagement (see, e.g., Cummins 2008b; Probyn 2015; Creese and Blackledge 2015). In addition to education-related research literature, the relationship of language and content in the disciplinary meaning-making process has been extensively explored in the field of content and language integrated learning (CLIL) (e.g. Dalton-Puffer, Smit, and Nikula 2010; Llinares, Morton, and Whittaker 2012; Meyer, Coyle, Halbach, Schuck, and Ting 2015; Nikula, Dalton-Puffer, Llinares, and Lorenzo 2016). The findings and propositions of these parallel research fields are very much in line with each other.

On a pedagogical level, translanguaging has been referred to with different terms, meaning slightly different things: García and Wei (2014) refer to *translanguaging pedagogy*; Probyn (2015) to *pedagogical translanguaging*, whereas Gibbons (2006) uses the term *bridging discourses*, and Canagarajah (2013) speaks of *translingual practice*. Drawing on these different conceptualizations, we recognize that translanguaging serves as a tool in the externalization of learners’ ideas and in building their meaning-making potential as independent thinkers and autonomous learners when making meanings in collaboration. Translanguaging is expected to promote deeper and fuller understanding of the content but also develop cross-linguistic awareness, flexibility and competence to use various language practices competently (Baker 2011; Lewis et al. 2012; García and Wei

2014: 121). It also guides learners in demonstrating their understandings of the phenomena to be learned. In all learning, the risk of technical memorizing and parroting of concepts and their definitions is high, but translanguaging can be used as a tool to encourage students to really understand the content knowledge (see also Robinson 2005; Baker 2011: 289; Meyer, Halbach, and Coyle 2015; Meyer, Coyle, Halbach, Schuck, and Ting 2015).

Collaborative learning, rooted in Vygotsky's sociocultural theory (Vygotsky 1978; see also Dillenbourg 1999), provides students with opportunities to develop their cognition and expand their conceptual potential by communicating with peers. Sociocultural theory views learning as an inherently social phenomenon in which interaction constitutes the learning process and language serves as the mediating tool, regulating the internalization of the content and transforming it from the social to individual level (Vygotsky 1978; Lantolf and Thorne 2006; see also Lin 2015). Optimally, students can work with peers that are, at least in some respect, more capable and hence scaffold each other's personal development through the Zone of Proximal Development (ZPD, Vygotsky 1978). Therefore, individuals are interdependent when they co-construct knowledge through the mutual social process of learning (Lin 2015). In the subject classroom, as learners draw on and share different linguistic resources or repertoires, they are mutually constituting understanding of the content and the academic language skills needed in verbalizing and describing the phenomenon they are working with.

Dillenbourg (1999: 4–5) claims that in the literature, collaborative learning has been understood in two distinctive ways: as a teaching method or as a learning mechanism. He (1999: 5) argues that collaborative learning is neither a method nor a mechanism, but rather a kind of 'social contract' that requires engagement and contribution of all participants. Optimally, he claims, interaction among learners generates activities that trigger learning mechanisms and enhance higher-order thinking, deep learning, and knowledge internalization. As interaction ideally invites participants to negotiate, explain, clarify, mutually adjust, agree, and disagree, these activities should trigger knowledge construction and internalization. However, it is by no means self-evident that those mechanisms and collaborative knowledge construction come into operation in any collaborative interactions (see also Van den Bossche, Gijsselaers, Segers, and Kirschner 2006; Summers and Volet 2010). The ability to learn together depends on the quality of the interaction in the group (e.g., Barron 2003). According to Hesse, Care, Buder, Sassenberg, and Griffin (2015), it is possible to teach and develop social skills such as participation, perspective taking, and social regulation through collaborative learning, raising the question, therefore, of how to trigger learning mechanisms in order to promote learning.

## 2.2 Integrating language and content

In this study, student teachers' pedagogical thinking on translanguaging and collaboration in subject learning is linked to their *pedagogical language knowledge*, thus how they see the role of language, language use and language learning in relation to content studies. Bunch (2013: 307) defines the concept of pedagogical language knowledge as 'knowledge of language directly related to disciplinary teaching and learning and situated in particular (and multiple) contexts in which teaching and learning take place' (for parallel concepts proposed, see O'Brien et al., 1995; Lucas and Grinberg 2008; Love 2009; Faltis, Arias, and Ramírez-Marín 2010; Schleppegrell and O'Hallaron 2011; Pettit 2011; Bunch 2013; Aalto and Tarnanen 2015).

The foundation for subject teachers' pedagogical language knowledge lies in developing abilities to observe the role and characteristics of oral and written language use in accordance with situation, audience and genre in disciplinary learning (e.g., Lemke 1990; Unsworth 2001). That approach leads us to adopt a distributed view of language (e.g., Zheng and Newgarden 2012) in which language is not primarily recognized as a code of linguistic structures and verbal patterns, but rather as a social institution (see also Kravchenko 2007) that serves to coordinate behaviour in real time and community across time and space (see also *Language as an action*, Walqui and van Lier 2010; Bunch 2013). Therefore, teachers' pedagogical language knowledge refers to the ability to analyse disciplinary language use *and* involves pedagogical knowledge and skills needed to develop meaningful activities that engage students' interest, promote collaborative meaning-making, and foster both language growth and content learning (see also Canale and Swain 1980; Bunch 2013).

There are a number of studies exploring mainstream teachers' expertise in adopting language-sensitive pedagogy. In order to link new language and content learning with students' prior experiences and learning, the teacher should have an understanding of the learners' linguistic and cultural histories both within and beyond school, e.g., language and literacy levels in various languages (see also, Cummins 2000, 2001). It has been pointed out that teachers' abilities to locate and leverage relevant linguistic and cultural information about their students is often limited and even overlooked (de Jong et al. 2013). Lack of information easily leads to vague and imprecise evaluative feedback and failures in setting language and literacy objectives for learning. It also hinders teachers' abilities to identify the linguistic challenges that learners face when studying academic content (de Jong et al. 2013: 91–92; Faltis et al. 2010; Pettit 2011).

Research highlights teachers' lack of knowledge about the fundamental role of language in disciplinary learning. It has been established that teachers are



often unable to analyse the phases of language development or to deliberately address the specific language and literacy demands of their various learning contexts and the texts and textual practices they deploy in their teaching (May and Smyth 2007; Valdes et al. 2005: 127; Coady et al. 2011; de Jong et al. 2013). Various studies have reported the undervalued and invisible role of language in meaning-making and limited focus on vocabulary and key terms alone (Creese 2005, 2010; Gleeson 2010; Zwiers 2007; Scarcella 2003; Aalto and Tarnanen 2015). Valdes et al. (2005: 126–127; see also Love 2009) claim that most teachers use spoken language unconsciously. According to Gleeson (2010: 160–161), subject teachers hardly set language learning objectives and, in her study, any focus on academic language seemed to be incidental rather than planned or strategically considered. However, teachers recognized writing explanations in science as a skill that needs explicit teaching, although they did not perceive it as a language-related skill but a subject-related skill. In Gajo's (2007) study on the integrated nature of content and language, subject teachers were more particular than language teachers regarding the use of language in science lessons. These examples from Gajo and Gleeson both point to the fundamental intertwining of language and content knowledge. For subject teachers' pedagogical decision-making, however, although understanding the role of language with regard to the nature of their subject is one important consideration, understanding how students learn a new language in school is another important consideration. Moreover, according to Gleeson (2010) teachers might well be uncertain about what aspects of language to teach and how to teach language and may even misconstrue language teaching as simplifying, boring, and unconnected to subject content (Gleeson 2010: 98, 108, 160–161, 188–193) or as the domain of language, not subject, teachers (Moate, 2011).

In this particular study, we focus on the collaborative meaning-making and translanguaging spaces student teachers create for learners during their own collaborative process of planning and conducting a study unit in which language and content learning are integrated. Translanguaging is seen as a pedagogical practice that enables students to learn through a multi-layered process of meaning-making in which students are invited and required to develop their understandings of the phenomena to be learned through different modes of communication. The pedagogical continuum of activities in which students draw on relevant linguistic media promotes the learning of phenomena in a tight link to the disciplinary language through which it is mediated. Optimally, those modes are used in a goal-oriented way to ensure real understanding of the phenomenon and the ability to explain it to other people.

Collaborative learning has a two-fold role in this study: student teachers are themselves learning through their collaborative planning process but they are

also expected to provide the learners in their classrooms with opportunities to learn through collaboration. In this article, though, collaborative learning is regarded as a tool for exploring student teachers' ways of deploying student interaction, student voices, and collaborative meaning-making in designing their own pedagogical practice (social perspective on collaboration, e.g., Van den Bossche et al. 2006).

## 3 Methods

### 3.1 Research questions

This study explores two collaborative, cross-disciplinary teaching interventions in which student teachers integrate content and language learning in a multilingual and multicultural setting. Our aim is to investigate student teachers' understandings and collaborative process in order to develop our practices in teacher education. The focus of this study is on the planning phase of the interventions and on the following questions:

1. What kinds of meanings are given to language and language use in the context of subject teaching? What kind of pedagogical language knowledge is reflected in participants' planning discussion?
2. What kind of space for meaning-making is created for students in the planning discussions of the two interventions?

### 3.2 Participants, data, and setting

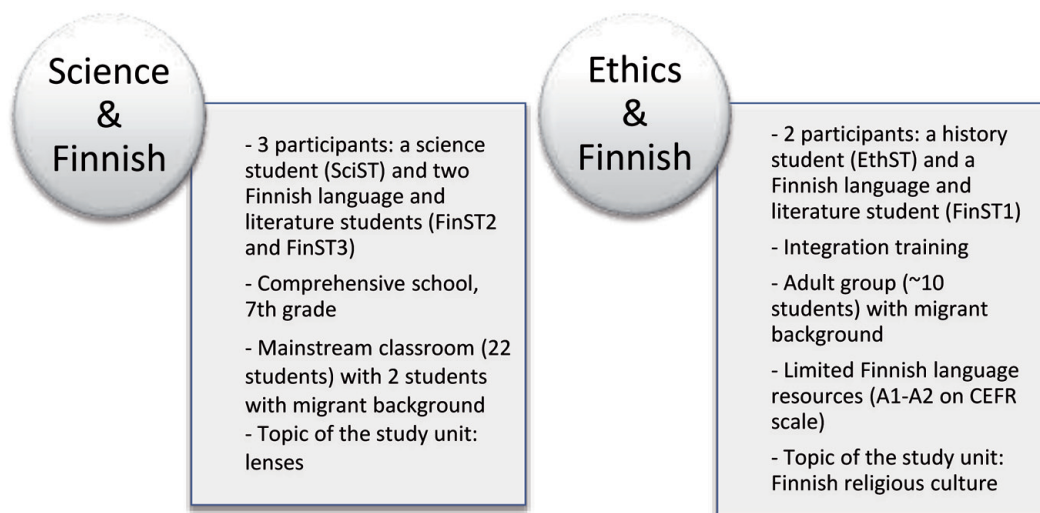
The data was collected from two teaching interventions in which pre-service teacher teams planned and conducted a study unit that integrated content subject and Finnish language in multilingual settings. The participants were Finnish fourth-year subject teacher students. To qualify as subject teachers, all students across the curriculum need to complete a Master's degree, which includes at least 60 ECTS of teachers' pedagogical studies provided by departments of teacher education. Student teachers volunteered to participate in this optional teaching practice in order to gain more experience of teaching and learning in multilingual and multicultural settings. Within their pedagogical studies, they had earlier completed a study unit on subject-specific pedagogical practices from the viewpoint of linguistic and cultural diversity in the classroom. Therefore, they were, in principle, aware of how to build on learners' prior skills and scaffold learning and develop language-sensitive pedagogical practices. The study unit was taught by

one of the authors of this article. Although the study unit was practically-oriented, due to limited resources the student teachers had not had the opportunity to apply the approach introduced in the earlier course into practice.

The interventions are summarized in Figure 1. They were rather different from each other, as the science-Finnish intervention (hereafter *science intervention*) took place in a mainstream classroom in a Finnish comprehensive school with only two students with migrant backgrounds, and the ethics-Finnish intervention (hereafter *ethics intervention*) was conducted in an adult migrant group as part of an integration course. In both settings, the language of instruction was Finnish, but students' level of Finnish proficiency varied significantly. The language proficiency of most of the students in integration training could be characterized as beginner (A1–A2 on the CEFR scale), whereas in the science intervention, both students with migrant backgrounds were able to study all the school subjects in the mainstream classroom, although one of them was clearly still struggling with both speaking and writing. In addition, the native speakers of Finnish in the science intervention varied clearly in terms of their disciplinary literacy skills. Students' language skills were not tested as this goes beyond the purpose of this study.

In the interventions, student teachers were instructed to plan and enact a study unit in which they integrated Finnish language and content knowledge studies. In the science intervention, they agreed on the topic (optical lenses) with the teacher of the school, whereas in the ethics intervention, they chose to focus on the characteristics of Finnish religious culture. The ethics student teacher was, alongside her studies, under contract to the institute in which the intervention took place and had previously taught the same course by herself but without a specific language focus.

The two interventions differ a lot in terms of multilingualism and multiculturalism, which, naturally, has an impact on the student teachers' approach and action in their planning and teaching. However, the challenge of disciplinary literacy does not concern only L2 learners but also native speakers of the language of schooling and, arguably, integrating language and content should promote all learners' learning.

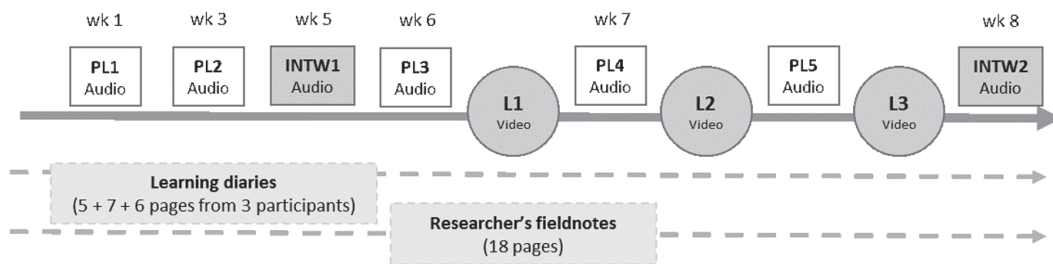


**Figure 1:** Two interventions in two different multilingual and multicultural settings. Student teachers' acronyms used in the data excerpts are given in brackets on the participants' row.

