Student craft teachers' perceptions of their preparedness to teach crafts in Finnish basic education

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Finnish craft education, as well as the basic education school system in general, continues to undergo various changes. One such change involved a transition from the basic education crafts subject with two content areas (textile and technical crafts, taught separately and according to pupils' choice) to the subject of crafts in which all pupils study both content areas. Subsequently, the craft teacher education programmes specialising either in textile or technical crafts were replaced by programmes covering both content areas. This study investigates how student craft teachers (who studied during the early years of this transitional period) perceived their preparedness to teach basic education crafts. Preparedness to teach, originating from the concept of self-efficacy, entails students' perceptions of their acquired competencies, future responsibilities and expected challenges as craft teachers. We combined a survey instrument used earlier in Finland and a semi-structured interview to provide a rich understanding of students' views. According to the survey, students were least concerned about their subject-specific (i.e., craft) skills. Simultaneously, they were most concerned about their special education skills, which concurs with previous domestic and international research results. However, this mixed-methods approach revealed a clear discrepancy between the survey results and the issues that students raised in the interviews. We discuss the results considering the school system changes (including increasing pupil diversity) and the balance between subject-specific and pedagogical skills provided by teacher education. Notably, despite the transitional period and multiple changes, students' perceptions on entering working life as craft teachers were predominantly positive.

Keywords: Craft teacher education, curriculum change, differentiation, pedagogical skills, pupil diversity, special education

Introduction

The Finnish educational landscape has undergone several changes in recent decades. Inevitably, these changes have caused – and continue to cause – pressures on teacher education. Craft teacher education has already accommodated some of these changes, while some remain at the level of discussion in various forums. These discussions also provide a societal context for student teachers' development of their teacher identity, which is an ongoing process involving both personal and social factors (Krzywacki, 2009). Furthermore, these discussions can also contribute to student craft teachers' perceptions of job insecurity. While renegotiations appear to continue in various forums, the views of student craft teachers and the role of teacher education have been understudied.

This study belongs to a broader research endeavour related to the perceptions of Finnish student craft teachers near graduation as they navigate the multiple changes affecting Finnish basic education and the subject of crafts. In this research, students' perceptions of various dimensions of craft teacher education

and craft teacher competencies were gathered to inform craft teacher education practices and curricula. While leaving a systematic examination of curricula and instructional practices encountered by the participating students for further studies, this study approaches the collected data with the construct of *preparedness to teach*. Student teachers' preparedness to teach reflects their beliefs about their competences and responsibilities and the challenges they expect to face as teachers (Elyashiv & Rozenberg, 2024). Preparedness to teach has been connected with one's readiness to engage with the teaching profession (Abraham et al., 2021), perceptions of teaching efficacy, and plans to stay in the occupation (Darling-Hammond et al., 2002). Even if preparedness does not necessarily correlate with actual performance, it is an important motivational construct with the potential to shape teaching performance and increase teacher retention (Elyashiv & Rozenberg, 2024).

From these premises, this study aims to investigate student craft teachers' perceptions of their preparedness for their future occupation: teaching crafts in Finnish basic education. To understand the study context, Finnish craft teacher education and basic craft education, the following provides an outline of the teacher education and basic education curricula (only) to the extent relevant for this study. First, we outline the changes around and in Finnish basic education.

Some recent changes have been extremely rapid due to the global Covid-19 pandemic (Lavonen & Salmela-Aro, 2022, but Korte et al., 2022) and some can be considered self-inflicted, such as the 2014 changes in the National Core Curriculum for Basic Education [NccBe-2014]. However, some changes have been underway for long. Declining age cohorts pose challenges to school networks, especially to basic education schools and rural areas (Aro et al., 2023), resulting in a declining need for teachers. Pupil diversity has increased (Jantunen et al., 2022). Regional and social segregation is increasing, as are differences in learning results between pupils as well as between schools (Bernelius & Huilla, 2021). What is notable for teacher education is that the skills needed to teach increasingly diverse pupil populations have been widely discussed (Alajoki & Mäkinen, 2023; Jantunen et al., 2021; Jyrhämä, 2021; Taajamo et al., 2025; UNESCO, 2020). Doubts have been raised as to whether subject-specific knowledge and the related pedagogical content knowledge gained during subject teacher education are adequate when facing diverse pupil populations (Alajoki & Mäkinen, 2023).

In research on Finnish craft education, some of these trends have already been highlighted. Covid-19 mostly brought temporary challenges (Kouhia et al., 2021a; Porko-Hudd & Hartvik, 2021, 2023). Moreover, in a national-level survey of basic education students' craft skills at the end of the mandatory crafts syllabus (Hilmola, 2023), no significant regional differences were identified. Additionally, between-school differences were smaller than between-student differences. Notably, girls' test performance surpassed boys' performance, which indicated a change since the 2010 survey in which no significant differences between these two groups were identified (Hilmola, 2023).

Every NccBe has included changes in its parts concerning the subject of crafts (see, e.g., Kokko et al., 2020, 2022; Porko-Hudd et al., 2018). However, the NccBe-2014 change has been much debated; even described as revolutionary (Kokko et al., 2020). Since the beginning of the NccBe-2014 implementation (August 2016), pupils do not make any choices between the two crafts content areas: textile or technical crafts (Finnish National Agency of Education [EDUFI], 2025). Coined as multi-material crafts by the NccBe-2014, this basic education subject aims to equip all students equally with diverse basic craft skills covering both content areas (EDUFI, 2014). For instance, a good level of learning for learning objective T4 at grade 6 entails being able to select, combine and use different materials and manufacturing techniques with informed and reasoned consideration of their properties and possibilities (EDUFI, 2014).

This broadening of the scope regarding materials and techniques has raised concerns about the insufficient time and practice needed for the proper learning of craft skills (Kokko et al., 2020; Porko-Hudd & Hartvik, 2021). However, what was even more substantial and long-reaching was the change

in craft teacher education, which approached the new situation by replacing the previously separate degrees for technical and textile crafts with a craft teacher degree involving both content areas. How this change will – and if it will – be reflected in craft teacher recruitment in the long run remains unclear. Considering all this, it is understandable that student craft teachers have mixed feelings at times.

Boundaries, legacy and the transformation of Finnish craft teacher education

According to Finnish legislation, the subject teacher qualification entails a master's-level degree (300 ECTS) with a minimum of 60 ECTS in both subject-specific and teacher pedagogical studies (Finlex, 986/1998). Subject teachers work predominantly with lower (and at times, upper) secondary classes (Jyrhämä, 2021). For craft education, this means that class teachers typically teach crafts for grades 1–6, leaving grade 7 (and elective courses for grades 8–9, in schools in which those are offered) for subject teachers of crafts.