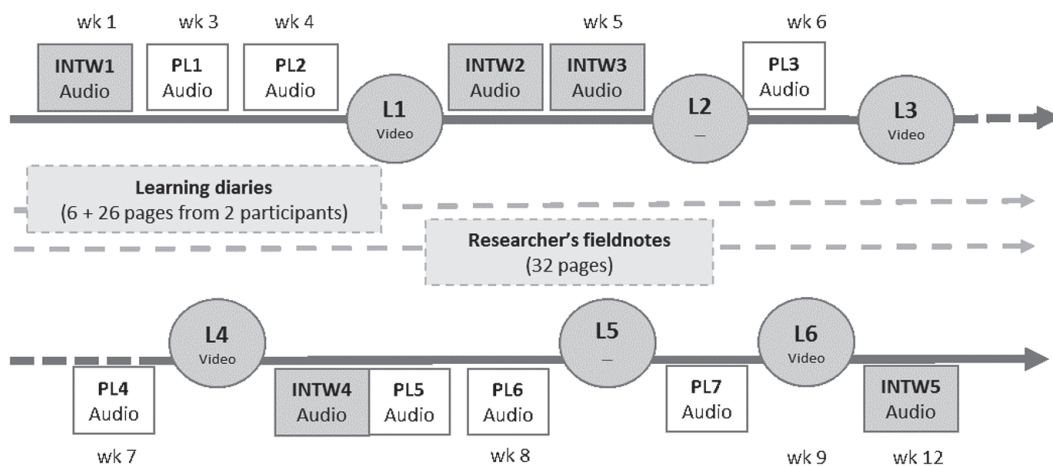
The data consist of audio-recorded planning sessions (PL) and group interviews (INTW), video-recorded lessons<sup>1</sup> (L), participants' individual diaries, and field-notes made by the researcher. The data collection process of each of the interventions is illustrated in Figures 2 and 3. In the science intervention, the planning sessions lasted 60–125 minutes (total 445 min) and group interviews 80 and 90 minutes (total 170 min). In the ethics intervention, planning sessions lasted 15–105 minutes (total 495 min) and group interviews 20–140 minutes (total 285 min). The classroom lessons lasted 90 minutes.

The analysis in this particular study is based on the data from the planning sessions, group interviews, and learning diaries and focuses on the planning and reflection of teaching. The audio-recordings were transcribed verbatim, and all of the data was first anonymised and then coded and analysed using qualitative data analysis software, ATLAS.ti. As the main objective was to analyse what kinds of discourses towards language the student teachers collaboratively construct in their talk and not to examine the detailed construction of talk, more precise transcription methods were not employed.

<sup>1</sup> Lessons 2 and 5 were not video-recorded: lesson 2 was a class trip, lesson 5 for technical reasons.



**Figure 2:** Timeline of data collection and data of the science intervention.



**Figure 3:** Timeline of data collection and data of the ethics intervention.

In this study, the analysis data consisted of rambling, variable, and sometimes even internally inconsistent discussions. The analysis process was not linear but iterative, constantly moving back and forth between the parts and the whole, the data and the theory. The coding and analyses of student teachers' collective meaning constructions were started with the thematic analysis (Braun and Clarke 2006) and finalized with a discursive approach that focused on the development of themes across the utterances in the discussion and did not aim to analyse linguistic elements on a detailed local level (Gee and Handford 2012: 5).

To begin with, the whole data corpus was read and re-read several times in order to get an overall picture of the data. The transcribed audiotapes were listened through again, and corrected. The thematic analysis process adopted in this study can be described as inductive and semantic (Braun et al. 2006). An open coding scheme was used to identify frequently occurring language-related themes, commonalities, and prevailing patterns in the data without paying explicit attention to theory or findings of the previous research. The *semantic approach* refers to an analytic process that proceeds from description to interpretation and theorization (Braun et al. 2006: 84). After identification of initial codes, the language-related

accounts were thematized in order to recognize prevailing patterns of thinking about meaning-making within the disciplinary context. Meanings and relevance given to language and language use were explored and compared between the two interventions in order to create an analytical approach that would cater to both interventions. The discourses on language use in action were then explored through the lens of what kind of space for meaning-making they provided for the learners. Finally, the findings were studied in relation to what discourses seemed to be informing and defining what student teachers said about language and meaning-making (Lankshear and Knobel 2004: 297; Kress 1985).

## 4 Findings

In the following, we will first report on what meaning-making resources student teachers planned to put into use and action in their study units. Thereafter, we will discuss the interplay and tensions between different meaning-making resources and what kind of translanguaging practices were developed and implemented in the interventions. Finally, we will consider how the voices of the target learners were represented in meaning-making and how students were engaged in using, creating, and interpreting various signs of communication. In the discussion, we will address what kind of pedagogical language knowledge is reflected in the participants' planning discussions and the implications this has for the development of teacher education.

### 4.1 What kinds of meanings are given to language and language use in the context of subject teaching?

Student teachers did not have any prior experiences of integrating language and content teaching in practice. Even so, in both interventions, their discourses echoed the integration as an ideal pedagogical approach. As FinST3 puts it in her diary before the first planning meeting of the science team:

- (1) *I'd like to hold on to the idea that teaching language and science really is integrated in a way that they cannot be separated from each other during the entire lesson. No 'Finnish parts and science parts' but a unified whole. So that we really would cross the subject borders and think creatively. (Science\_diary\_FinST3: 14)<sup>2</sup>*

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<sup>2</sup> The translations of excerpts are not literal but aim to transmit the tone and speaking style of the participants.

In excerpt 1, FinST3 enthusiastically emphasized the need to cross subject borders and treat language and content as a unified whole. The idea is, however, expressed at an abstract level without articulation of what integration means in concrete terms.

Science and ethics differ significantly as school subjects. Particularly, the knowledge structure in natural sciences has been characterized as hierarchical, whereas humanities are more horizontal in nature (Kuteeva et al. 2014). Science explores natural scientific phenomena with explicitly defined core concepts, whereas ethics deploys a more humanistic idea of knowledge and is more speculative by nature. In science, disciplinary language appears, for example, in textbooks and concept definitions. In ethics, disciplinary language is more difficult to determine, as it can refer to language used in a variety of texts ranging from religious rituals and the law of religious freedom to everyday ethical problems. In all, disciplinary literacy involves more than simply reading and writing the disciplines; knowledge construction, negotiation, and dissemination using a wide range of semiotic resources are included in the term (Kuteeva et al. 2014).

Despite this fundamental difference, in both interventions, disciplinary language is understood mainly as **terms or vocabulary** (cf. CALP in Cummins 2008a). In the science intervention, SciST set the learning goal for the last lesson emphasizing the crucial role of terms in the core of the subject:

- (2) SciST: *Well, what about sort of mastery of terms or concepts as – - after all, all this revolves around individual concepts – -* (Science\_PL\_5: 1415)

The vocabulary played, as is perhaps anticipated, an even more crucial role in meaning-making in the ethics intervention, as the learners' proficiency in Finnish was very limited. Throughout the process, student teachers treated the vocabulary bias as a problem but did not seem to seriously try to widen the approach to meaning-making. Moreover, even texts were perceived as words, and in the first planning session student teachers constructed a text on the basis of a list of verbs they wanted to teach. In the final interview, they reflected on their focus on words as follows:

- (3) EthST: *I think we concentrated too much on new words, I don't know, but I was wondering if we somehow waffled too much*  
 FinST1: *I don't know about new words or not new words*  
 EthST: *or everything is just in some way automatically new words*  
 FinST1: *I somehow just sort of mean that we really concentrated a lot on the words in the first place because there are so many of them that they don't know in the language. But how else can you deal with the content of ethics, so I don't really know, on the other hand, in a way I don't think in regard to that content we did anything silly*  
 EthST: *Right right* (Ethics\_INTW\_5: 321)

In excerpt 3, EthST signals dissatisfaction with the emphasis on vocabulary in their lesson and seems to wonder why new content for learning automatically means focusing on words. As for FinST1, she justifies the focus on words by arguing that it is the only way content can be dealt with. At this point, she clearly perceives disciplinary language as words. This stance or perspective is also present in her learning diary as she confirms her enthusiasm for vocabulary teaching, since she writes rather emotionally after their first class how much she had enjoyed picking up new words and explaining them. Furthermore, later she states that their focus on vocabulary would be too biased for a language class but was needed for content knowledge learning. Student teachers did not seem to make an effort to explicitly analyse other features of disciplinary language use.

How were different **language modes** (speaking, writing, reading and listening), then, planned to be used in disciplinary meaning making? Generally speaking, the ethics intervention followed more second language teaching pedagogy with activities focusing on all language skills. Development of the skills was occasionally referred to in the discussions, but teaching of strategic skills and scaffolding effective reading, listening, speaking and writing remained extremely limited. For instance, in reading and listening to many texts ranging from statistics and tax deduction cards to radio programs and ads, focused on vocabulary, but how to read the text and infer meanings, the characteristics of the genre and the overall structures of the text were overlooked. In the science intervention, learners' language proficiency was higher and, therefore, language skills were taken more for granted with only reading treated as a skill to be explicitly practiced in the context of subject learning. For the first science lesson, student teachers prepared material for efficient reading of the textbook text. The activity remained unconnected though, as the later activities were not built upon the knowledge of the science text. The student teachers recognized that native speakers and second language learners share many of the same linguistic challenges in relation to listening and reading in science; however, concrete plans for supporting parallel content and language learning were minimal.

In neither intervention was writing used for knowledge construction or for developing learners' thinking skills. Rather, it was used mainly for making notes, that is, copying words and definitions formulated by the teacher. Excerpt 4 from the ethics intervention illustrates the way in which writing was perceived as a tool of learning:

- (4) FinST1: *When we would go through this together [with the students] I would look through the text one more time and pick up words from it to be written down together. We give the text to everyone but isn't it still good to write some words in the notebook?*



EthST: *mm, yes*

FinST1: *Somehow it's really stupid, but they would get to practice their writing skills*  
(Ethics\_PL\_5: 263)

In excerpt 4, the planned activity is teacher-centred as the teacher chooses the words and to focus on individual words. This represents a mechanical understanding of writing. FinST1 comments that writing words is *stupid*, but she justifies it by arguing that it is a way of practicing writing. She seems to refer to writing as a technical skill rather than a tool for expressing one's ideas and constructing new knowledge. EthST seems to go along with this idea and offers no alternative action.

In both interventions, speaking remained an invisible and unanalysed means of meaning-making. Language was, rather, implicitly embedded in many working modes. Students were, for instance, invited to work and discuss in pairs or groups, and in the science intervention they also carried out information searches online and made presentations as groups. However, those activities were not used for developing language skills in a target-oriented way; neither was students' work supported through scaffolding. In the science intervention particularly, oral explanations and all kinds of verbal reasoning were treated as self-explanatory, not as skills to be taught and developed explicitly. They were not considered powerful, systemic, pedagogical tools for meaning-making but remained an invisible resource, which, indeed, were unconsciously used. The student teachers did not often refer to *speaking*, but used expressions like *opetella piirtämään* 'learn to draw', *käydä läpi teoria* 'go through the theory', and *kokeelliset työt käydään suullisesti läpi* 'experiments are gone through orally' (PL2: 618; S3: 505). Behind all these expressions, it is often the teacher who explains actions to the students or asks the students questions and invites them to orally explain their understanding. However, in the planning talk, this explaining is not treated as a meaning-making skill that is explicitly practiced or analysed. Neither is speaking made explicit as an element in a meaning-making continuum (Gibbons 2006), although FinST3 recurrently developed the idea of comparing the two genres, everyday language and disciplinary language (cf. BICS and CALP in Cummins 2008a), by explaining a phenomenon to a friend and then formulating the same issue in an exam. Although the idea is discussed several times during the intervention, it is not elaborated further into a concrete activity nor recognized as a pedagogical technique that can be purposely used by the teacher (Lemke 1989). Neither do student teachers analyse any deeper the differences between the language used in those genres; nor do they mention how the difference could be pedagogically used for fostering learning and deeper understanding of the content.

While verbalizations did not receive much strategic attention in planning talk, student teachers planned to use other semiotic means for meaning-making. Particularly in the science intervention, drawings and other **visualizations** were given a big role. Within the topic of lenses, visualizations such as how a ray of light passes through a lens and how images are formed by a lens are crucial. How to draw them and how to conduct experiments were instructed through step-by-step procedures. Interestingly, as excerpt 5 illustrates, SciST treated visualization as a separate means for meaning-making, independent of verbalization:

- (5) SciST: *- - I think that in this chapter the most important thing ... is not the verbal issue or, I mean, about writing, but rather it is important to draw them, I mean that you can draw the lenses - - ok, it is nice if you can interpret them ready-made for you as well, but still, it's maybe even more important to be able to produce them on your own - - really, you don't even need to calculate this because you can just draw it - - and get the answer by drawing it*
- FinST3: *As long as you know the correct terms*
- SciST: *Well yes, if you know the right terms, yes. But it is necessary to use the terms, too*
- FinST3: *Yes - - but in such a way the picture on its own is not enough if you don't understand the terms*
- SciST: *No [in agreement]*
- FinST3: *so here comes the linguistic aspect (Science\_PL\_2: 505)*

SciST did not see a need to translanguaging the understanding through verbalizing; visualizing was the core means of meaning-making. In fact, different means for translanguaging were treated in isolation with little consideration of the need to combine different modes of meaning-making. As FinST3 highlighted the need to understand the terms used in the task instruction, SciST also agrees that terms are needed. In all, this discourse signals the invisibility and self-explanatory role of oral language in meaning-making. Although visualization is hardly used without any verbal explanation of what is seen in the drawing or what kind of thinking is behind it, the verbal explanation is not seen as a target and tool for learning. Even teaching how to visualize the path of a ray through a lens is done through verbal explanation, but the language used is not analysed, and the language skills needed in explaining, defining, and describing the phenomenon are not explicitly taught or made apparent.

In ethics, the use of visualizations as an artefact for translanguaging was much more limited. Pictures and symbols were used to explain individual words like names of religions or holy places, and students were asked to combine pictures and words or name places and items. In fact, the whole ethics intervention seemed to a large extent to be about simplifying language in order to make

concepts comprehensible while still holding on to relevant and accurate content. FinST1 even described her role as a transmitter who translates the disciplinary language into plain language. The emphasis here on the use of plain language reiterates its dominant role when mediating meaning and overlooks the use of other artefacts.

In both interventions, students' multilingual language resources were recognized when students independently looked for information in two languages or used an online dictionary to check the meanings of new words. However, they were not explicitly encouraged to deploy their resources, and the benefits of multilingual repertoires in meaning-making and content learning were not raised as an issue for discussion in the planning talk. The pedagogical approach promoted, thus, monolingualism.

To sum up, the student teachers aimed at adopting multiple semiotic means for meaning-making in their teaching, but translanguaging activities did not constitute a systematically planned and target-oriented continuum in either of the interventions. Rather, language remained discrete and bounded among other means of meaning-making, they were not complementary to each other (see, Blackledge et al. 2013). Clearly, the student teachers lacked the ability to analyse the features of disciplinary language use, and, therefore, language was treated as a technical element related to regular routines and customary working modes. Meaning-making skills were neither explicitly taught nor scaffolded.

## **4.2 What kind of space for meaning-making is created for students in the planning discussions of the two interventions?**

As described above, tools for meaning-making were treated as separate and did not seem to complement each other in the meaning-making continuum. In this section, we will discuss how learners were engaged in using, creating, and interpreting various signs for communication and how their voices were represented while using them. The discourses on the roles that students were given in disciplinary meaning-making tend to focus on the two poles of pedagogical tradition: student-centred vs. teacher-centred pedagogical discourse. The ways in which the student teachers position themselves and the learners, however, defines the learners' roles in meaning-making.

The student teachers' discourses clearly manifest a mutual will to promote learner-centred pedagogy. They consider aspects that could be meaningful to learners (laser operations of eyes, advertisements), working modes that activate students (ALIAS games, online information search in groups), and artefacts that

relate the topics to students' lives. However, most of the activities are teacher-led, and students' roles as meaning-makers is, to a large extent, reduced to listening to the teacher and copying notes from the board. Pair and group work are used in both the interventions, but mostly in traditional terms without supporting peer interaction and designing the task to involve real problem-solving and an authentic need for collaboration (see Dillenbourg 1999; Van den Bossche et al. 2006). Discussion skills are treated as automatic, without consideration of how they are developed in relation to subject content and disciplinary literacy skills, which currently is considered to consist of 'knowledge construction, negotiation and dissemination using a wide range of semiotic resources' (Kuteeva et al. 2014: 539). The topics to be discussed were often rather abstract and demanding (in the ethics intervention, e.g., the difference between a church and a community, the law of religious freedom and values), but students were not supported in running the discussion.

In the ethics intervention, the learning environment was reduced in many ways to making the content more comprehensible. Translanguaging was not promoted as a students' resource, but teachers seemed to do a lot of the meaning-making work for them. Optimally, however, learners could do it themselves and it would strengthen their learning. Nonetheless, the student teachers were very aware of their teacher-centred orientations to teaching all along, and they decided many times to give more space to student action. The following two excerpts are from the second interview (after two lessons) and from the fourth planning meeting (after three lessons):

- (6) EA: *Is it easy to catch what each [student] understands and thinks about the issues?*  
 FinST1: *Not what they think about them, at least, mainly because we led [the lesson] all the time (Ethics\_INTW\_2: 20)*
- (7) FinST1: *Well, some sort of discussion or something, you know... nothing where we speak, I can't speak throughout the entire lesson*  
 EthST: *Yes, and last time they sought [wanted] discussion themselves*  
 -- [talk about teacher-led dealing with the law of religious freedom]
- FinST1: *-- Well but then we'll do something else*  
 EthST: *Mmm yes. So would that be sort of the boring section after all, so we would link that to the boring part and then we should come up with something more fun. Yes. What about... do they play ALIAS type games in all the lessons?*  
 FinST1: *No... some sort of discussion activity where they can... where they somehow do something in turns (Ethics\_PL\_4: 382, 410)*

Excerpts 6 and 7 demonstrate that student teachers aimed at activating students. The talk can be interpreted to contain self-reflection and self-criticism towards their prior three lessons, in which the teachers talked incessantly or most of the time. However, FinST1's suggestion of student discussion indicates a view of interaction and collaboration primarily as a working mode rather than collaborative meaning-making and knowledge construction. In the planning discussions they do not set aims for group discussions, but treat them as a change from the mostly teacher-centred approach. Group discussions are also intended to be *more fun* than the *boring* teacher-led sections. The topics given for discussion are usually rather broad and do not require structured interaction to solve the issue, construct knowledge or shared understanding, or come to some kind of conclusion. Furthermore, the results of the group discussions are not used as materials for further elaboration.

Many scholars have defined positive interdependence between learners, equal participation, and simultaneous interaction as characteristics of collaborative learning (e.g., Lin 2015: 23). In both interventions, discussions are used more as a working mode than as a tool for collaborative meaning-making. Learners' interactions are not scaffolded or even required in a target-oriented way. Student teachers of the ethics intervention shared in the interview that learners did not support their less-achieving classmates in discussions, but even turned their backs on those with poorer Finnish skills (Ethics\_INTW\_4: 62). Similarly, in the poster work, learners avoided interaction as they preferred to do the task individually. This was possible because the activity did not necessitate interdependence between learners.

In science, experiments and pair work are frequently applied and interaction skills considered crucial, as SciST states in the discussion on the curriculum below:

- (8) SciST: - - *'Teaching needs to develop understanding of language and literature and interaction skills in new and more demanding situations' [reading from the curriculum]. Well, physics is basically pair work half the time, in lower secondary school interaction skills play a big role*
- FinST2: *What do you think is the most important interaction skill?*
- SciST: *Sharing information with a partner or within a group, because things are usually done in pairs because there isn't enough equipment to go around for everyone; ok, that's a good excuse for why things are done that way, or perhaps it's the real reason, but group work is pretty natural; but then again, there's usually always a smart student who can do everything on their own and their partner just watches them do the work and doesn't learn a thing, but if the smarter partner engages the weaker partner in the activity and somehow involves them, that's the kind of interaction skill that needs to be learned, because otherwise they can just do everything on their own if they want, and the*

*other one is left not learning anything. Sharing information and sort of engaging engagement.*

(Science\_PL\_1: 213)

SciST describes the pedagogical practice used in the science class. According to him, group work is favoured, both because of the lack of tools needed in the experiments and for promoting interactional skills. By nature, the activities do not call for collaboration, and smart students could manage them on their own. Interactional skills are needed in engaging the weaker students. However, during the planning sessions, student teachers do not discuss how to support and develop learners' interaction skills in peer work. Using Dillenbourg's (1991) terms, student teachers' discourses reflect a teaching method-related approach to interactive meaning making (cf. traditional cooperation or group work) rather than a 'social contract' type of approach of learning in collaboration (e.g., tasks that create positive interdependence, allow and require negotiation and individual accountability, trigger learning mechanisms).

## 5 Discussion

The findings of this study provide a picture of student teachers' positive attitude towards integrating language and content and desire to support the learning of students with diverse backgrounds. In their pedagogical decisions, future subject teachers draw on their pedagogical language knowledge, which, based on this study, can be characterized in the following way. First, the mediating role of language seems to be very vague for student teachers, and despite the ideal of language and content integration, language and content instead remain separate entities and language skills are not treated as an explicit target and tool for learning within content teaching. Although student teachers collaboratively made sense of language and content integration and developed a shared understanding and practice for the classroom, they still remained in the customary positions of their own subject. These findings are in line with the results from earlier studies that have reported on teachers' unconscious use of spoken language (Valdes et al. 2005; Love 2009) and the focus on academic language as incidental rather than planned or strategically considered (Gleeson 2010).

Second, students in the classroom were not invited to truly construct knowledge and negotiate understanding. Rather, the student teachers conducted much of the meaning-making work for the students – a probable risk entailed in the teacher-centred pedagogical approach. Various meaning-making resources were not planned to complement each other in the knowledge construction continuum.

It seems that interactive meaning-making was used more as a teaching method than a genuinely social contract type of collaborative learning. The emphasis on terms and vocabulary may also be one reason for the narrow procedure in meaning-making. Words or even concepts as small units do not easily provide a space for collaborative knowledge construction or a wider view of the disciplinary language as a mixture of various semiotic means, genres, texts, or patterns of language use (see, Creese 2005, 2010; Gleeson 2010; Aalto and Tarnanen 2015).

Thirdly, the teaching of strategic skills and scaffolding effective reading, listening, speaking and writing seemed to have a minor role in student teachers' pedagogical language knowledge. Even in the context of second language learning, literacy skills were not taken for granted but not perseveringly developed either. Language and content were connected in a natural way only at the level of vocabulary. Skill development in the content learning context remained limited.

In this study, the discourses informing and defining what student teachers say about language and meaning-making contained traces of both learner-centred and teacher-centred pedagogical thinking. Student teachers seemed to struggle between learner-centred practice as their pedagogical ideal and the teacher-centred tradition in subject teaching (see e.g., Lin 2015). Within the collaborative learning approach, it is assumed that higher-order thinking, deep learning, and knowledge internalization require multi-layered interaction that is not often provided in teacher-centred action in which content learning is not fostered by active meaning-making activities but rather by expecting students to internalize ready-made concepts and make notes. Ideally, translanguaging serves as a tool in building learners' meaning-making potential as independent thinkers and autonomous learners when making meanings in collaboration (i.e., *translingual practice* by Canagarajah 2013).

There are some limitations to be considered in evaluating the validity of the study, as the first author was a teacher of the participants and in charge of the teaching practice explored in this study. Throughout the research process, this two-fold position has been critically reflected upon. Furthermore, the practice was part of the student teachers' studies, and they were following certain instructions. Clearly, those instructions guided their acting and thinking, and the entire course of the process might have been different without this research setting. However, the study throws light on student teachers' pedagogical language knowledge in an educational setting that is relevant for the development of teacher education.

Nevertheless, the findings from this study indicate that student teachers' understandings and collaborative negotiation processes set a clear challenge for teacher education. The role of language and literacy in disciplinary learning should be clarified and discipline-specific language use made more visible. The

pedagogical models that describe principles for optimal and parallel learning of language and content and that emphasize the role of multi-layered interaction with peers and teachers in joint activities should be provided to student teachers during their studies (see e.g., Cummins 2001; Gibbons 2007; Walqui and van Lier 2010). They also need possibilities to apply them in their own teaching practice, followed with reflection on their own thinking and feedback. In order to provide quality learning for all students in multilingual settings, subject teachers need to have the readiness to create spaces for collaborative meaning-making and trans-languaging across the curriculum. This raises a challenge for practitioners, researchers and teacher educators to develop practices and models to support this.

## References

- Aalto, Eija & Mirja Tarnanen. 2015. Approaching pedagogical language knowledge through student teachers: assessment of second language writing. *Language and Education* 29(5). 400–415. DOI: 10.1080/09500782.2015.1031676 (accessed 4 November 2016).
- Baker, Colin. 2011 [2001]. *Foundations of bilingual education and bilingualism*, 5th ed. Clevedon, UK: Multilingual Matters.
- Barron, Brigid. 2003. When smart groups fail. *Journal of the Learning Sciences* 12(3). 307–359.
- Blackledge, Adrian, Angela Creese & Jaspreet Kaur Takhi. 2013. Beyond multilingualism: Heteroglossia in practice. In Stephen May (ed.), *The Multilingual Turn: Implications for SLA, TESOL and Bilingual Education*, 191–215. London/New York, Routledge.
- Braun, Virginia & Victoria Clarke. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3. 77–101.
- Bunch, George. 2013. Pedagogical Language Knowledge: Preparing Mainstream Teachers for English Learners in the New Standards Era. *Review of Research in Education* 37. 298–341.
- Canagarajah, Suresh. 2011. Translanguaging in the classroom: Emerging issues for research and pedagogy. *Applied Linguistics Review* 2. 1–28.
- Canagarajah, Suresh. 2013. *Translingual practice: Global Englishes and cosmopolitan relations*. Abingdon, UK: Routledge.
- Canale, Michael & Merrill Swain. 1980. Theoretical Bases of Communicative Approaches to Second Language Teaching and Testing. *Applied Linguistics* 1. 1–46.
- Chi, Michelene T. H., Nicholas De Leeuw, Mei-Hung Chiu & Christian LaVanher. 1994. Eliciting self-explanations improves understanding. *Cognitive Science* 18. 439–477.
- Coady, Maria, Candace Harper & Ester de Jong. 2011. Preservice to practice: Mainstream elementary teacher beliefs of preparation and efficacy with English language learners in the state of Florida. *Bilingual Research Journal* 34. 223–239.
- Creese, Angela. 2005. Is this content-based language teaching? *Linguistics and Education* 16. 188–204.
- Creese, Angela. 2010. Content-focused classrooms and learning English: How teachers collaborate. *Theory into practice* 49(2). 99–105.



- Creese, Angela & Adrian Blackledge. 2010. Translanguaging in the bilingual classroom: A pedagogy for learning and teaching? *The Modern Language Journal* 94. 103–115.
- Creese, Angela & Adrian Blackledge. 2015. Translanguaging and identity in educational settings. *Annual Review of Applied Linguistics* 35. 20–35.
- Cummins, Jim. 2001. *Negotiating identities: Education for empowerment in a diverse society*. 2nd ed. Los Angeles: California Association for Bilingual Education.
- Cummins, Jim. 2008a. BICS and CALP: Empirical and Theoretical Status of the Distinction. In B. Street & Nancy Hornberger (eds.), *Encyclopedia of Language and Education*, 2nd edn. (Volume 2: Literacy), 71–83. New York: Springer Science + Business Media LLC.
- Cummins, Jim. 2008b. Teaching for transfer: challenging the two solitudes assumption in bilingual education. In Jim Cummins & Nancy Hornberger (eds.), *Encyclopedia of Language and Education*, 2nd edn. (Volume 5: Bilingual Education), 65–75. New York: Springer.
- Dalton-Puffer, Christiane. 2011. Content-and-Language Integrated Learning: From Practice to Principles? *Annual Review of Applied Linguistics* 31. 182–204.
- Dalton-Puffer, Christiane, Ute Smit & Tarja Nikula (eds.). 2010. *Language use and language learning in CLIL classrooms*. Amsterdam: John Benjamins.
- Darling-Hammond, Linda & John Bransford (eds.). 2005. *Preparing teachers for a changing world: what teachers should learn and be able to do*. Somerset, US: Jossey-Bass.
- Dillenbourg Pierre. 1999. What do you mean by collaborative learning? In Pierre Dillenbourg (ed.), *Collaborative-learning: Cognitive and computational approaches*, 1–19. Oxford: Elsevier.
- de Jong, Ester, Candace Harper & Maria Coady. 2013. Enhanced knowledge and skills for elementary mainstream teachers of English language learners. *Theory into Practice* 52. 89–97.
- Faltis, Christian, Beatriz Arias & Frank Ramírez-Marín. 2010. Identifying relevant competencies for secondary teachers of English language learners. *Bilingual Research Journal* 33. 307–328.
- Gajo, Laurent. 2007. Linguistic knowledge and subject knowledge: How does bilingualism contribute to subject development? *International Journal of Bilingual Education and Bilingualism* 10(5). 563–581.
- Galguera, Tomás. 2011. Participant structures as professional learning tasks and the development of pedagogical language knowledge among pre-service teachers. *Teacher Education Quarterly* 38. 85–106.
- García, Ofelia. 2009. *Bilingual education in the 21st century: A global perspective*. Oxford, UK: Wiley-Blackwell.
- García, Ofelia & Naomi Kano. 2014. Translanguaging as process and pedagogy: Developing the English writing of Japanese students in the U.S. In Jean Conteh & Gabriela Meier (eds.). *The multilingual turn in languages education: Benefits for individuals and societies*, 258–277. Clevedon, UK: Multilingual Matters.
- García, Ofelia & Claire Sylvan. 2011. Pedagogies and practices in multilingual classrooms; singularities in pluralities. *The Modern Language Journal* 95. 385–400.
- García, Ofelia & Li Wei. 2014. *Translanguaging: Language, bilingualism and education*. Basingstoke, UK: Palgrave Macmillan.
- Gee, James Paul & Michael Handford. 2012. Introduction. In Paul Gee & Michael Handford (eds.), *The Routledge Handbook of Discourse Analysis*, 1–6. London & New York: Routledge.
- Gibbons, Pauline. 2006. *Bridging discourses in the ESL Classroom: Students, teachers and researchers*. London: Continuum.