Finnish teacher education employs two different models. In many subjects, students first complete their subject-specific studies and then continue to a year-long teacher pedagogical studies programme. Some subject teacher programmes, such as crafts, home economics and mathematics, are scheduled to take five years, during which pedagogical and subject-specific studies alternate (Mankki et al., 2025). Teacher pedagogical studies include several teaching practicum periods (about 20 ECTS in total), which are predominantly implemented in basic education.

In Finland, four craft teacher education programmes exist: three Finnish-speaking programmes (offered by the universities of Eastern Finland [UEF], Helsinki [UH], Turku [UTU]) and one Swedish-speaking programme (at Åbo Akademi in Vaasa). Each programme has its own curriculum, even if the overall structure of the programmes follows the general principles of Finnish teacher education discussed above. These craft teacher education curricula have changed over the years to accommodate changes in the NccBe. Many of the changes in NccBe-2014 are rooted in long-term developments (for details, see Kokko et al., 2020, 2021b). One of the most discussed changes related to the long tradition of dividing crafts into two content areas: textile and technical crafts, between which pupils needed to choose. Correspondingly, the tradition was manifested in separate craft teacher education programmes and qualification requirements for technical and textile crafts. Subsequently, the responsibilities for teaching crafts in basic education schools were divided between the two content areas. This resulted in gender-based segregated basic education crafts, as most girls participated in textile crafts and almost all the boys participated in technical crafts (Kokko, 2012). To avoid this, efforts were made to obtain a gender-neutral crafts subject (Autio, 2023; Lepistö & Lindfors, 2015; Niiranen, 2016; Niiranen et al., 2021; Virtanen et al., 2015). As a result, the current NccBe-2014 crafts subject aims to provide all learners with a broad understanding of the different aspects of crafts (Pöllänen et al., 2021b). According to the curriculum (EDUFI, 2014), learning is driven by creativity, problem-solving, cultural awareness and technological literacy.

For basic education schools, the NccBe provides a uniform foundation that is to be detailed in local curricula accounting for local needs and perspectives (EDUFI, 2026a). Furthermore, transforming these local-level interpretations of the NccBe into classroom activities is affected by factors such as teachers' skills and viewpoints, school culture, available time and other resources (Goodland et al., 1979). Debates are also caused by collisions between the curriculum's different representations: ideological, formal, perceived, operational and experiential (Goodlad et al., 1979). However, the NccBe-2014 crafts subject appears to have activated an unprecedent number of various stakeholders and members of the public to voice their interpretations of basic education crafts: what it means in practice and how it should be implemented (Kokko et al., 2020). Topics have included the role of digitalisation as common and unifying content for content areas (Pöllänen et al., 2021b) and co-teaching as a collaboration of experts (Härkki et al., 2024). Co-teaching entails integration, for example, in the direction of arts and expression, technology and engineering or natural sciences (Pöllänen et al., 2021b). One constant area of concern appears to be pupil learning in basic education (Kokko et al., 2020). Worried voices have also been

raised regarding craft skills that can be achieved with current craft teacher education curricula (e.g., Niiranen et al., 2021). Namely, since 2016, all Finnish craft teacher education programmes have covered both textile and technical crafts with the aim of educating teachers who are qualified to teach the entire spectrum of craft technologies and contents. Before this, the programmes focused on one craft content area. Hence, most current in-service basic education craft teachers' degree qualifications cover only textile or technical crafts. This will continue to affect the structure of crafts teaching in basic education and the reality that student craft teachers encounter during practicum periods or when working as substitute teachers.

Furthermore, there are signs of diverse NccBe-2014 interpretations. In Hilmola's (2023) data corpus, collected in 2021 and covering 62 schools, teachers reported that only 4 per cent of the studied pupils (N = 1414) had participated in crafts organised according to the NccBe-2014. The situation may have changed since then. However, some student craft teachers working as substitute teachers could have noticed that real-life craft teaching differs from the NccBe-2014 and the craft teacher education curriculum. This could have an impact on students' perceptions of their own teaching competence.

Student teachers' perceptions of their preparedness to teach

The construct of preparedness has its origins in the concept of self-efficacy (Housego, 1990), which Bandura (1997, p. 3) defined as one's 'beliefs in their capabilities to organize and execute the course of action required to produce given attainments'. In comparison, student teachers' perceptions of their preparedness to teach reflect their beliefs about their competences, responsibilities and the challenges they expect to face as teachers (Elyashiv & Rozenberg, 2024). In the research literature, preparedness and self-efficacy have consistently been treated as separate entities.

Student teachers' and early career teachers' preparedness to teach has been studied at least since the late 1980s. Recent international studies on preparedness to teach have centred on teaching multicultural classrooms (Ji et al., 2025), in culturally and linguistically diverse classrooms (Peterson et al., 2025), and the teaching of sustainable development goals (Leal et al., 2026). In Finland, the construct of preparedness to teach has been used, for instance, to study outcomes of teacher education (Saloviita et al., 2017, 2019) and class teachers' preparedness to teach programming (Pörn et al., 2021).

Preparedness to teach has consistently been found to correlate with teaching self-efficacy (e.g., Aybek & Aslan, 2019; Abraham et al., 2021; Darling-Hammond et al., 2002; Elyashiv & Rozenberg, 2024; Giallo & Little, 2003; Housego, 1990), with the management of classroom behaviour (Giallo & Little, 2003), with the responsibility for student learning and with plans to remain in teaching (Darling-Hammond et al., 2002). Furthermore, student teachers' preparedness to teach has been used as a measure of teacher education quality in meeting national standards (Darling-Hammond et al., 2002; Swabey et al., 2019), as well as an estimate of individuals' readiness to engage with the teaching profession (Abraham et al., 2021) and commitment to teaching (Darling-Hammond et al., 2002; Swabey et al., 2019). While no direct correspondence has been found between perceptions of preparedness and actual professional success (Brown et al., 2021; Giallo & Little, 2003; Saloviita, 2019), preparedness is a worthy research topic as a motivational construct with the potential to shape teacher performance and increase teacher retention (Elyashiv & Rozenberg, 2024).

Perceptions of preparedness are shaped by individual and contextual factors, as well as by teacher education (Darling-Hammond et al., 2002; Siwatu, 2011). In general, the practical experience of teaching has been linked with an increased perceived preparedness (Brown et al., 2021; Saloviita & Tolvanen, 2017; Ukkonen-Mikkola et al., 2021). However, considering the above-mentioned possible misalignment between real-life craft teaching experiences and craft teacher education curricula, this might not always be the case for student craft teachers. Similarly, Siwatu (2011) discussed students' doubts about the correspondence between their accumulated experience and anticipated school settings as potentially meaningful factors for students' perceptions of their preparedness to teach.

However, an evaluation of all the possible factors influencing individuals' perceptions of their preparedness is difficult (cf. Darling-Hammond et al., 2002). Some advice can be found in the literature on self-efficacy, as the two constructs are closely related. According to Bandura (1977, 1997), beliefs of self-efficacy are constructed from four principal sources of information: performance accomplishments; vicarious experience and social comparison; verbal persuasion; and physiological and affective states. Of these, performance accomplishments – such as successes and failures – are the most influential. While repeated successes often build strong positive expectations for future performance, the effects of failure depend on the timing and entirety of the experience. Failures experienced before one has formed a strong perception of one's self-efficacy are especially detrimental. Moreover, social, situational and temporal circumstances can dilute the effect of successes (Bandura, 1977, 1997). Notably, identifying sources of individuals' perceptions and establishing causality are further complicated by variations in their self-reflective metacognitive skills and capabilities to weight and integrate multidimensional information on their efficacy (for details, see Bandura, 1997).

As preparedness is a subjective measure, the level of realism behind students' beliefs – related to abilities, tasks and duties – is of utmost importance. Therefore, the above-mentioned discourses on crafts curricula and realities of craft teaching are not insignificant to student teachers' beliefs about their preparedness. Neither is the implemented curricula of teacher education. A recent study on Finnish student subject teachers' conceptions of teachers' work emphasises the central role of teacher education in supporting student teachers in recognising their future professional responsibilities (Lutovac & Körkkö, 2024). Yet, for reasons of clarity, this study focuses on student teachers' perceptions and leaves exhaustive treatment of teacher education curricula and practices for further studies.

In Finland, one previous data corpus on student teachers' (N = 1104) perceptions of their preparedness exists. The corpus was collected from student teachers who graduated from the University of Jyväskylä (2008–2015) and resulted in two studies: one on Finnish student class teachers (Saloviita & Tolvanen, 2017) and one comparing student class teachers with student subject teachers (Saloviita, 2019). The survey measure was based on an adaptation of the INTASC standard of teacher competency, which has its roots in the 1992 American standard for teachers' core competencies. Premises and early uses of INTASC are described, for instance, by Darling-Hammond et al. (2012), and a short history of various adaptations and expansions is available in Saloviita (2019). The Finnish adaptation by Saloviita included ten competence domains: content pedagogy, child development, special education, instructional strategies, motivation and management, communication and technology, planning, assessment, reflective professional development and co-operation (Saloviita, 2019).

Saloviita's (2019) data corpus included students from various subject teacher programmes: language, science and mathematics, history, religion, philosophy, psychology, arts, physical education and crafts. Three domains received especially low scores: co-operation, child development and special education – of which special education received the lowest scores. The studied students' perceptions aligned with the views of Finnish in-service subject teachers (Saloviita, 2020) and grade 7–9 teachers (Taajamo et al., 2025). Furthermore, in-service subject teachers perceived themselves as incompetent in teaching students who need stronger support, and they saw that encountering those students had not been part of their training (Saloviita, 2020).

Saloviita (2019) suggested that the low ranking of special education could reflect 'the relative indifference of the teacher education programme towards this area' (p. 330) and recommended a change in that respect. He also noted that the teacher education programmes that were studied had structural differences in the level of attention to the teaching competencies measured by the survey. Therefore, we compared the curricula of the three Finnish-language craft teacher education programmes from 2016 to 2022 to understand the extent with which craft teacher education has addressed inclusive practices and special education. Based on the curriculum descriptions (UTU, 2016, 2018, 2020, 2022; UEF, 2014, 2018, 2022, 2022; UH, 2015, 2021), these programmes included one to two courses that appeared to be related to special education topics. These courses represented 5–10 ECTS (out of a total of 300 ECTS).

This is in line with Äikäs et al.'s (2024) findings that Finnish teacher education programmes typically include one or two courses on special education.

However, teachers are increasingly required to achieve instructional goals in classrooms characterised by growing diversity. This trend is indicated by, for instance, the Finnish TALIS 2024 survey findings (Taajamo et al., 2025). Traditionally, approaches to diversity have focused on identifying learners' deficits, reinforcing the notion of learner groups perceived as deficient, incapable of learning or unable to cope (e.g. UNESCO, 2020). Contemporary perspectives, however, are shifting towards recognising barriers to learning and strengthening teacher education to equip teachers with the competencies needed to support all learners. According to UNESCO (2020; see also Arvelo-Rosales et al., 2021), essential components of teachers' professional competence today include valuing learner diversity, promoting the learning of all pupils, collaborating within one or more teaching teams and developing both professional and personal attributes.

These components are not new to Finnish basic education. In the year 2007, EDUFI stated the need to develop teaching to account for the needs of all pupils (EDUFI, 2007). These components have been included in the Finnish National Core Curriculum of 2016 and are further emphasised by the Finnish model of support for learning and school attendance (EDUFI, 2025), effective from August 2025. According to the model, all teachers need to account for and respond to all pupils' varying learning needs and capabilities by differentiating their teaching in co-operation with other school personnel (EDUFI, 2025).

For craft teachers, the capability to account for pupil diversity and support all learners is particularly important. Craft teachers work regularly in learning environments filled with various tools and machines that require advanced subject-specific skills and knowledge. Pupils' cognitive, metacognitive and fine-motor skills are regularly challenged during crafts lessons. As pupils' craft-related skills form a wide spectrum (Hilmola, 2023), the need to diversify craft teaching is evident.

Research questions

This study aims to investigate student craft teachers' perceptions of their preparedness for their future occupation: teaching crafts in Finnish basic education. Building on the previous research on Finnish student teachers' perceptions of their preparedness to teach, we set three research questions (RQs):

RQ1: When student craft teachers assessed the adequacy of the knowledge and experience acquired during their teacher education, which domains received (a) the highest and (b) the lowest ratings in the survey?

RQ2: What recurrent themes concerning these highest- and lowest-rated domains emerge from the students' interview responses?

RQ3: How did student craft teachers perceive their transition from teacher education into working life as craft teachers?

In the following, we describe the principles of our methodological choices, the study participants, data-acquisition procedures and the utilised quantitative and qualitative instruments. Then, we outline the multiple steps of our qualitative data analysis and the resulting coding scheme. The combined results and discussion section provides ample data excerpts to ensure that the diversity of student perspectives is highlighted. We end our conclusion with questions – rather than recommendations – for teacher education.