- Gibbons, Pauline. 2007. Mediating academic language learning through classroom discourse. In Jim Cummins & Chris Davidson (eds.), *International handbook of English language teaching*, 701–718. New York: Springer.
- Gleeson, Margaret. 2010. *Language AND content? How do curriculum teachers of year 12 English language learners combine two disciplines?* Victoria University of Wellington dissertation. <http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/1637/thesis.pdf?sequence=1> (accessed 25 November 2016).
- Harju-Luukkainen, Heidi, Kari Nissinen, Sari Sulkunen, Minna Suni & Jouni Vettenranta. 2014. *Avaimet osaamiseen ja tulevaisuuteen. Selvitys maahanmuuttajataustaisten nuorten osaamisesta ja siihen liittyvistä taustatekijöistä PISA 2012 -tutkimuksessa*. [Keys to competence and future. A report on PISA 2012 results and related underlying factors for students with an immigrant background.] Jyväskylän yliopisto: Koulutuksen tutkimuslaitos.
- Hesse, Friedrich, Esther Care, Juergen Buder, Kai Sassenberg & Patrick Griffin. 2015. A framework for teachable collaborative problem solving skills 2015. In Patrick Griffin & Esther Care (eds.), *Assessment and Teaching of 21st Century Skills*, 37–56. Springer Science+Business Media Dordrecht.
- Hietala, Risto & Najat Ouakrim-Soivio. 2015. Maahanmuuttajataustaisten oppijoiden määrä alueittain. In Tuula Pirinen (ed.), *Maahanmuuttajataustaiset oppijat suomalaisessa koulutusjärjestelmässä – koulutuksen saavutettavuuden ja opiskelun aikaisen tuen arviointi*, 47–51. [Learners with immigrant backgrounds within the Finnish education system – Evaluation on the access to education and the support during studies.] Helsinki: Kansallinen koulutuksen arviointikeskus.
- Hornberger, Nancy H. 2009. Multilingual Education Policy and Practice: Ten Certainties (Grounded in Indigenous Experience). *Language Teaching* 42(2). 197–211.
- Kravchenko, Alexander V. 2009. The experiential basis of speech and writing as different cognitive domains. *Pragmatics & Cognition* 17(3). 527–548.
- Kress, Gunther. 1985. *Linguistic processes in sociocultural practice*. Oxford: Oxford University Press.
- Kuteeva, Maria & John Airey. 2014. Disciplinary differences in the use of English in higher education: reflections on recent language policy developments. *Higher Education* 67. 533–549.
- Kuukka, Katri, Najat Ouakrim-Soivio, Heini Paavola & Mirja Tarnanen. 2015. Kulttuurisen monimuotoisuuden edistäminen ja kehittämistarpeet. In T. Pirinen (ed.), *Maahanmuuttajataustaiset oppijat suomalaisessa koulutusjärjestelmässä – koulutuksen saavutettavuuden ja opiskelun aikaisen tuen arviointi*, 181–199. [Learners with immigrant backgrounds within the Finnish education system – Evaluation on the access to education and the support during studies.] Helsinki: Kansallinen koulutuksen arviointikeskus.
- Lankshear, Colin & Michele Knobel 2004. *A handbook for teacher research. From design to implementation*. London: Open University Press.
- Lantolf, James & Steven Thorne. 2006. *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.
- Lemke, Jay L. 1989. Making text talk. *Theory into practice* 28(2). 136–141.
- Lemke, Jay L. 1990. *Talking science: Language, learning, and values*. Norwood, New Jersey: Ablex Publishing Corporation
- Lewis, Gwyn, Bryn Jones & Colin Baker. 2012. Translanguaging: origins and development from school to street and beyond. *Educational Research and Evaluation* 18(7). 641–654.

- Lin, Lin. 2015. Exploring Collaborative Learning: Theoretical and Conceptual Perspectives. In *Investigating Chinese HE EFL Classrooms. Using Collaborative Learning to Enhance Learning*, 11–28. Berlin Heidelberg: Springer-Verlag.
- Llinares, Ana, Tom Morton & Rachel Whittaker. 2012. *The roles of language in CLIL*. Cambridge: Cambridge University Press.
- Love, Kristina. 2009. Literacy pedagogical content knowledge in secondary teacher education: reflecting on oral language and learning across the disciplines. *Language and Education* 23 (6). 541–560.
- Lucas, Tamara & Jaime Grinberg. 2008. Responding to the linguistic reality of mainstream classrooms. Preparing all teachers to teach English language learners. In Marilyn Cochran-Smith, Sharon Feiman-Nemser & D. John McIntyre (eds.), *Handbook of Research on Teacher Education. Enduring Questions in Changing Contexts*, 606–636. New York: Routledge.
- May, Stephen & John Smyth. 2007. Addressing Literacy in Secondary Schools: Introduction. *Language and Education* 21(5). 365–369.
- Meyer, Oliver, Ana Halbach & Do Coyle. 2015. *A Pluriliteracies Approach to Teaching for Learning. Putting a pluriliteracies approach into practice*. Graz: ECML, Council of Europe. <http://pluriliteracies.ecml.at/Portals/4/publications/pluriliteracies-Putting-a-pluriliteracies-approach-into-practice.pdf> (accessed 25 November 2016).
- Meyer, Oliver, Do Coyle, Ana Halbach, Kevin Schuck & Teresa Ting. 2015. A pluriliteracies approach to content and language integrated learning – mapping learner progressions in knowledge construction and meaning-making. *Language, Culture and Curriculum* 28(1). 41–57.
- Moate, Josephine. 2011. The impact of foreign language mediated teaching on teachers' sense of professional integrity in the CLIL classroom. *European Journal of Teacher Education* 34(3). 333–346.
- Mortimer, Eduardo & Phil Scott. 2003. *Meaning Making in Secondary Science Classrooms*. Maidenhead: Open University Press.
- National Board of Education (NBE) 2014. *Koulutuksen seurantaraportit 2014:10*. [Educational follow-up reports 2014:10.] Helsinki: Opetushallitus.
- Nikula, Tarja, Christiane Dalton-Puffer, Ana Llinares & Francisco Lorenzo. 2016. More than Content and Language: The Complexity of Integration in CLIL and Bilingual Education. In Tarja Nikula, Emma Dafouz, Pat Moore, and Ute Smit (eds.), *Conceptualising Integration in CLIL and Multilingual Education*, 1–25. Bristol: Multilingual Matters.
- O'Brien, David, Roger Stewart & Elisabeth Moje. 1995. Why content literacy is difficult to infuse into the secondary school: Complexities of curriculum, pedagogy and school culture. *Reading Research Quarterly* 30. 442–463.
- Pettit, Stacie Kae. 2011. Teachers' beliefs about English language learners in the mainstream classroom: A review of the literature. *International Multilingual Research Journal* 5(2). 123–147.
- Pirinen, Tuula. 2015. *Maahanmuuttajataustaiset oppijat suomalaisessa koulutusjärjestelmässä – koulutuksen saavutettavuuden ja opiskelun aikaisen tuen arviointi*. [Learners with immigrant backgrounds within the Finnish education system – Evaluation on the access to education and the support during studies.] Helsinki: Kansallinen koulutuksen arviointikeskus.
- Probyn, Margie. 2015. Pedagogical translanguaging: bridging discourses in South African science classrooms. *Language and Education* 29(3). 218–234.

- Robinson, Penelope J. 2005. Teaching key vocabulary in geography and science classrooms: An analysis of teachers' practice with particular reference to EAL pupils' learning. *Language and Education* 19(5). 428–445.
- Scarcella, Robin. 2003. *Academic English: A conceptual framework* (Technical report 2003–1). Santa Barbara: University of California Linguistic Minority Research Institute.
- Schleppegrell, M. J., and C. L. O'Hallaron 2011. Teaching Academic Language in L2 Secondary Settings. *Annual Review of Applied Linguistics* 31: 3–18.
- Statistics Finland 2017. *Migration*. [http://www.stat.fi/til/muutl/index\\_en.html](http://www.stat.fi/til/muutl/index_en.html) (accessed 17 May 2017).
- Summers, Mark & Simone Volet. 2010. Group work does not necessarily equal collaborative learning: Evidence from observations and self-reports. *European Journal of Psychology of Education* 25. 473–92.
- Swain, Merrill. 2006. Languaging, agency and collaboration in advanced second language proficiency. In Heidi Byrnes (ed.), *Advanced language learning: the contribution of Halliday and Vygotsky*, 95–108. London: Continuum.
- Unsworth, Len. 2001. *Teaching multiliteracies across the curriculum. Changing contexts of text and image in the classroom practice*. Buckingham: Open University Press.
- Valdes, Guadalupe, George Bunch, Catherine Snow, Carol Lee & Lucy Matos. 2005. Enhancing the development of students' language. In Linda Darling-Hammond and John Bransford (eds.), *Preparing teachers for a changing world*, 126–67. San Francisco, CA: John Wiley.
- Van den Bossche, Piet, Wim H. Gijssels, Mien Segers & Paul A. Kirschner. 2006. Social and cognitive factors driving teamwork in collaborative learning environments: Team learning beliefs and behaviours. *Small Group Research* 37. 490–521.
- van Lier, Leo. 2000. From input to affordance: social-interactive learning from an ecological perspective. In James P. Lantolf (ed.), *Sociocultural theory and second language learning*, 155–177. Oxford: Oxford University Press.
- Vygotsky, Lev. 1978. *Mind in society*. Cambridge: Harvard University Press.
- Walqui, Aída. 2006. Scaffolding instruction for English language learners: A conceptual framework. *International Journal of Bilingual Education and Bilingualism* 9(2). 159–180.
- Walqui, Aída & Leo van Lier 2010. *Scaffolding the academic success of adolescent English language learners*. San Francisco: WestEd.
- Zheng, Dongping & Kristi Newgarden. 2012. Rethinking language learning: virtual worlds as a catalyst for change. *International Journal of Learning and Media* 3(2). 13–36.
- Zwiers, Jeff 2006. Integrating academic language, thinking, and content: Learning scaffolds for non-native speakers in the middle grades. *Journal of English for Academic Purposes* 5(4). 317–332.





### III

## CONSTRUCTING A PEDAGOGICAL PRACTICE ACROSS DISCIPLINES IN PRE-SERVICE TEACHER EDUCATION

by

Eija Aalto, Mirja Tarnanen & Hannu L. T. Heikkinen, 2019

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# Constructing a pedagogical practice across disciplines in pre-service teacher education

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## HIGHLIGHTS

- Student teachers of ethics and language collaborated to develop a shared pedagogical practice across disciplines.
- Pedagogical practice development was governed by L2 learners' limited language skills.
- Student teachers emphasized vocabulary over discursive and textual aspects of the subject.
- Student teachers justified the oversimplification of tasks and materials by learners' deficient language skills.
- Change in pedagogical approach requires reflective supervision and a long-term process.

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## ABSTRACT

In this paper we report a qualitative case study of a teaching intervention in which a pre-service subject teacher pair planned and conducted a course integrating Finnish language and ethics in a multilingual setting. Audio-recorded planning sessions and interviews including learning diaries were analysed using qualitative content analysis to identify the dynamics of collaborative cross-curricular pedagogical practice development and pedagogical language knowledge. The analysis revealed tensions in crossing the boundary between language and content knowledge. The study suggests that when creating cross-curricular practices, student teachers benefit from longer-term processes and theory-based supervision and modelling for reflecting on the development process.

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## 1. Introduction

The increasing diversity and mobility of societies together with education reforms toward learner-centred and multidisciplinary pedagogical approaches have recently raised interest in crossing boundaries within and across communities of practice (see e.g. Akkerman & Bakker, 2011; Lonka, 2018). In this article, we focus on teacher education in Finland and investigate how pre-service teachers negotiate and collaborate in developing their pedagogical practice and pedagogical language knowledge across the subject boundary between Finnish as a second language and ethics content knowledge in a multilingual and multicultural setting.

Deeper understanding of student teachers' collaborative meaning-making is crucial for developing pre-service teacher education in terms of timely supervision practices and relevant supportive tools.

In Finland, as a consequence of the growing number of migrant students in recent years (Statistics Finland, 2017), there is an increasing need for language and culture sensitive pedagogy across curricula. Furthermore, the current revised National Core Curriculum for Basic Education introduces cultural diversity and language awareness as one of seven cornerstones for the development of school culture (NBE, 2014). However, in an extensive nationwide survey, in-service teachers clearly articulated the need to enhance their expertise in teaching in culturally and linguistically diverse contexts at all educational levels (Kuukka, Ouakrim-Soivio, Paavola, & Tarnanen, 2015). The integration of language and content teaching is central to the provision of quality education for all (Bunch, 2013; Walqui & van Lier, 2010). In multilingual learning

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settings, in particular, in order to provide optimal learning conditions for all learners and support both disciplinary and language development, teachers need knowledge and understanding of how language is used to create meanings in their subject and how to scaffold learning by drawing on learners' current language resources (e.g. Cummins, 2001; Walqui & van Lier, 2010). International research provides evidence that mainstream teachers' abilities to locate and utilise relevant linguistic and cultural information about their students is often inadequate and even ignored, which may lead to vague and ill-defined assessment feedback and failures in setting appropriate aims for language and literacy learning (e.g. de Jong, Harper, & Coady, 2013; Faltis, Arias, & Ramírez-Marín, 2010; Pettit, 2011). Various studies have also reported on teachers' inability to address the language and literacy demands of their discipline, the disregarded and unperceivable role of language in meaning-making, and a narrow focus on vocabulary and terminology (e.g. Aalto & Tarnanen, 2015; Creese, 2010; Gleeson, 2010; May & Smyth, 2007; Zwiers, 2006).

Amid curricular and other educational change, teachers need to be 'adaptive experts' (Love, 2009, p. 542; see also Bransford, Darling-Hammond, & LePage, 2005) who are able to innovate and develop teaching practices both individually and collaboratively across disciplines ahead of time as a response to changing contexts and needs. The increasing diversity in schools challenges teachers and teacher education institutes to critically reflect on the tacit aspects of their disciplinary practices (Creese, 2010; Wenger, 1998) and develop their expertise in collaboration across subject borders (Pawan & Ortloff, 2011) in order to cater for all students' learning and adapt their teaching accordingly.

In the analysis of student teachers' collaborative development of a shared pedagogical practice across disciplines, our conceptual framework (see Fig. 1) draws on the sociocultural view of learning (Vygotsky, 1978).

We adopt *collaborative learning* (Dillenbourg, 1999; Vygotsky, 1978) as a concept for understanding *pedagogical practice development* in the context of *interdisciplinary boundary crossing* (Akkerman & Bakker, 2011). In this study boundary crossing refers to how language and content are integrated. Boundary crossing is explored by applying the concept of *pedagogical language knowledge* (Bunch, 2013) in order to examine how student teachers act at the subject boundary of Finnish as a second language and ethics. In this study, the main aim was to better understand student teachers' understanding of the role of language in subject learning, in other words *pedagogical language knowledge*, in order to develop

supervision tools that support the learning of all learners. The key concepts and the conceptual framework are elaborated below.