Method

Mixed-methods research design

The methodological design followed the aim of this study: to investigate student craft teachers' perceptions of their preparedness to teach crafts in Finnish basic education. The construct of preparedness to teach has been approached with several measurement instruments (e.g., Preparedness to Teach Scale by Darling-Hammond et al., 2002; Pre-service Teacher Professional Experience by

Abraham et al., 2021; PrepCon Questionnaire by Cains & Brown, 1996 and Giallo & Little, 2003; Sense of Preparedness by Siwatu, 2011, as well as the INTASC-scale derivative by Saloviita, 2019). Instead of developing and validating an instrument for the purposes of this study, we chose to use the one already used by Saloviita et al. (2017, 2019) in the context of Finnish teacher education. Using a survey with its background in the US-based (INTASC) teaching standard and competence model in the Finnish context can be questioned. Alternatives existed. For Finnish research-based teacher education, a specific teacher competence model has been developed: the Multidimensional Adapted Process Model of Teaching (Metsäpelto et al., 2021). Another possible starting point could have been, for instance, the seminal categorisation of the teachers' knowledge base by Shulman (1986), which has been widely used for various research purposes. However, choosing Saloviita et al.'s (2017, 2019) structured survey instrument preserved the comparability with previous Finnish results with a reasonably high sample (1102 pre-service primary and subject teachers, student craft teachers included).

However, to inform craft teacher education amid the various transformational trends and discussions, the depth and breadth of students' concerns and the subtleties of topics with which they were confident deserved to be understood in more detail; thus, a method that could capture and convey students' voices as authentically as possible was needed. Therefore, we chose a mixed-methods approach. Rooted in pragmatism, mixed-methods research combines quantitative and qualitative research approaches (Johnson & Onwuegbuzie, 2004). Pragmatism is a philosophy that has been systematically developed by classical pragmatists such as Dewey, James and Peirce, and later, refined by neo-pragmatists such as Davidson and Putnam (Johnson & Onwuegbuzie, 2004). In mixed-methods research, method selection follows the RQs, with the aim of finding the best combination to effectively obtain conducive results (Johnson & Onwuegbuzie, 2004).

The fundamental principle of mixed-methods research targets a design in which methods have complementary strengths and non-overlapping weaknesses (Johnson & Turner, 2003). In our design, the survey represented a method effortless enough for researchers in different universities to administer, and time-efficient for students to answer, likely resulting in relatively good coverage. Weaknesses of survey methods include the dependability of reliability on the survey structure and on the accuracy of participants' answers (Queirós et al., 2017). To improve the reliability of results and to preserve comparability with previous studies, the structure was borrowed from Saloviita (2019). To tackle the concern about the accuracy of answers, we chose to complement (Hunter et al., 2019) the survey with a semi-structured interview. Moreover, the semi-structured interview method supports acquiring a more nuanced view on students' perceptions, as the method suits exploring perceptions (Barriball & While, 1994). The semi-structured approach permits the interviewers to follow sub-themes that emerge from interviewees' reflections that appear as meaningful for them (Kallio et al., 2016) and to create an atmosphere supporting interviewees' retrospection on potentially sensitive and complex issues (Barriball & While, 1994). As the interviews were to be conducted by several researchers, an interview guide was developed to outline the interview themes and keep the interviews as comparable as possible (Kvale, 2011).

The analysis of the survey data was limited to descriptive statistics. The mean values are represented in the form of a horizontal bar graph, which provided an adequate answer to RQ1. Comparability with Saloviita's (2019) results was reached, and an overall view of the participants' perceptions was captured with relative ease. Therefore, the rationale for method selection in mixed-methods research (Hunter et al., 2019) was met with these decisions.

For the interview data, we chose an exploratory descriptive qualitative (EDQ) research approach (Hunter et al., 2019; Sandelowski, 2000) conducted through conventional content analysis (Hsieh & Shannon, 2005). Hunter et al. (2019) described the theoretical underpinnings of EDQ research. According to them, EDQ is a systematic and purposive undertaking, which aims to discover the 'who, what and where' of events or experiences, and to produce a straightforward description of the topic of interest. The EDQ approach is especially suitable for exploring phenomena with limited prior research literature coverage. Hunter et al. (2019) suggest concentrating the literature review on closely related research, while only

briefly addressing studies marginally related to the study topic, as those could distract readers from the study focus. Central to the EDQ approach is retaining the perspective of the participants when detailing the significance of the phenomena. This allows the study participants to contribute to the construction of scientific knowledge and to an increased understanding of the phenomena.

For methods, Hunter et al. (2019) and Sandelowski (2000) suggest semi-structured interviews and qualitative content analysis. Additionally, Hunter et al. (2019) recognise that quantitative materials such as participants' demographics could support the study. Sandelowski (2000) emphasises that qualitative descriptive studies involve low-inference interpretation, where accurately conveying the original meaning is central, rather than describing the data through a conceptual framework or abstractions (Sandelowski, 2000). These principles support the selection of conventional qualitative content analysis (Hsieh & Shannon, 2005) as the analysis method.

The main steps related to the study methods are compiled in Table 1, which is followed by more detailed descriptions of the analytical steps taken.

Table 1.
Main steps related to the methods

Phases	Analytical steps
Design of this mixed-methods study	
	Quantitative survey: Structure and an 11-item scale borrowed from Saloviita (2019) for comparability and to get an overall view on students' perceptions
	Semi-structured interview with five main themes, three of which that were included in this study to complement the survey data with rich qualitative data
Data acquisition	
	Online survey completed after final practicum N = 104 of which only the interview participants' responses were included in this study
	Semi-structured interviews completed remotely (via zoom) after the online survey N = 91 of which all were included in this study
Data analysis	
Survey data	Descriptive statistics of interview participants' answers: mean scores visualised as a horizontal bar graph Comparisons with Saloviita's (2019) results
Interview data	Exploratory descriptive qualitative analysis (Hunter et al., 2019; Sandelowski, 2000) Conventional qualitative content analysis (Hsieh & Shannon, 2005)
	1st phase: The development of tentative codes based on manifest content (Note: In this phase, the coding was not limited to the scope of this study, i.e., RQ2, but all students' strengths and development needs were coded) The data were divided between the following authors: Two authors each coded the same 20 per cent of the data, and the third coded all the data
	2nd phase: Tentative codes were compared; discrepancies were discussed and codes collated to preliminary categories that were representative on the level of the whole data corpus (e.g., preliminary codes with five or fewer instances were combined; codes with similar content but differently named with different authors were combined) This resulted in a preliminary coding scheme for all the data
	3rd phase: The coding scheme with preliminary categories was reviewed by an author who had not participated in the previous phases Some minor revisions on the choice of words in the category names were made, after which the final coding scheme for all the data was complete
	4th phase: From the final coding scheme, the categories and codes relevant for the scope of this study, i.e. RQ2, were extracted for the reporting of this study
Selection of representative data excerpts and reporting of results	

Participants and data collection

The three-year data collection period was conducted at UH, UTU and UEF. The participants were master's-level student craft teachers ($N = 114$) who had completed their final teaching practice and were very close to graduation. All participants gave their informed consent to participate in the research. Their participation was voluntary and had no effect on their grading.

First, the participants answered an online survey, the design of which is introduced in the following. The questionnaire involved an 11-item scale adapted from the Finnish interpretation of INTASC standards for teacher competence. The survey asked students to rate their perceptions of the adequacy of the knowledge and experience gained during teacher education. Of the 11 items, 9 followed previous Finnish surveys (Saloviita, 2019; Saloviita & Tolvanen, 2017), but our research focus on one school subject (crafts) permitted us to use a targeted formulation for survey item 1. That is, instead of 'disciplines in the school and they ways they are taught' (as in Saloviita et al., 2017, 2019), we referred to 'crafts and the teaching of crafts in basic education' (item 1.a), and 'facilitating a complete craft process' (item 1.b). The 5-point Likert scale ranged from strongly disagree (1) to strongly agree (5), in line with Saloviita. Additionally, the survey involved demographic variables, such as age, study year, university, estimated time of graduation, experience of teaching crafts, studies prior to teacher education, acquired pedagogical qualifications and related teaching experience. The survey questions are available in Appendix A.

The survey was followed by an online interview via zoom scheduled at the time of the students' choosing. The semi-structured interview (Kallio et al., 2016) involved five main themes probing the interviewees' perceptions of craft teacher expertise in general and were reflected on in reference to their own strengths. The interviewee was asked to reflect on the development of their craft teacher expertise in relation to factors within (and external to) teacher education, the role of teacher education in cultivating (or hampering) the development of that expertise, one's most significant development needs and, finally, one's orientation towards upcoming working life as a craft teacher. Of the data, only part was used in this study. The interviewers were university lecturers in charge of organising students' teaching practice; thus, they were familiar to most of their interviewees. All the interviewers used the interview guide.

Due to scheduling issues and student availability, interview data was obtained from 91 students. An average interview lasted 20 minutes, but the variation was large (9–52 minutes). In this study, survey data provided by participants who were not interviewed is excluded to maintain data coherence. Therefore, the final corpus involved data from 91 student craft teachers, the demographics of which are outlined in Table 2.

Table 2.

Participant demographics: age, level of prior education, whether prior education was related to crafts or pedagogy and whether they had worked as a substitute craft teacher. Note: The level of education follows the International Standard Classification of Education, in which 34 = upper secondary school, 35 = vocational education, 6 = bachelor's level, and 7 = master's level (EDUFI, 2026b).

		Level of prior education					Prior education related to...		Worked as a substitute craft
Age	N	34	35	6	7	Not known	Crafts	Pedagogy	teacher
< 25	24	12	1	0	0	11	3	0	12 (50%)
26–30	34	5	7	6	0	16	7	1	29 (85%)
31–40	25	0	11	9	2	3	14	6	18 (72%)
>40	8	1	1	4	2	0	5	0	7 (88%)
Total	91	18	20	19	4	30	29	7	66 (73%)

Data analysis

From the survey data, the means and standard deviations were calculated. The transcribed interview data were analysed through conventional (i.e., data-driven) qualitative content analysis (Hsieh & Shannon, 2005), with the steps described in Table 2. The coding was based on manifest content, which reflects the intent of EDQ to limit interpretation to a low-inference interpretation and to produce a straightforward description of the data (Hunter et al., 2019; Sandelowski, 2000). The themes and categories relevant for the scope of this study, i.e., RQ2, are presented in Table 3.

Table 3.

Final coding scheme for this study, i.e., RQ2

Category	Theme	Description
Crafts		
	Craft techniques (unspecified)	Student refers to 'craft techniques' but does not specify in more detail which technique or which type of technique.
	Technical crafts	Student refers to technical crafts, either generally or to a specific technical crafts technique, such as woodwork or welding.
	Textile crafts	Student refers to textile crafts, either generally or to a specific technical crafts technique, such as knitting or sewing.
	Teaching of crafts	Student refers to one or more phases of crafts teaching: planning, implementing or assessment.
Broad pedagogical understanding		
	Teaching methods	Student refers to pedagogy, planning or organising of teaching.
	Differentiation	Student refers to teaching tailored to individual student needs.
	Motivating	Student refers to teaching activities that aim to increase pupil interest around learning and participating.
	Teacher–pupil interaction	Student refers to noticing individual pupils, considering pupils' situations or, more generally, to interacting with pupils.
	Classroom management	Student refers to activities and interactions with a pupil group that aim to maintain a good quality learning environment and to avoid disturbing behaviour.

Results and discussion

This study focused on student craft teachers' perceptions of their preparedness to teach Finnish basic education crafts. The set RQs approached the topic through an online survey (RQ1) and a thematic semi-structured interview (RQ2 and RQ3), in which the students participated after their final practicum period. In the following section, the results are presented and discussed in the order of the RQs, with an emphasis on qualitative results and interview excerpts. We summarise this section with the results from RQ3, which provides an overview of the participants' views about entering working life as craft teachers. This level of preparedness was specifically probed by the summarising question at the end of the interview.

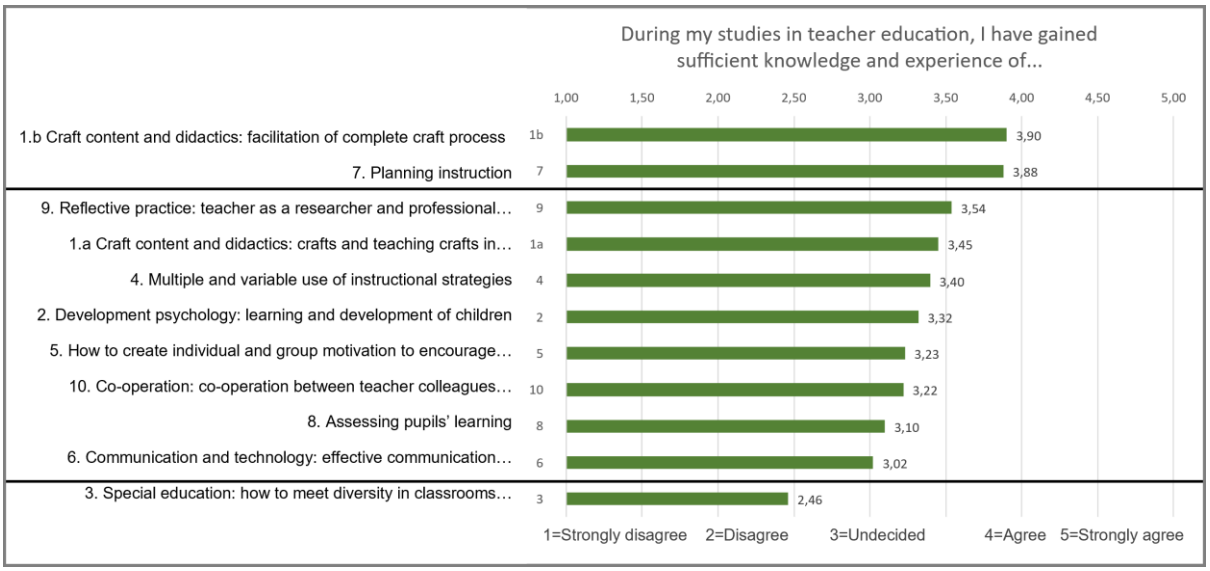
RQ1: Adequacy of the gained knowledge and experience