## 2. Conceptual framework

### 2.1. Collaboration in pedagogical practice development

This study draws on Vygotskian sociocultural theory, viewing learning as an intrinsically social phenomenon in which interaction comprises the learning process and language serves as the means for mediation, guiding the internalization of the content and transforming it from the social to individual level (Lantolf & Thorne, 2006; Lin, 2015; Vygotsky, 1978). *Collaborative learning*, rooted in Vygotsky's sociocultural theory (Vygotsky, 1978; see also Dillenbourg, 1999), is a widely and often ambiguously used term that refers to a variety of approaches adopted to describe and implement practices of students working with peers towards a shared goal (Dillenbourg, 1999; Orland-Barak & Tillema, 2006; Van den Bossche, Gijsselaers, Segers, & Kirschner, 2006). Collaborative practices have been regarded as crucial to professional development because they facilitate opportunities for teachers to create networks that enable them to reflect on and share their practice, reconsider their understanding of learning and teaching, and co-construct new knowledge (Achinstein, 2002; Chan & Pang, 2006).

Roschelle and Teasley (1995, p. 70) define collaboration as 'a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem'. This definition involves consciously aiming to create something new, such as knowledge, solutions, understanding or practices and, as part of that process, learning through interaction. The process of creation is cyclical and iterative and involves ambiguity and uncertainty (Damsa & Jornet, 2016). The outcome of the shared effort is something that cannot be credited to any individual and exceeds what any single participant could have constructed on their own (Kuusisaari, 2014).

According to Dillenbourg (1999), collaborative learning situations are typically perceived as symmetrical with respect to power status, although the group symmetry may change during the process. Participatory roles may constantly shift, but it is essential that division of labour is minimal and participants genuinely work together. This creates positive interdependence and individual accountability between the participants. Dillenbourg (1999) refers to this as a 'social contract' between learners in reaching their goal. The shared goal may partially have been set up at the outset of the

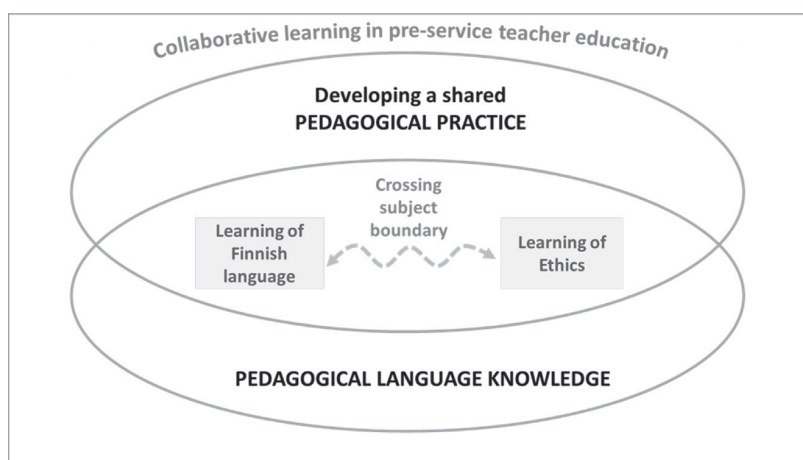


Fig. 1. The conceptual framework of the present study.

project, but as the task is open-ended there is space for negotiation and modification during the process. Negotiation of different standpoints and misunderstandings is central, and it is through this process that participants create something together.

*Pedagogical practice development* refers to student teachers' understanding of learning goals and their design of learning activity sequences accordingly (Cope & Kalantzis, 2015; Mascolo, 2009). This is informed by their pedagogical perceptions and beliefs and shaped by multiple social, individual and institutional discursive relations (Buendía, 2000). Pedagogical practice development has often been connected to the roles given to the learners and the teacher. The Vygotskian approach to learning can be described as learner-centred (e.g. Brown, 2003; Mascolo, 2009), whereas the pedagogical tradition in Finland has rather teacher-centred and textbook-driven roots (Luukka, Pöyhönen, Huhta, Taalas, & Tarnanen, 2008). In the teacher-centred pedagogical approach the teacher aims to control learning and transmit knowledge to the learners, mainly to be memorized (Brown, 2003). The focus is thus more likely to be on the content than on the learning process. The learner-centred approach, on the other hand, shifts the power from teacher to learner and learners become agents of their own learning (Ahn & Class, 2011; Vygotsky, 1978). In the teacher-centred approach learners are treated as a group, whereas in the learner-centred approach learners can work either individually or in groups but their learning needs, strategies and styles guide the pedagogical choices (Brown, 2003).

In this study, student teachers' pedagogical practice is assumed to facilitate both language and content learning and their ability to respond to the challenges presented by learners with diverse interests and backgrounds. In a multilingual group, the pedagogical approach regulates learners' opportunities to develop their language and literacy skills both as a tool and as a target of learning. By focusing on the student teachers' collaborative thematic advancement, we aim to understand the essential elements of collaborative practice development, how student teachers critically consider their pedagogical practice and understandings, generate a shared understanding of the mutual aim, and strive to develop it further and co-construct new knowledge. When collaborating to integrate language and content learning, student teachers construct their pedagogical language knowledge within subject boundaries.

## 2.2. Pedagogical language knowledge within subject boundaries

Disciplinary boundaries can be defined as 'sociocultural differences that give rise to discontinuities in interaction and action' (Akkerman & Bakker, 2011, p. 139). *Boundary crossing* refers to attempts made to create ongoing, two-sided action or interaction across different practices (Akkerman & Bakker, 2011). It requires going into unfamiliar territories and demands cognitive retooling (Tsui & Law, 2007). If the participants represent expertise from two different disciplines, the collaborative situation is not completely symmetrical. However, knowledge asymmetry and the possibility to work with a more capable peer may facilitate student learning in the zone of proximal development (ZPD) (van Lier, 2000; Vygotsky, 1978). Participants are interdependent when they collaboratively construct a shared practice that goes beyond the subject matter (Lin, 2015) and represents a change in their prior traditions and understanding. Inherent tensions, which stem from sociocultural differences should not be seen as sources of potential difficulty, but rather as sources of deep learning as they force participants to reflect on their practices and assumptions, thus affording opportunities for renewal and developmental transformation (see also Akkerman & Bakker, 2011). According to Akkerman & Bakker (2011) the aim is not to dissolve the boundary and merge the

intersecting social domains by moving from diversity to unity, but rather to solidify continuity of action and interaction when mutually aiming to develop a new in-between practice.

In the context of this study, a pair of student teachers work across the disciplines of Finnish language and ethics in a multilingual and multicultural classroom. The main boundaries to be crossed during their collaboration include the pedagogical and disciplinary traditions of Finnish language and ethics, linguistically and culturally homogeneous classrooms versus multilingual and multicultural classrooms, language and content, and parallel roles as students in teacher education and teachers at an institute. The multilingual and multicultural setting with its built-in disciplinary boundary crossing provides a fruitful space for collaboration and construction of a shared pedagogical practice that goes beyond the participants' customary areas of expertise.

When integrating a second language and a content area, language functions both as a mediating tool and as a target of learning (van Lier, 2000; Vygotsky, 1978). The student teachers' understanding of language is therefore connected with their pedagogical practice development. The concept of *pedagogical language knowledge* refers to the student teachers' understanding of the role of language, language use and language learning in relation to content studies. Bunch (2013, p. 307) defines the concept as 'knowledge of language directly related to disciplinary teaching and learning and situated in particular (and multiple) contexts in which teaching and learning take place' (for proposed parallel concepts see Aalto & Tarnanen, 2015, 2017; Bunch, 2013; Faltis et al., 2010; Lucas & Grinberg, 2008).

In terms of disciplinary and pedagogical traditions, there is a boundary between language and content teaching. However, from a sociocultural perspective, language and content are intertwined and cannot be detached, as subject knowledge is bound to and verbalized in particular discourse (Cummins, 2001; Gajo, 2007; Mortimer & Scott, 2003; Nikula, Dalton-Puffer, Llinares, & Lorenzo, 2016). The concept of pedagogical language knowledge draws on a distributed view of language (e.g. Zheng & Newgarden, 2012) in which language is not primarily perceived as a linguistic system, but rather as a social constitution that serves to regulate behaviour in real time and in community over time and space (see also *Language as an action*, Bunch, 2013; Walqui & van Lier, 2010). Therefore, teachers' pedagogical language knowledge refers not only to the ability to analyse learners' language skills and disciplinary language use, but also to the pedagogical knowledge and skills for developing meaningful activities that engage learners, facilitate collaborative meaning-making, and stimulate both language and content development (see also Aalto & Tarnanen, 2017; Bunch, 2013; Canale & Swain, 1980). These aspects have an impact on lesson planning as they affect what is taught, how it is taught and who does the teaching.

Prior studies on English as a second language (ESL) teachers' and content teachers' collaborations have focused on, for instance, the power relationships between teachers (Creese, 2002; Mousa, 2012), teachers' perceptions of collaboration (Pawan & Ortloff, 2011) or the factors describing successful collaboration (Mousa, 2012). Research recognizes the need to provide interdisciplinary practical experiences and pedagogical models of collaboration between ESL and content area teachers already in pre-service education (e.g. Agyei & Voogt, 2012; DelliCarpini, 2009; Kaufman & Brooks, 1996; Kleyn & Valle, 2014; Tilley-Lubbs & Kreye, 2013). For instance, Kleyn and Valle (2014) aimed to rethink the academic structures and develop a co-teaching model for diverse classrooms across academic boundaries in which pre-service teachers' collaboration was intensively supervised by teacher educators. Interconnections across fields were created and teacher and student learning were increased, but the findings suggested that new approaches are

needed for developing inclusive pedagogies that engage diverse students.

This study aims to contribute to the discussion on crossing subject boundaries in pre-service teacher education and developing a shared pedagogical practice and pedagogical language knowledge through collaboration.

### 3. Methods

#### 3.1. Research questions

This qualitative study examines the essential dynamics of the development of pedagogical practice in collaboration when two pre-service teachers plan and enact a cross-disciplinary course of Finnish as a second language and ethics and integrate content and language learning. In this paper, we ask:

- How do pre-service teachers collaboratively develop a shared pedagogical practice within subject boundaries?
- What kind of pedagogical language knowledge does the student teachers' collaboration reflect?

#### 3.2. Research context, participants and data

This study is a part of a larger intervention study run by the first author and aiming to understand how student teachers collaborate across subject borders in the context of an independent field practice, and what kinds of supervision practices should be developed for better promoting their joint construction of language-sensitive pedagogical practices. Pre-service teachers do not have, in this particular university, an opportunity to practice in a multilingual group within their regular teaching practice, although linguistic and cultural diversity in subject-specific pedagogical practices are dealt with in their pedagogical studies. To remedy the lack of teaching practice, student teachers are offered an optional practice in multilingual groups of local schools outside the official practice school. However, the supervision of this field practice is not resourced adequately enough to enable the supervisor to closely support the process. Instead, small groups of student teachers work largely independently based on given instructions. Therefore, in this educational context a better understanding of student teachers' collaboration and shared construction of pedagogical language knowledge is needed in order to develop tools for supervision.

In this sub-study, we report on a teaching intervention in which a pre-service teacher team planned and conducted a course that integrated ethics and Finnish as a second language in a multilingual setting. The two participants were Finnish fourth-year student teachers, an ethics and history student teacher (acronym *EthST*) and a Finnish language and literature student teacher (acronym *FinST*). The student teachers were being trained to teach in the nine-year Finnish comprehensive school system, mainly grades 7 to 9 (age 13–16), and in upper secondary school (age 16–19). To qualify as teachers, all students across the curriculum need to complete a Master's degree that includes at least 60 ECTS of pedagogical studies offered by the department of teacher education, where this study was conducted.

The student teachers chose to participate in the teaching practice under study in order to gain more experience of teaching and learning in multilingual and multicultural settings. They were instructed to plan and implement a course that integrated Finnish language and ethics content studies. It was up to them to define the project and generate a practice of their own in a situation where no prior concrete models were at their command. The student teachers chose to implement their course within integration training for

adult migrants, given by a private non-governmental institute, and chose to focus on the characteristics of Finnish religious culture. The participating student teachers' status was symmetrical and there was no pre-set distribution of work. The first author of this article facilitated the intervention by organizing the practice and providing requirements and instructions for action. She refrained from interfering in the student teachers' process unless they asked for her help, as the aim was to better understand their own pedagogical approach in order to develop supervision practices in teacher education.

The integration course was optional for the adult migrants and attendance varied from class to class from 3 to 10 students. The ethics student teacher was, alongside her studies, under contract to the institute in which the intervention took place and had taught the same course previously but without a specific language focus. The course included a visit to a Lutheran church and the topics dealt with ranged from customary religious traditions to values such as religious freedom, and solving ethical problems.

The language of instruction was Finnish. The learners' level of Finnish proficiency varied from beginner to more independent user of the language, i.e. on average, level A1–A2 on the CEFR scale (see <http://www.coe.int/en/web/common-european-framework-reference-languages>). The learners' language skills were not tested as this was beyond the purpose of this study.

The data consisted of audio-recorded planning sessions (PL) and group interviews of the two student teachers (INTW), video-recorded lessons<sup>1</sup> (L), student teachers' individual diaries (D), and field notes made by one of the authors. The data collection process is illustrated in Fig. 2. The planning sessions lasted 15–105 min (total 495 min) and group interviews 20–140 min (total 285 min). The classroom lessons lasted 90 min. The first author conducted the interviews and was present in lessons 1, 3, 4 and 6. The student teachers accompanied each other in the planning sessions.

The anonymized transcriptions of the audio-recordings were coded using the qualitative data analysis software ATLAS.ti. As the main objective was to analyse the meanings attributed to language that the student teachers constructed in collaboration in their talk rather than an extensive construction of the talk itself, more detailed transcription methods were not adopted in analysing the data from planning sessions and interviews.

#### 3.3. Analytical procedure

Collaboration is often explored at the micro level of interaction (e.g. Damsa, 2013; Kuusisaari, 2013) and in relation to individual learning (Barron, 2003; Meirink, Meijer, & Verloop, 2007). In contrast to this, the focus of analysis in the present paper is on the topical development of the pair of student teachers. Data-driven and theory-informed qualitative content analysis (Hsieh & Shannon, 2005; Patton, 2015) was used to analyse the student teachers' collaboration. The analytical procedure was iterative and proceeded via the following phases:

To begin with, the structure of the data as a whole was analysed by discerning conversational episodes based on their substantive contents. The discussion data were divided into episodes of topic talk by means of data-driven systematic qualitative analysis of the contents (Patton, 2015).

The episodes were then examined in terms of the pedagogical ideals that the student teachers raised in the planning sessions and interviews, the tensions that emerged, and the approaches towards language in a subject learning context or in meaning making in

<sup>1</sup> Lessons 2 and 5 were not video-recorded: lesson 2 was a class trip, lesson 5 for technical reasons.

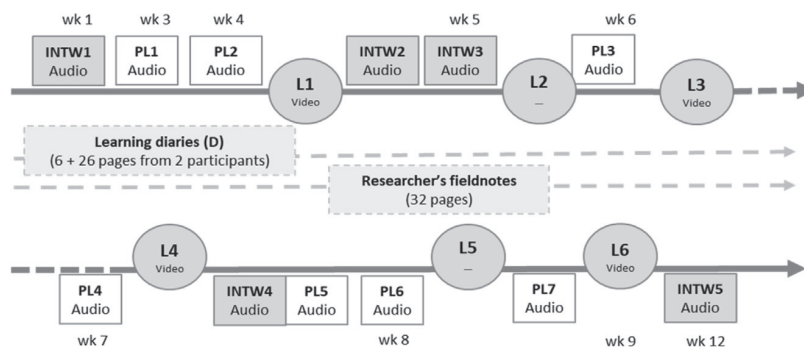


Fig. 2. Timeline of data collection and data of the intervention. The data from the interviews, planning sessions and participant diaries are referred to in this article.

general. It became evident that the student teachers struggled throughout the project between their established teacher-led pedagogical practice and the more learner-centred pedagogical ideal. This tension was therefore selected for more detailed analysis and was interpreted inductively by examining two types of topical episodes: 1) episodes in which the student teachers critically considered their existing pedagogical practice, and 2) topical sequences in which the student teachers oriented themselves toward transforming their existing pedagogical practice and promoted learner activation, interaction, discussion and participation with each other and with the teachers. The selection of key episodes was done without preconceived categories of analysis. Thereafter, the coding of the key episodes was partly theory-informed as the development of a coding system was initially inspired by the work of Damsa (2013), Kuusisaari (2014), and Popp and Goldman (2016), but the final coding scheme (see Table 1) was adjusted through recurrent data-driven coding cycles and refinements of the approach in line with the research questions of the study. The first author identified the key episodes and coded and analysed the actions. The coding scheme was discussed with the co-authors in

light of the various examples from the data. Ambiguities were acknowledged, discussed and, where needed, re-examined.

The student teachers' collaboration in developing their pedagogical practice was also examined across time. Phases in the pedagogical practice development were identified by exploring key sequences and seeking the points at which the student teachers reformulated their focus and began to outline and structure it in a new way (Kärkkäinen, 1999). This was usually done by bringing a new viewpoint to the discussion, which led to change in defining the focus of the activity.

Finally, in line with the purpose of this study, the student teachers' pedagogical language knowledge within the subject boundary was examined on the basis of their analysis of their existing pedagogical practice and their efforts to generate a new practice in collaboration. This was done by examining how student teachers addressed the key aspects of pedagogical language knowledge: learners' language skills, disciplinary language and pedagogical choices that, firstly, promote student engagement, meaningful activities and collaborative meaning-making and, secondly, foster both language growth and content learning.

Table 1  
Coding scheme for qualitative content analysis of collaborative development of pedagogical practice.

Categories of action		Description of action	Data example
Main categories	Sub-categories		
Critical consideration of current pedagogical practice	Reflecting on or analysing the current pedagogical practice	Naming or analysing difficulties that impede the team from transitioning away from their current pedagogical practice	'we were thinking about discussion that we'd sort of like to have more of it - - but you notice in discussions where there are two who have the upper hand in the language and then one who is really weak that the discussion gets turned away from where the weaker speaker is' (INTW4: 068)
	Problematising the current pedagogical practice	Challenging or questioning the current practice	'they certainly have to ask something, we can't simply lecture throughout the course' (PL2: 443)
Generating a new pedagogical practice	Creating shared understanding	Framing the pedagogical principles and ideals underpinning the current and desired practice and redirecting and reformulating the focus of planning (on a general level, not specific to individual tasks or activities)	'what if we didn't do things so much all together [as a group], like now we did a huge amount with them just all together - if we sort of differentiated more - so that they'd just do some tasks and we'd then go around [the group individually]?' (INTW4: 068)
	Generating new initiatives	Bringing in ideas for activities and tasks that can contribute to student activation and engagement	FinST: <b>should we have some sort of dialogue or discussion at the end?</b> (new initiative)
	Analysing new initiatives Elaborating new initiatives	Evaluating the task or activity Developing the activity or task idea further	EthST: um, yeah where they'd sort of discuss with each other, I'm just wondering, <b>could they</b> (analysis), if we had here some of the, um, if they sort of had a go at remembering the names of their own religions - - <b>what if I made another version of this discussion [text] where I could leave out - - this word and leave out this word - -</b> (elaboration) FinST: <b>yeah or then just do questions like 'what are your beliefs?'</b> - - (elaboration) (PL1: 427–433)

In the following section we will discuss our two main findings concerning existing pedagogical practice and the generation of new practice and how pedagogical language knowledge is embedded in practice construction.

#### 4. Findings

Over the course of the study it became evident that although the student teachers employed a somewhat teacher-led approach, they at the same time problematized it and tried to move towards a more learner-focused approach. In the following, we describe the student teachers' collaboration in constructing their shared pedagogical practice by examining, firstly, how they analyse and problematize their existing pedagogical practice and, secondly, how they aim to resolve this by constructing a shared understanding of a more learner-centred approach first on a conceptual level and then on a practical initiative-generating level. Throughout the analysis we will discuss what kind of pedagogical language knowledge their collaboration reflects and how it tended to guide their pedagogical practice development.

##### 4.1. Critical consideration of existing pedagogical practice

The two student teachers clearly sought to promote the pedagogical ideals of learner engagement, active participation and autonomy both in their discussion and in the learning objectives they set. However, throughout the intervention they problematized the teacher-centredness of their practice. Their self-criticism focused on the following three key aspects: 1) teacher-dominated talk at the cost of free discussion and the students' prevailing needs, interests and participation, 2) emphasis on vocabulary and difficulties in learning, and 3) the comprehensibility of instruction (Table 2). These concerns reveal the student teachers' pedagogical language knowledge and demonstrate their analytic approach to learner language skills, disciplinary language and pedagogy that promotes learner engagement.

FinST tended to criticize the practice in general terms referring to the teachers' overall role of running the class, whereas EthST's questioning was more specific and encompassed more aspects. Overemphasis on vocabulary particularly troubled EthST, who was concerned that learning new words took precedence over content knowledge. She also questioned whether the learners were able to comprehend the lengthy sessions of teacher-led instruction.

Examination of how the student teachers analysed and named the challenges barring them from transitioning away from teacher-centredness in their practice revealed aspects related both to the characteristics of the learners and their own actions (Table 2). Their learner-related analysis was found to focus on three aspects: learners' limited language skills, heterogeneity of the group, and difficulty of student activation. They both found it difficult to understand learners' questions (intw2, D-afterL3) and, particularly for EthST, it was difficult to gauge the learners' comprehension skills. The heterogeneity of the group hindered learner activation as they

felt that not all of the learners had sufficient language skills for discussing abstract issues. They also found student activation difficult because the learners did not support their weaker peers (intw4) and they preferred individual work over pair work (D-afterL6). Whole-class discussions tended to activate only a couple of learners (D-afterL4).

In the analysis of the existing practice, the identified teacher-related aspects that impeded their practice development can be categorized as 1) the teachers' role as expert in their own domain, 2) adherence to the customary pedagogical approach, and 3) a tendency to focus on difficulties in learning. These aspects are discussed in further detail in light of the data examples. FinST, in particular, frequently emphasized her minor role in conducting the course. The following diary excerpts show how she positioned herself in the context of integrating language and content teaching.

- (1) *Can I trust that linguistic matters are naturally interwoven into the different themes so that my teaching can be called language teaching? - - I feel that I definitely have to act according to my own role. When planning the course the content is absolutely the main determining factor. - - it felt stupid for there to be something related to grammar in the course plan. Surely the language focus can be on discussion too – or on something else that comes up. (Diary\_FinST: 045 after PL1)*
- (2) *It was funny that, especially towards the end of the course, I felt myself to be more of a reporter [of linguistic facts] than a teacher. Bringing a linguistic aspect in to support the content surprisingly often meant just simply plain language. This usually provided the most help and was perfectly adequate. It was even a relief that it was not needed to impose the language aspect with all its own trappings by force: teaching the passive voice within an ethics course would definitely have blown my, EthST's and the students' heads. (Diary\_FinST: 178–180 after INTW5)*

Excerpt 1 shows that, for FinST, ethics content has the priority role in the course and that she even positions the student teachers differently: *I have to act according to my own role*. She finds it challenging to analyse the role of language within content learning and perceives language primarily as grammar, although she admits that a linguistic focus can also be set for conversation. In her final diary entry (excerpt 2), FinST clearly concludes that her role was to explain issues in plain language in order to make them more comprehensible. To her, the role of language seems to be reduced to that of a mediating tool without target-oriented teaching and learning of it. Furthermore, she tends to consider the language teacher as subordinate (*reporter*) to the content knowledge teacher (*teacher*). As disciplinary language is perceived according to traditional linguistic premises as a grammatical system (Dufva, Aro, & Suni, 2014), the link with content learning remains weak and the disciplines seem to remain separate without transformation.

In the analysis of their customary pedagogical approach (Table 2), the student teachers expressed that they enjoy talking

**Table 2**

Key aspects identified in the student teachers' critical consideration of their existing pedagogical practice.

Problematization of the existing pedagogical practice	Analysis of the existing pedagogical practice	
	Learner-related analysis	Teacher-related analysis
- teacher-dominated talk at the cost of free discussion, students' prevailing needs, interests and participation	- learners' language skills	- teacher roles as language and content teachers
- emphasis on vocabulary and difficulties in learning	- heterogeneity of the group	- customary pedagogical approach
- the comprehensibility of instruction	- difficulty of student activation	- tendency to focus on difficulties in learning

and occupying the stage when running the class and explaining things (PL3, PL6, intw5). FinST considered teacher-centred practice as formalism (see e.g. Dufva, Suni, Aro, & Salo, 2011), which in the field of language education is related to grammar orientation, and that considerable conscious effort is needed to break away from the customary teaching approach (PL3). In the final interview, the student teachers chose to watch the video recording of lesson 3 with the researcher and reflect on their action in the classroom (stimulated recall). The participants were frustrated with their constant focus on difficulties in learning and the amount of teacher-dominated talk and lack of student engagement during the lesson, and the researcher asked whether they would consider making some changes to their approach. The following excerpt from that interview shows the student teachers' analysis of their customary teacher-centred approach in relation to the emphasis on vocabulary and the boundary between language and ethics content knowledge.

(3) EA: - - would you somehow change the amount you speak or EthST: well, that's a good question. Did we have a sort of need to explain things? - -

FinST: well, in my view we did need to do some explaining because of the kinds of tasks we were doing, so we should have left out some of the tasks and left space for discussion. But I do think if they are doing a task linking pictures with words the meanings of the words need to be explained. - - but for sure we could have thought of other kinds of tasks that might not have required so much explaining from us

EthST: - - if you think of the groups in the Finnish class, did our lesson really differ a lot from a Finnish lesson in terms of the amount of explaining?

FinST: - - I don't really know - - there is more explaining here as - - we focused here so much on the words that the students don't understand in the text or, in the Finnish class you can just discuss something without needing to think what each word means and whether it's a strange [unfamiliar] word - -

EthST: I think we concentrated too much on new vocab, I don't know, I did wonder if we somehow waffled too much

FinST: I don't know about new words or not new words

EthST: or then maybe just the whole thing is in some way automatically about new words

FinST: I somehow just sort of mean that we really concentrated a lot on the words in the first place because there are so many of them that they don't know in the language. But how else can you deal with the content of ethics? So I don't really know, on the other hand, in a way I don't think in regard to the content we did anything odd

EthST: Right right (INTW5: 321–333)

The student teachers' reflection in excerpt 3 illustrates how their understanding of the relationship between language and ethics resulted in teacher-led practice in the classroom. EthST wonders whether they had a need to explain things and questions the teacher-dominated talk and the emphasis on vocabulary (*we somehow waffled too much - - everything is just in some way automatically new words*) and calls for an opportunity for all learners to communicate their thoughts. FinST intimates that their choice of activities was biased and resulted in too much explaining as the types of activities used required new vocabulary to be described, and that the topics could have been taught using more diverse and activating tasks. She nevertheless justifies the focus on vocabulary by arguing that it is the only way content can be dealt with, whereas in a language class it is possible to discuss issues without knowing the precise meanings of all words. In her pedagogical language knowledge disciplinary language thus seems to be

perceived as vocabulary, and learning as the comprehension of words and texts. This view is contrary to the learner-centred approach in which already comprehensible elements and prior knowledge and skills are a natural and obvious basis for action and the pedagogical thinking draws on the idea of fostering student activation despite limited skills (Walqui & van Lier, 2010). Learning is therefore understood as neither a controlled nor predetermined process.

Furthermore, the excerpt suggests that the student teachers consider that the learners' limited Finnish skills mean that teacher-dominated talk is needed to explain things and that the focus of teacher supervision should be on vocabulary as opposed, for instance, to interaction or reading and writing skills.

It can be concluded that the student teachers' collaborative reflection on their existing practice focused on three main aspects: 1. The learners' limited language skills, which led to a focus on vocabulary and difficulties in learning and prevented the teachers from activating the learners, 2. The customary teacher-driven pedagogical tradition, and 3. Built-in knowledge asymmetry when crossing subject boundaries. These findings reflect the student teachers' pedagogical language knowledge as follows. Firstly, they were sensitive to the learners' language skills but perceived them mainly through the lens of insufficiencies and difficulties. Secondly, it was challenging for them to discern the role of language within content learning and disciplinary language was treated mainly as vocabulary and grammar. Thirdly, their pedagogical choices focused to a large extent on how to make teaching comprehensible and their consequent stress on vocabulary demanded teacher-led explaining at the cost of student activation.

In the following, we examine how the student teachers worked to develop their pedagogical practice.

#### 4.2. Generating a new pedagogical practice

Two types of pedagogical practice development were identified in the data of the student teachers' planning sessions. At the general level, the student teachers identified the pedagogical principles and ideals underpinning their practice and redirected and reformulated their planning focus accordingly. At the local level, they generated new initiatives by developing ideas for activities and tasks that could support student activation and engagement. The majority of planning time was used for creating and refining individual tasks and activities, but through the meta-level discussion they created a shared understanding and redirected the trajectory of the course. In the following, we first discuss the ways of creating a shared understanding on a more general level and then demonstrate the collaborative patterns behind task and activity generation.

##### 4.2.1. Creating shared understanding

A shared goal can only be partially set at the outset of a joint project. Participants will typically have different understandings of the goal at the outset and approach it from their own perspectives. Collaboration therefore requires that the shared goal is negotiated and revised during the process. Through negotiation, the participants develop a mutual awareness of their shared goals (Dillenbourg, 1999). In the present study, four phases were identified in the student teachers' process of constructing their understanding of a shared goal and joint pedagogical practice (see Fig. 3).

The first phase, *Discussion without personal involvement*, was the longest and spanned the first three lessons. The phase begins with planning session 2, after FinST is informed by a teacher at the institute that the learners in their group are unwilling to discuss religious issues on a personal level. This incident initiated ongoing speculation regarding the learners' willingness to share their

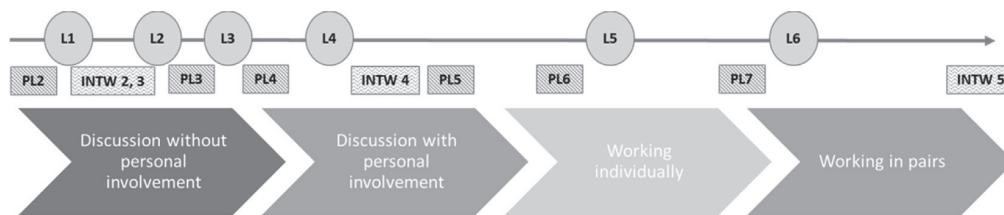


Fig. 3. The phases of pedagogical practice development and learner activation.

opinions and experiences and how to address ethics topics without engaging the learners at a personal level.