The RQ1 asked which domains received the highest and the lowest ratings when students considered if they had gained adequate knowledge and experience during teacher education. According to the survey asking them to rate (1–5, with 5 equalling 'strongly agree') the adequacy of the knowledge and experience they had gained during teacher education, three groups of domains of knowledge and experience could be identified (Figure 1). The highest ratings (close to 4.0) were related to 'teaching crafts', that is *craft content and didactics: facilitating a complete craft process* (item 1.b; mean 3.90) and *planning* (item 7; mean 3.88). On the other end, the lowest rating was related to *special education* (item 3; mean 2.46). The scores from the third group formed a middle group (of eight items) with scores

closer to each other (3.02–3.54) than the highest and lowest items. What was especially large was the difference between the mean values for *special education* (2.46) and the next lowest item *assessment* (3.10). Clearly, *special education* was in a class of its own.

Figure 1.

Survey results. The highest (on the top) and the lowest (at the bottom) scores separated from the middle scores by horizontal lines. Note: Items shortened. Full-length item text is available in Appendix A.



Due to a relatively small study sample and uneven demographic groups, we limit speculation related to the results and participant demographics to the notion that the youngest age group (less than 25 years old) was, in general, slightly more critical than the older ones. The youngest age group also had less work experience and fewer previous level 4–7 degrees than participants in the other groups.

When compared to Saloviita's (2019) study, there were clear commonalities. In Saloviita's (2019) study, students ranked *instruction planning* (item 7) as the highest, while in our study, students ranked it second, with only a 0.02 lower mean than the first-ranked *craft content and didactics* (item 1.b). In both studies, *special education* (item 3) was ranked the lowest. In both studies, *content pedagogy* (in our survey: item 1.a and item 1.b), *multiple instructional strategies* (item 4), *instruction planning* (item 7) and *reflective practice* (item 9) held the top positions. Three of these four (item 1, item 4 and item 7) heavily lean on subject-specific and pedagogical skills and knowledge, whereas *reflective practice* (item 9) could be called the go-to practice of Finnish teacher education.

Together with Saloviita's (2019) study, the results of our study indicate clear trends in Finnish teacher education: Students trust their subject-specific competencies more than their competence in the field of special education. Considering that special education can be taken as a major in the Finnish teacher education system, this could be natural, as the study participants understand that their own studies have offered them only a fraction of the content available for special education majors. Moreover, public discourse related to special education and inclusion appears to emphasise negative aspects (e.g., a recent master's thesis by Mikkola, 2023). This tendency is also visible in subject teachers' attitudes (Saloviita, 2020; Takala et al., 2023). It is understandable that student teachers feel underprepared. However, mere understanding is not an adequate response to students' concerns, especially considering the current support model for learning and school attendance (EDUFI, 2007). More importantly, crafts is a subject in which pupils' underdeveloped (fine-motor or metacognitive, just to name a few) skills could

effectively prohibit them from achieving proficiency in a certain craft technique. Therefore, the teacher's sensitivity in providing scaffolding or differentiation is important.

Saloviita's 2019 study results based solely on student craft teachers' responses are not available due to his study treating crafts, arts and physical education students as one group. However, the results of our survey are informative. Furthermore, by complementing (Hunter et al., 2019) the survey data with interview data, we aimed to produce a more detailed picture of student craft teachers' views of their preparedness than the previous study did.

RQ2: Themes concerning the highest- and lowest-related domains

The following treatment of RQ2 concentrates on the opposing ends of the spectrum: the domain most often identified as a strength (the subject-specific domain of crafts) and the other most often identified as a development need (special education). The interview themes probed participants' strengths and development needs as craft teachers with the general aim of allowing them to raise and reflect on issues that they felt were topical and important. Therefore, their answers varied in length and in terms of the depth of reflection, as well as in the issues raised.

The interviewees did not use the phrase 'special education' but their comments on differentiation, motivation, teaching methods, interaction and classroom management often touched on this topic. Therefore, rather than trying to mechanically isolate 'special education', we decided to describe the participants' comments to reflect their *broad pedagogical understanding*, which covers all these themes. Additionally, this felt timely, as it provides an account that is comparable with the current learning support model in basic education.

Next, we present the findings and data excerpts per domain category, starting each section with an illustrative table summarising the interviewees' views in numerical form.

Crafts

Interviewees' comments on crafts as a strength and a development need differed depending on the level of detail when they described their preparedness. When talking about a general level, crafts was more often a strength, but when detailing – either to a level for a specific technique or a content area – crafts was more often a development need (Table 4). Teaching crafts was slightly more often a development need than a strength. Teaching crafts was mentioned less often than craft as a skill, which could imply an emphasis on the mastery of crafts over didactics.

Table 4.

Students' strengths and development needs related to crafts (subject-specific competence) presented as percentages (N = 91).

Themes related to the category *Crafts*	Strength	Development need
Craft techniques (unspecified)	38	27
Technical crafts	11	26
Textile crafts	8	12
Teaching of crafts	23	29

Considering the current scope of craft teacher education, it is notable that some interviewees stated doubts about ever teaching the whole repertoire of crafts contents. They emphasised that their strengths included only one of the two subject-matter areas. Some stated that they had made a practical choice to focus only on ‘one side’.

> YSIV: Got no interest in textile [crafts], technical [crafts] is my strong side and I'm not gonna be teaching textile [crafts] anyway.

> YSOT: There's just such a crazy amount of those content areas, like, the way you're supposed to develop in all of them, it just takes unbelievable hours. I mean, I've got nothing against textile crafts, I actually like doing it. But I always think about this from the job point of view, like, that I'm supposed to get a profession. And right now I feel like I'm being trained kinda unqualified for a profession.

Typically, 'the chosen' techniques or areas involved those that the interviewees had already been familiar with when entering teacher education. Some expressed doubts about gaining adequate expertise during teacher education, especially considering the multitude of techniques introduced.

> KILE: Cause there's just such a large number of technologies, getting expert-level understanding in all of them can be pretty challenging. Mostly the feeling is like you know a little about a lot. And then, about the areas that have been your strong ones already before, those you know more about.

Technical crafts were expressed as a source of concern more often than textile crafts. Quite often, these concerns also included references to scarce opportunities to practice due to Covid-19 restrictions and local renovations in the universities' craft learning environments. (In all the three universities, some level of reconstructing, moving or upgrading craft learning environments caused temporary unavailability during the studies of this student population.)