Gradually, the student teachers discovered that they had been overcautious and began allowing space for discussion and sharing in the classroom (the second phase *Discussion with personal involvement*). However, class discussions remained teacher-led and only two students in the group were active participants. Thereafter, again on FinST's initiative, they moved on to a new phase in which they promoted *individual working* and activation of prior knowledge and skills. At several points FinST indicated that a lesson dedicated to individual work was needed as a counterbalance to continuous teacher-centeredness: *I'm not sure whether the teachers know how to be quiet and give (the students) space to examine the text independently and make their own conclusions* (PL6\_FinST: 1548). Finally, in the fourth phase *Working in pairs*, the task of producing a poster in heterogeneous pairs was set for the final lesson. However, this pair work was also criticised by the student teachers because the learners worked individually instead of in pairs as intended.

The following data excerpt displays the collaborative negotiation in the third phase of pedagogical practice development, particularly the aim to promote learner agency by activating prior skills in individual work.

- (4) FinST: (our aim is) that we don't help all the time. In developing their language proficiency it's good to use more of their own prior knowledge of the language, (so) when reading a long text it's good to (get them to) activate and practice their existing knowledge

EthST: but is that our aim? I'm wondering if it's wrong then, if I help them all the time

FinST: no no no, but let's give them at least fifteen minutes because we haven't given them any time to do anything on their own

EthST: yeah that's true, we have always rushed to help, yes, that's true

FinST: -- the first word they don't understand we tell it to them immediately. It doesn't activate their prior knowledge in any way -- (so) when they ask [the meaning of] a word -- we won't help but [tell them to] continue reading. It's not the point to understand every word

EthST: yes, right (PL6: 1462–1480)

In line with the learner-centred approach, FinST aims to highlight the importance of strategic skills and to exceed language skill limitations, but does not propose explicit teaching of the skills. She emphasizes that it is not necessary to understand every word, which may echo the aim of moving from the vocabulary level to the textual level. EthST, in viewing the teacher as a supervisor, does not seem to grasp these points in the beginning, and may not be aware of the approach of teaching strategic skills in language pedagogy. After all, although FinST's aim to promote learner agency through activating prior knowledge is clear, in practice they do not teach strategic skills or supervise the learners in adopting them, but

instead leave the learners largely to their own devices.

Shared understanding can be perceived both as a process and as an effect of collaboration (Dillenbourg, 1999). Here common ground is required to be able to perform well together (effect) but also to change the existing pedagogical practice (process). The student teachers constantly construct their mutual understanding of their pedagogical practice and their awareness of the need for change is based primarily on their own analysis of the appropriateness of their practice, although external factors also lead them to reconsider their choices. The pedagogy aspect of their pedagogical language knowledge is revealed as they discuss the underpinning goals of ethics as a subject and frequently reflect on how to make their classroom activities meaningful to the learners. Their avoidance of teacher-centred pedagogy relies primarily on holding classroom discussions on relevant topics, but also on learner activation by providing time for individual work without instant teacher support. However, although they redirect their pedagogical focus four times during the process, they do not engage in any deeper discussion of their shared understanding of learning or how learner agency could be promoted in practice. Their pedagogical language knowledge seems to lack the aspect of support for learner engagement.

#### 4.2.2. Generating, analysing and elaborating new initiatives

When developing ideas for activities and tasks that can contribute to student activation and engagement, the student teachers set the learning aims for each lesson only at the end of each session when filling in the lesson plan form. Thus, their pedagogical lesson planning does not start from explicitly set linguistic and content-related learning goals but rather focuses on contents and activities. FinST, particularly, frequently expresses concern in her diary about the linguistic aims, as she considers them to be her responsibility and finds it difficult to define them (see also section 4.1 above). However, in the first interview, they both emphasize broadening the learners' religious perspectives through peer interaction and learning from each other and the ability to talk about religion and values as linguistic aims of the course.

The student teachers' task initiatives for learner activation and the foci of their further analysis and elaboration are summarized in Table 3. The task initiatives with which they aimed to activate the learners included teacher-led whole-class discussions and pair discussions involving sub-tasks such as verbally sharing information, ideas and opinions or formulating questions based on material provided, as well as working on texts either individually or in pairs.

In their analysis of the task initiatives, the student teachers evaluated their comprehensibility and difficulty in relation to the learners' language skills. The relevance (meaningfulness and usefulness) of each task and the risks it entailed were also weighed up.

Furthermore, five patterns of elaboration of the task initiatives were identified. The student teachers elaborated tasks primarily by identifying and explaining relevant vocabulary (1) and by simplifying the language of the task or material (2). Learner activity was

**Table 3**

The student teachers' ideas for activities and tasks that can contribute to learner activation and engagement and the foci of their further analysis and elaboration.

Task initiatives	Focus of analysis of the task initiatives	Patterns of elaboration of the task initiatives
<ul style="list-style-type: none"> <li>- verbally sharing information, ideas and opinions</li> <li>- formulating questions</li> <li>- class discussion</li> <li>- pair discussion</li> <li>- pair or individual work on multimodal texts</li> </ul>	<ul style="list-style-type: none"> <li>- <b>comprehensibility</b> of the task</li> <li>- sufficiency of students' <b>language skills</b>/linguistic <b>difficulty</b> of the task</li> <li>- <b>relevance</b> (= meaningfulness, usefulness) of the task</li> <li>- <b>risks</b> involved in the task</li> </ul>	<ul style="list-style-type: none"> <li>- focusing on <b>vocabulary</b> (selecting relevant words and explaining them)</li> <li>- <b>simplifying</b> the text, vocabulary or task instructions</li> <li>- providing <b>support</b> (guiding questions, visual support, teacher support)</li> <li>- developing learner <b>activation</b></li> <li>- elaborating the <b>content</b> of the task</li> </ul>

also supported (3) by formulating guiding questions for discussions or providing visual support for comprehension; teacher support was also proposed. Task initiatives were also elaborated by considering better ways of supporting learner activation (4) and by developing the content (5) of the task to better meet the learners' needs and interests. Consequently, the elaboration of the task initiatives was considerably language-related.

The following excerpt displays a typical episode of generating, analysing and further elaborating a task initiative.

(5) FinST: -- should we have some sort of dialogue or discussion at the end?

EthST: um, yeah where they'd sort of discuss with each other, I'm just wondering, could they, if we had here some of the, um, if they sort of had a go at remembering the names of their own religions – what if I made another version of this discussion [text] where I could leave out – this word and leave out this word –

FinST: yeah or then just do questions like 'what are your beliefs?', 'where do you meet?' 'who leads the congregation?' – and these verbs.

EthST: yeah, yes, right, absolutely, and with a partner, yes, right. (PL1: 427–434)

New initiatives were typically proposed on a rather general level, as by FinST in excerpt 5: 'some kind of dialogue or discussion'. EthST takes up the idea and first analyses it in relation to the learners' language skills, pondering whether they have the (linguistic) capability to carry out the discussion. She then continues to elaborate the initiative by focusing first on the vocabulary (names of religions) that needs to be activated and then by simplifying the text by deleting difficult words. FinST then pursues the elaboration by providing guiding questions to support the pair discussion. She also emphasizes the importance and relevance of vocabulary (the verbs *believe*, *gather together*, *lead the congregation*). It is apparent that the student teachers' perception of the learners' deficient language skills and difficulties in learning significantly governs the development of their pedagogical practice.

In the following excerpt, a task initiative is elaborated by developing the content of the task and by planning how to activate the learners.

(6) FinST: some sort of discussion activity where they can... where they somehow do something in turns

EthST: -- if they sort of discussed what they think about freedom of religion in Finland or if this freedom of religion differs from their own previous experience --

FinST: right, I mean they could talk about it -- but there should be some sort of hook [trigger], and not just say now talk about this

EthST: mm, right -- that's what [one student] asked -- because he thought it was odd that back in Africa -- if one [parent] is a Muslim and another a Christian, the child automatically

becomes a Muslim but -- in Finland is the child allowed at some point to choose which they want to belong to --

FinST: -- we could discuss -- yes and not that we ask questions, but that they discuss these issues with a partner. We don't need to -- ask for answers, they can talk in pairs and then we can tell from the Finnish perspective -- what kinds of questions could we [set] what is freedom of religion? Can a person freely believe in whatever he or she likes? (PL4: 414–470)

FinST points out that it is not enough to simply set a topic for discussion, but rather discussion should be triggered. EthST, on the other hand, links the topic to an interest in religious freedom previously raised by a learner in the class. However, the learners' participation and discussion is not supported beyond this. The above excerpt was followed by a lengthy formulation of appropriate questions that match the learners' language skills. Adapting the language to the learners' level of language proficiency took up the majority of planning time, and was the only measure taken by the student teachers towards supporting learner interaction. The topics given for discussion tended to be rather broad and did not require structured interaction to solve an issue, construct knowledge or shared understanding, or come to some kind of conclusion. Discussion was not supported with respect to the subject content or by teaching interaction skills or key phrases to facilitate discussion, despite the student teachers' prior experience that discussions often do not engage more than a couple of students in the class.

These findings reflect the student teachers' pedagogical language knowledge (learners' skills, disciplinary language and pedagogical choices). Similar to their consideration of their current pedagogical practice (section 4.1), in their new initiatives the student teachers again equated disciplinary language with vocabulary. Furthermore, they were sensitive to the learners' skills and the limited Finnish language skills of the learners became the key focus of the student teachers' discussions. This focus shaped their pedagogy around the need to simplify materials and tasks. Pedagogically, learner support was thus perceived not as the provision of linguistic or content resources for participation, but as the simplification of linguistic material and avoidance of difficulties. This is perhaps to be expected as the context was new to the student teachers and the assessment of learner skills and material difficulty were not yet routinized.

## 5. Discussion and conclusions

In this study, we traced two student teachers' collaboration in pedagogical practice development when integrating Finnish language and ethics content knowledge in a multilingual and multicultural classroom. We examined how the student teachers critically considered their existing pedagogical practice and made efforts to develop towards a more learner-centred approach. Crossing of subject boundaries was examined by analysing what kind of pedagogical language knowledge their practice development reflected. The findings in relation to the research questions



are discussed in the following.

The process of practice development was iterative and involved ambiguity and uncertainty (see also [Damsa & Jornet, 2016](#)). The student teachers' collaboration reflected predictable inconsistencies, as they were in a cross-disciplinary setting orienting themselves to something new. They had a mutual will to engage and activate the learners in meaningful activities and constantly made multiple efforts to develop more learner-centred pedagogy. However, their talk reveals that their pedagogical ideals did not match their practice and that they were, to a degree, aware of and dissatisfied with this. Based on the analysis, it is evident that despite the clear advocacy of the idea of student activation, the student teachers did not discuss in depth how they perceive learner engagement or what this requires in terms of pedagogical practice. Moreover, it is noteworthy that the classroom activities were designed as a continuum of task types and not planned according to explicit learning or (linguistic) skills development objectives, as the student teachers formulated the goals of each lesson only at the end of each planning session when filling in the lesson plan form. Our analysis suggests that the student teachers were not able to resolve the critical inconsistencies behind their approach because their idea of language and content integration was still developing and, despite their continuous efforts to analyse their practice, they did not seem to have tools for pedagogical development. This tendency may be typical of relatively short-term student teacher projects. The findings of this study are in line with previous research that shows that promoting student collaboration and crossing subject boundaries does not automatically lead to innovative learning and generating new practices or knowledge ([Barron, 2003](#); [Kuusisaari, 2010](#); [Meirink, Imants, Meijer, & Verloop, 2010](#); [Tillema & van der Westhuizen, 2006](#)). The student teachers' knowledge asymmetry should ideally form a zone of proximal development (ZPD, [Vygotsky, 1978](#)) in which they can scaffold each other's personal development by co-constructing a shared practice ([Lin, 2015](#)).

The observed tendencies in pedagogical practice development suggest that the student teachers' pedagogical practice was interwoven with their pedagogical language knowledge, particularly their ways of perceiving 1) learners' language skills and 2) disciplinary language and, furthermore, 3) the pedagogical knowledge and skills needed to develop meaningful activities that engage students in collaborative meaning-making and foster both language growth and content learning. Both in their critical consideration of their existing pedagogical practice and in their efforts to generate more learner-centred activities, the student teachers were sensitive to the learners' language skills but viewed them through the lens of deficiencies and difficulties in learning. They thus did not consider the learners' existing knowledge and experiences as a resource for learning.

The student teachers' difficulty in outlining the role of language in content learning and perceiving the characteristics of disciplinary language seemed to narrow their understanding of disciplinary language to vocabulary, ignoring for instance the discursive and textual aspects of the subject (for similar findings, see also [Aalto & Tarnanen, 2017](#); [Creese, 2010](#); [Zwiers, 2006](#)). Language and content tended to remain as separate reified entities and not as a unified process ([Dalton-Puffer, 2011](#)) of engaging learners in developing language and content knowledge and skills in a target-oriented way. However, sufficient vocabulary is not enough for participation; instead, systematic development of interaction and strategic skills is needed.

Finally, the pedagogical aspect of the student teachers' pedagogical language knowledge rested on their emphasis on the learners' limited skills and the idea of linguistic simplification of tasks and materials, while support for participation, peer interaction and strategic reading and language use remained low. The

student teachers did recognize the need to activate the learners, but this did not lead them to develop ways of supporting learner engagement through cognitively challenging activities or to provide tools for participating in meaning-making ([Kibler, Walqui, & Bunch, 2015](#)). Rather, it tended to strengthen their need for teacher control, as the perceived deficient language skills and related difficulties in learning of the learners were taken as the pedagogical starting point and learning became something delivered by the teacher to be internalized by the student. Activities aiming to activate the learners were treated as a change from the normal teacher-centred approach, and interaction more as a technical method than as a social contract ([Dillenbourg, 1999](#)).

The findings of this study are also consistent with earlier studies that have shown that in groups of second language learners a traditional, reductive pedagogy in accordance with the notion that language has to be acquired first before it can be used for content learning is often employed (see, e.g., usage-based approach to language learning, [Tomasello, 2003](#)). However, a pedagogical approach that focuses on difficulties may constrict pedagogical practice development and the learners' learning. Therefore, many current pedagogical recommendations promote amplifying instead of simplifying content knowledge ([Walqui & van Lier, 2010](#)).

There are some challenges to be considered in the evaluation of the study, as the first author was a teacher of the student teachers and responsible for the teaching practice explored in the study. The aim was to examine the phenomenon of pre-service teacher collaboration across disciplines and not to influence it. Therefore, as is typical of the chosen practitioner research approach ([Heikkinen, de Jong, & Vanderlinde, 2016](#)), the researcher's two-fold position was sometimes problematic, as she did not want to get involved in or guide the student teachers' efforts. If asked, she supervised the participants regarding their specific questions. Throughout the research process this two-fold position has been analytically reflected upon and the phases of the research were validated by the co-authors. Furthermore, the student teachers participated voluntarily in the study and were therefore highly motivated; the results might have been rather different if the participating students were less motivated to collaborate and to cross subject boundaries. In addition, the instructions given for the teaching practice are likely to have to some degree guided the student teachers' performance and thinking, and the planning process might have differed without the research setting. Moreover, the course that the student teachers were planning was optional for the learners and, therefore, likely to be more challenging to conduct than obligatory courses in which learners engage better. However, the study throws light on student teachers' mutual process of developing a shared pedagogical practice across disciplines, which is relevant for the development of teacher education.

Presumably, an intervention that requires boundary-crossing across disciplines may even enlarge the disciplinary gap and thus lead in the opposite direction to that intended. In line with many previous studies, in the present study language was perceived even as subordinate to content knowledge and negotiation of the role of language within content knowledge learning thus remained limited ([Arkoudis, 2006](#); [Creese, 2002](#)). According to [Akkerman and Bakker \(2011\)](#), even if participants are able to generate a new practice, it should not be understood as a fusion of two intersecting sociocultural systems. In the pedagogical context of language and content integration the boundaries of disciplinary expertise remain, but it is noteworthy that linguistic analysis of disciplinary language is not straightforward even for language experts. Development of pedagogical language knowledge should therefore be a mutual effort of both language and content knowledge experts.

On the basis of the results of this case study some implications for teacher education can be made. In the context of independent

teacher practice where supervision resources are limited, student teachers would benefit from models for both their pedagogical planning and for reflection on their action. This study suggests that longer-term processes along with timely supervision practices and relevant supportive tools are needed to foster productive collaborative learning in teacher education. Supervision mechanisms should provide students with theory-based conceptual tools for examining and reflecting on the process (see also Kuusisaari, 2014). As Dinkelman (2003) pointed out, only a reflective practitioner learns from experience.

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## References

- Aalto, E., & Tarnanen, M. (2015). Approaching pedagogical language knowledge through student teachers: assessment of second language writing. *Language and Education*, 29(5), 400–415.
- Aalto, E., & Tarnanen, M. (2017). Negotiating language across disciplines in pre-service teacher collaboration. *European Journal of Applied Linguistics*, 5(2), 245–271.
- Achinstein, B. (2002). Conflict amid community: The micropolitics of teacher collaboration. *Teachers College Record*, 104(3), 421–455.
- Agyei, D., & Voogt, J. (2012). Developing technological pedagogical content knowledge in pre-service mathematics teachers through collaborative design. *Australasian Journal of Educational Technology*, 28(4), 547–564.
- Ahn, R., & Class, M. (2011). Student-centered pedagogy: Co-construction of knowledge through student-generated midterm exams. *International Journal of Teaching and Learning in Higher Education*, 23(2), 269–281.
- Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, 81(2), 132–169.
- Arkoudis, S. (2006). Negotiating the rough ground between ESL and mainstream teachers. *International Journal of Bilingual Education and Bilingualism*, 9(4), 415–433.
- Barron, B. (2003). When smart groups fail. *The Journal of the Learning Sciences*, 12(3), 307–359.
- Bransford, J., Darling-Hammond, L., & LePage, P. (2005). Introduction. In L. Darling-Hammond, & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 1–40). Somerset, US: Jossey-Bass.
- Brown, K. (2003). From teacher-centered to learner-centered curriculum: Improving learning in diverse classrooms. *Education*, 124(1), 49–54.
- Buendía, E. (2000). Power and possibility: The construction of a pedagogical practice. *Teaching and Teacher Education*, 16(2), 147–163.
- Bunch, G. (2013). Pedagogical language knowledge: Preparing mainstream teachers for English learners in the new standards era. *Review of Research in Education*, 37, 298–341.
- Canale, M., & Swain, M. (1980). Theoretical bases of communicative approaches to second language teaching and testing. *Applied Linguistics*, 1, 1–46.
- Chan, C., & Pang, M. (2006). Teacher collaboration in learning communities. *Teaching Education*, 17(1), 1–5.
- Cope, B., & Kalantzis, M. (2015). The things you do to know: An introduction to the pedagogy of multiliteracies. In B. Cope, & M. Kalantzis (Eds.), *A pedagogy of multiliteracies: Learning by design* (pp. 1–36). London: Palgrave.
- Creese, A. (2002). The discursive construction of power in teacher partnerships: Language and subject specialists in mainstream schools. *Tesol Quarterly*, 36(4), 597–616.
- Creese, A. (2010). Content-focused classrooms and learning English: How teachers collaborate. *Theory Into Practice*, 49(2), 99–105.
- Cummins, J. (2001). *Negotiating: Education for empowerment in a diverse society* (2nd ed.). Los Angeles: California Association for Bilingual Education.
- Dalton-Puffer, C. (2011). Content-and-Language integrated learning: From practice to principles? *Annual Review of Applied Linguistics*, 31, 182–204.
- Damsa, C. (2013). *Knowledge co-construction and object-oriented collaboration: A study of learning through collaborative construction of knowledge objects in higher education*. Dissertation submitted for the degree of PhD Department of Education Faculty of Educational Sciences, University of Oslo.
- Damsa, C., & Jornet, A. (2016). Revisiting learning in higher education—framing notions redefined through an ecological perspective. *Frontline Learning Research*, 4(4), 39–47.
- DelliCarpini, M. (2009). Dialogues across disciplines: Preparing English-as-a-second-language teachers for interdisciplinary collaboration. *Current Issues in Education*, 11(2), 1–17.
- Dillenbourg, P. (1999). What do you mean by collaborative learning? In P. Dillenbourg (Ed.), *Collaborative-learning: Cognitive and computational approaches* (pp. 1–19). Oxford: Elsevier.
- Dinkelman, T. (2003). Self-study in teacher education: A means and ends tool for promoting reflective teaching. *Journal of Teacher Education*, 54(1), 6–18.
- Dufva, H., Aro, M., & Suni, M. (2014). Language learning as appropriation: How linguistic resources are recycled and regenerated. *AFinLA-E: Soveltavan Kielitieteen Tutkimuksia*, 6, 20–31.
- Dufva, H., Suni, M., Aro, M., & Salo, O.-P. (2011). Languages as objects of learning: Language learning as a case of multilingualism. *Apples – Journal of Applied Language Studies*, 5(1), 109–124.
- Faltis, C., Arias, B., & Ramírez-Marín, F. (2010). Identifying relevant competencies for secondary teachers of English language learners. *Bilingual Research Journal*, 33, 307–328.
- Gajo, L. (2007). Linguistic knowledge and subject knowledge: How does bilingualism contribute to subject development? *International Journal of Bilingual Education and Bilingualism*, 10(5), 563–581.
- Gleeson, M. (2010). *language and content? How do curriculum teachers of year 12 English language learners combine two disciplines?* Victoria University of Wellington dissertation. Retrieved on 25 November, 2016 from: <http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/1637/thesis.pdf?sequence=1>.
- Heikkinen, H., de Jong, F. P., & Vanderlinde, R. (2016). What is (good) practitioner research? *Vocations and Learning*, 9(1), 1–19.
- Hsieh, H., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277–1288.
- de Jong, E., Harper, C., & Coady, M. (2013). Enhanced knowledge and skills for elementary mainstream teachers of English language learners. *Theory Into Practice*, 52, 89–97.
- Kärkkäinen, M. (1999). *Teams as breakers of traditional work practices. A longitudinal study of planning and implementing curriculum units in elementary school teacher teams*. Doctoral dissertation. Research bulletin 100. Helsinki: Department of Education, University of Helsinki.
- Kuukka, K., Ouakrim-Soivio, N., Paavola, H., & Tarnanen, M. (2015). Kulttuurisen monimuotoisuuden edistäminen ja kehittämistarpeet. In T. Pirinen (Ed.), *Maahanmuuttajatutustajat oppijat suomalaisessa koulutusjärjestelmässä – koulutuksen saavutettavuuden ja opiskelun aikaisen tuen arviointi* (pp. 181–199). Helsinki: Kansallinen koulutuksen arviointikeskus. Learners with immigrant backgrounds within the Finnish education system – Evaluation on the access to education and the support during studies.
- Kaufman, D., & Brooks, G. J. (1996). Interdisciplinary collaboration in teacher education: A constructivist approach. *Tesol Quarterly*, 30(2), 231–25.
- Kibler, A., Walqui, A., & Bunch, G. (2015). Transformational opportunities: Language and literacy instruction for English language learners in the common core era in the United States. *TESOL Journal*, 6(1), 9–35.
- Kleyn, T., & Valle, J. (2014). Modeling collaborative teaching in teacher education: Preparing pre-service teachers to teach all students. In Y. Freeman, & D. Freeman (Eds.), *Research on preparing preservice teachers to work effectively with emergent bilinguals. Advances in research on teaching* (Vol. 21, pp. 137–164). Emerald Group Publishing Limited.
- Kuusisaari, H. (2010). Yhteisen tiedon tuottamisen prosessi – teorialiedon ja opettajien kokemustiedon kohtaaminen kehittämispuheessa. [The process of knowledge co-construction - the encounter of theoretical knowledge and experience knowledge in developing talk.]. *Kasvatus*, 41(3), 226–239.
- Kuusisaari, H. (2013). Teachers' collaborative learning – development of teaching in group discussions. *Teachers and Teaching: Theory and Practice*, 19(1), 50–62.
- Kuusisaari, H. (2014). Teachers at the zone of proximal development – collaboration promoting or hindering the development process. *Teaching and Teacher Education*, 43, 46–57.
- Lantolf, J., & Thorne, S. (2006). *Sociocultural theory and the genesis of second language development*. Oxford: Oxford University Press.
- Lin, L. (2015). Exploring collaborative learning: Theoretical and conceptual perspectives. In *Investigating Chinese HE EFL classrooms. Using collaborative learning to enhance learning* (Vols. 11–28) Berlin Heidelberg: Springer-Verlag.
- Lonka, K. (2018). *Phenomenal learning from Finland*. Helsinki: Edita Publishing.
- Love, K. (2009). Literacy pedagogical content knowledge in secondary teacher education: Reflecting on oral language and learning across the disciplines. *Language and Education*, 23(6), 541–560.
- Lucas, T., & Grinberg, J. (2008). Responding to the linguistic reality of mainstream classrooms. Preparing all teachers to teach English language learners. In M. Cochran-Smith, S. Feiman-Nemser, & D. J. McIntyre (Eds.), *Handbook of research on teacher education. Enduring questions in changing contexts* (pp. 606–636). New York: Routledge.
- Luukka, M.-R., Pöyhönen, S., Huhta, A., Taalas, P., & Tarnanen, M. (2008). Maailma muuttuu – mitä tekee koulu? Äidinkielen ja vieraiden kielten tekstikäytänteet koulussa ja vapaa-aikalla. In *The world changes – how does the school respond? Mother tongue and foreign language literacy practices in school and in free-time*. Jyväskylä: Jyväskylän yliopisto, Soveltavan kielentutkimuksen keskus.
- Mascolo, M. (2009). Beyond student-centered and teacher-centered pedagogy: Teaching and learning as guided participation. *Pedagogy and the Human*

- Sciences*, 1(1), 3–27.
- May, S., & Smyth, J. (2007). Addressing literacy in secondary schools: Introduction. *Language and Education*, 21(5), 365–369.
- Meirink, J. A., Imants, J., Meijer, P. C., & Verloop, N. (2010). Teacher learning and collaboration in innovative teams. *Cambridge Journal of Education*, 40(2), 161–181.
- 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.
- Mortimer, E., & Scott, P. (2003). *Meaning making in secondary science classrooms*. Maidenhead: Open University Press.
- Mousa, W. (2012). Collaboration between English as a second language teachers and content area teachers; Implications for working with English language learners. *ETD Archive*. Paper 214. Retrieved on 16 May, 2018 from: <https://engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?referer=https://www.google.fi/&httpsredir=1&article=1213&context=etdarchive>.
- National Board of Education (NBE). (2014). *Koulutuksen seurantaraportti 2014:10* [Educational follow-up reports 2014:10]. Helsinki: Opetushallitus.
- Nikula, T., Dalton-Puffer, C., Llinares, A., & Lorenzo, F. (2016). More than content and language: The complexity of integration in CLIL and multilingual education. In T. Nikula, E. Dafouz, P. Moore, & U. Smit (Eds.), *Conceptualising integration in CLIL and multilingual education* (pp. 1–28). Bristol: Multilingual Matters.
- Orland-Barak, L., & Tillema, H. (2006). The 'dark side of the moon': A critical look at teacher knowledge construction in collaborative settings. *Teachers and Teaching: Theory and Practice*, 12(1), 1–12.
- Patton, M. (2015). *Qualitative research & evaluation methods. Integrating theory and practice*. Thousand Oaks, CA: Sage.
- Pawan, F., & Orloff, J. (2011). Sustaining collaboration: English-as-a-second-language, and content-area teachers. *Teaching and Teacher Education*, 27(2), 463–471.
- Pettit, S. (2011). Teachers' beliefs about English language learners in the mainstream classroom: A review of the literature. *International Multilingual Research Journal*, 5(2), 123–147.
- Popp, J., & Goldman, S. (2016). Knowledge building in teacher professional learning communities: Focus of meeting matters. *Teaching and Teacher Education*, 59, 347–359.
- Roschelle, J., & Teasley, S. (1995). The construction of shared knowledge in collaborative problem solving. In C. O'Malley (Ed.), *Computer supported collaborative learning. NATO ASI Series* (Vol. 128). Berlin, Heidelberg: Springer.
- Statistics Finland. (2017). *Migration*. Retrieved on 17 May, 2017 from: [http://www.stat.fi/til/muut/index\\_en.html](http://www.stat.fi/til/muut/index_en.html).
- Tillema, H., & van der Westhuizen, G. (2006). Knowledge construction in collaborative enquiry among teachers. *Teachers and Teaching: Theory and Practice*, 12(1), 51–67.
- Tilley-Lubbs, G., & Kreye, B. (2013). Collaboration for authentic preservice teacher experiences: Mathematics and English as a second language. *International Journal of Teaching and Learning in Higher Education*, 25(3), 316–323.
- Tomasello, M. (2003). *Constructing a language: A usage-based theory of language acquisition*. Cambridge, MA: Harvard University Press.
- Tsui, A. B. M., & Law, D. Y. K. (2007). Learning as boundary-crossing in school–university partnership. *Teaching and Teacher Education*, 23, 1289–1301.
- van Lier, L. (2000). From input to affordance: Social-interactive learning from an ecological perspective. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 155–177). Oxford: Oxford University Press.
- Van den Bossche, P., Gijssels, W., Segers, M., & Kirschner, P. (2006). Social and cognitive factors driving teamwork in collaborative learning environments: Team learning beliefs and behaviours. *Small Group Research*, 37, 490–521.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological functions*. Cambridge: Harvard University Press.
- Walqui, A., & van Lier, L. (2010). *Scaffolding the academic success of adolescent English language learners*. San Francisco: WestEd.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.
- Zheng, D., & Newgarden, K. (2012). Rethinking language learning: Virtual worlds as a catalyst for change. *International Journal of Learning and Media*, 3(2), 13–36.
- Zwiers, J. (2006). Integrating academic language, thinking, and content: Learning scaffolds for non-native speakers in the middle grades. *Journal of English for Academic Purposes*, 5(4), 317–332.