In general, access to equipment and learning environments were frequently mentioned by interviewees as a condition hindering their skill learning.

> ARON: The conditions and possibilities, you know these last five years. Renovation, covid-19, [the lack of] dust extraction system, whatever else there were. We really haven't had a good path. But yeah, we've still turned out pretty okay teachers, but, I really wouldn't wish the same path for others.

Especially metal technologies and welding were linked to learning environment availability. Another possible reason for metal technologies and welding being highlighted as sources of concern could be that they represent an area that is relatively unfamiliar to basic education crafts. This unfamiliarity hypothesis is somewhat supported by Hilmola's (2023) study on basic education pupils' (N = 1414) craft learning at the end of their obligatory crafts studies. In the 2021 assessment, pupils' knowledge of various technologies was tested by multiple choice questions. In this task, welding equipment (along with embroidery machines) was the least recognised object, which signals that they had not been frequently utilised in crafts lessons. We believe that this situation outlined in Hilmola's (2023) assessment data is unlikely to be radically different from the situation that the participating students had encountered during their basic education studies.

Some interviewees noted that with suitable facilities and motivation to practice in one's free time, it would be possible to become skilled enough to feel prepared to teach a technique that had not been learned before entering craft teacher education.

> AKON: I had really weak knowledge about metalwork when I [started at craft teacher education], now I've got way more info and I'd even know how to teach it. And I've actually done it at home too, been welding and stuff 'cause we've got welding gear and all.

However, descriptions of this level of dedication were rare in our data. More often, the need to dedicate one's time to practice was criticised.

> AMII: That sixty credits, where you have stuff from both textile and technical [crafts], then you end up with these courses that have such wide contents that everything's just scratching the surface and you can't really do anything properly. And then they say you can develop those skills in your own time. But if you start developing all of them on your own time, then there's no time left for anything else.

Comments such as the one above on skill learning imply a level of realism, but also expectations appearing to contradict realities – and possibly, occupational needs. On the one hand, the level of expertise required for teaching basic education crafts is a subject for discussion in its own right. On the other hand, skill learning requires time and progressive targeted practice (e.g., Ericsson, 2002). Notably, some interviewees did emphasise students' own responsibility for their learning.

> YSHC: I've talked about it with quite a few students too, that you get just as much out of that school as you yourself wanna take.
>
> ASRE: I think it's pretty much up to you, like how you wanna work in your free time, to practice, how much time you've got, what your motivation is. A lot of it really depends on your motivation and how you spend your time, like what level of expertise you'll get from there.

Continuing on a positive note, some described that learning novel techniques had been inspiring.

> OSIM: As we're graduating as craft teachers we gotta master a bunch of different materials and techniques, then definitely the soft materials, like [my] textile [crafts skills have] gotten stronger, like, [developed] much more than [my] technical side. 'Cause I've had so little earlier experience with [textile crafts], so I've learned way more. And it's kinda inspired me to do stuff, which then again supports my own expertise.

These kinds of personal positive learning experiences are important for teachers as sources of inspiration when they seek ways in which to motivate and encourage their own pupils. These perceptions could be understood to reflect students' various understandings of skill learning. However, for a craft teacher, an appreciation of basic skills and the acknowledgement of the time required to develop those skills is elemental – even if that time can sometimes be frustratingly long.

It is worth noting that some interviewees referred to craft techniques as both the most and the least concerning domains. Interviewees often emphasised that mastering techniques is most important for craft teachers. This could be due to raising the bar as one's performance improves; namely, Bandura (1977) suggests that reaching a given performance level often changes one's views on satisfying performance. While they already felt rather capable, they also felt the urge to become experts. One interviewee noted that craft expertise is a precondition for effective teacher–pupil interaction.

> AHPS: I wish we'd had more actual doing, so, you'd already develop a kinda routine during [the teacher education]. Like, if you could do something every day and use the machines and devices, then it would [start coming from] muscle memory. And then you wouldn't have to put so much energy and thinking into the actual doing, but you could focus on the other things, like your pupils.

This comment implies that having confidence in one's own teaching skills necessitates a balance between one's subject-specific and pedagogical skills. Whether that kind of balance can be defined at a general level by teacher education curricula or if it is a dynamic feature related to one's teacher identity is an interesting question but is outside the scope of this study. Nevertheless, both parts are necessary. What is especially a central part of craft teacher expertise is the capability of framing the practicing of skills in a way that is inspiring and motivating to all pupils. This leads us to now examine the domain of broad pedagogical understanding.

Broad pedagogical understanding

A common trend for themes *related to broad pedagogical understanding* was that they were identified more often as strengths than as development needs (Table 5). This is in contrast with interviewees' craft-related comments, which were much more often described as a development need.

Table 5.

Students' strengths and development needs related to broad pedagogical understanding presented as percentages (N = 91).

Themes related to category	Strength	Development need
Pedagogy and teaching methods	19	9
Differentiation	10	9
Motivating	5	4
Teacher–pupil interaction	47	5
Classroom management	22	14

For some, these development needs had emerged from teaching practicums or other practical teaching experience.

> OKAM: [My most important development need:] that I'd learn to… like when a pupil asks 'hey, how do I do this?' I'd learn to answer more like 'well how do you think you could do it?' instead of just telling straight away how it can be done.

This level of detail was, however, relatively rare. Some mentioned the word 'pedagogy' as their strength but did not elaborate. The themes that were most often raised as strengths were *teacher–pupil interaction* and *classroom management*.

> ASAL: My [strength] is connecting with my pupils at individual level. I'm good at noticing pupils as individuals and acting accordingly.

> SUAM: My strengths are group management skills and, like, a generally good pedagogical eye. And being able to differentiate [according to individual needs], find right ways, like, who can go through certain things and [to whom] you gotta give a bit more time and patience. So yeah, that kind of general pedagogical eye.

The strengths (class management, differentiation, recognising individual pupil's needs and providing support accordingly) listed by the latter interviewee correspond closely with the current Finnish model of support for learning and school attendance (EDUFI, 2025). However, the two data excerpts above do not represent typical answers. In this data, the overall scarcity of references to differentiation and motivating could imply that students have confidence in their skills or that they understand pupils as a predominantly homogeneous group; thus, differentiation is unnecessary as 'one size fits all'. However, one size is unlikely to fit all, considering Bernelius and Huilla's (2022) results on social and regional divisions, the equity of education and the learning results in Finland.

Another untypical excerpt follows:

> ALUJ: Another thing I'm working on is special education. It's an interesting field, and I think it's something our [teacher education] should include more. There's a lot of inclusion and integration going on, and it has its good sides. But then again, we only had one and a half courses related to special education. It was one and a half 'cause one was more doing. We got to know about autism. And the other one was a special education course and it focused more on disability stuff, like if there was intellectual disability, blindness or deafness. We should definitely learn more.

This interviewee was the only one to use the exact phrase 'special education', despite the survey results signalling that the participants were clearly concerned about their skills and knowledge related to special education. This disparity is interesting. It is also slightly alarming, especially if it signals that when asked, the participants recognise their unpreparedness but, simultaneously, they do not consider it personally meaningful and relevant for *their own* future employment.

This rare exception of an interviewee continues:

> ALUJ: I think [in teacher education there] should be more about [pupils'] behavioral problems, 'cause I feel like we haven't been given anything concrete, how to work with integrated pupils or pupils having behavioral problems. So that's kinda one thing that's been left hanging, like, you just gotta learn the hard way.

In addition to broader training in special education issues, this interviewee highlighted the need for theoretical and practical materials related to behavioural problems. Behavioural problems in a school context refer to ongoing actions that disrupt or hinder students' learning or the learning of others, and that fall outside age-appropriate social norms and developmental expectations (Lindberg et al., 2025). However, the phrase is sometimes used as an umbrella term for all unwanted classroom behaviour. The need to address behavioural problems in teacher education is backed by research. For instance,

Onnismaa (2010) and Ojala (2017) found that Finnish teachers' workloads and coping mechanisms were closely related to socially and pedagogically challenging situations, and teacher–pupil relationships.

Siding with this issue, but using a framing closer to classroom management skills, another interviewee mentioned challenging situations.

> II: Maybe I'm missing those kinds of skills, like, 'hey, that kid is behaving really badly,' [in practice] I had no idea at all what I'm even allowed to do [as a teacher].

This difference in framing could be deliberate or accidental. Yet the difference is meaningful. The traditional view of special education focuses on teaching pupils with disabilities and special needs, which emphasises differences between learners and reinforces barriers, exclusion and marginalisation (UNESCO, 2020). A contemporary view suggests that teacher education should account for diversity from the outset and take a pupil-centred rather than a disability-centred approach (UNESCO, 2020). This view responds to challenges described by Bernelius and Huilla (2022). More importantly, this is also the approach embedded in current Finnish learning and school attendance model; thus, in the NccBe (EDUFI, 2025).

RQ3: Students' perceptions of their transition from teacher education into working life as craft teachers

At the end of the interview, the participants were asked to summarise their perceptions about entering working life as craft teachers. Their replies were predominantly positive, with only 10 (out of 91) having negative feelings and 5 remaining doubtful. However, while feeling ready to start work, the participants were wary of declaring that they knew it all.

> SINA: I feel like I've got the kind of skills that one can have at this point. I also feel like I'm happy to [start working as a crafts teacher], and like, the learning is maybe only just starting. I think that maybe it'll be the coming years in the field that will really grow me into that craft teacher or class teacher career. So yeah, [I'm entering working life] feeling good and kind of expectant.

Some noted that they expected the following years to be full of learning experiences.

> KILE: Kinda feels like there's still plenty to learn when stepping into working life. But on the other hand, teaching is about lifelong learning anyway, like, you can never really be ready.

These views are well in line with documents outlining the future of Finnish teacher education emphasising the importance of continuous learning (e.g., Jyrhämä, 2021; Taajamo et al., 2025; Toom & Husu, 2024). Moreover, these views sensibly recognise that skill learning requires time: time dedicated to deliberate and progressive practice, stable states of adaptation and feedback (Ericsson, 2002).

When considering their professional identity, the final practicum had been a turning point for some participants. This is well in line with previous results (Brown et al., 2021; Saloviita & Tolvanen, 2017; Ukkonen-Mikkola et al., 2021) on the value of practicums for students' perceptions of their preparedness to teach.

> IVUJ: I thought before the final practicum that I'm not gonna become a lower secondary teacher. But then during the practicum my thoughts kinda shifted, like I don't see lower secondary anymore as a place I wouldn't go to, but if there happens to be an open position somewhere, I'll definitely apply for a crafts teacher job.

To conclude, the interviewees' perceptions on entering working life as craft teachers were predominantly positive. This is an important signal: Even though the participants had concerns, and even though multiple changes have already affected – and even though several changes will continue to affect – their future occupations, the clear majority of them saw themselves teaching crafts in the future.

Study limitations

Some methodological limitations are related to the interview method. Kvale (2011) lists 'standard criticisms of qualitative interviews' (p. 84), many of which are related to general tensions between quantitative and qualitative research. Our main methodology-related concern, however, is related to the uniformity and comparability of semi-structured interviews. Semi-structured interviews provide the freedom to pursue topics and details that the interviewees raise, thus improving the relevance of such studies (cf. Mays & Pope, 2000). Firstly, when several interviewers conduct the interviews and data collection spans over several years, it is possible that the level of systemacy has not been maintained. Secondly, interviewers can influence interviewees' motivation to provide complete, rich and sincere accounts. This challenge is common to all interview methods, despite the number of interviewers and the length of the study. However, when planning this study, we prioritised data coverage (i.e., to reach as many interviewees as possible) over discovery-oriented, in-depth interviews taking a considerable amount of time (Rutledge & Hogg, 2020).

To mitigate the methodological limitations, we used data triangulation. Both survey and interview data were collected and analysed to provide a fuller and more reliable view. The discrepancy between these two datasets related to special education is interesting and suggests that further research related to student craft teachers' perceptions of special education and other themes related to the current support for learning and school attendance model is needed.

Conclusions

This study aimed to investigate student craft teachers' perceptions of their preparedness for their future occupation: to teach crafts in Finnish basic education. Based on 91 interviews and survey responses from Finnish student craft teachers nearing graduation, the students' perceptions of entering working life as craft teachers were predominantly positive. However, the experiences and expectations that they shared regarding learning crafts and craft teacher education varied substantially. We ask our fellow craft teacher educators: Could this signal an increased need for differentiation in craft teacher education?

The interviewees rarely named specific techniques. Instead, they typically referred to textile or technical crafts. When techniques were named, the issues raised were more often linked to the availability of specific learning environments than the techniques as such. This could signal that the multitude of craft techniques and practices introduced to them during craft teacher education could have shifted their concerns from learning a particular craft technique towards learning techniques novel to them. In other words, towards learning to learn, which equips them for the decades ahead that are likely to bring changes in subject content.

The perception of preparedness entails comparing subjective beliefs of one's capabilities with one's expectations of the real-world competence requirements. These beliefs and expectations can be more or less realistic. When no clear competence requirements or measures for adequate performance exist, one compares one's performance against other peoples' performance (Bandura, 1997). In these data, it is unclear if students resorted to social comparison and with whom they compared themselves. For craft teacher education, a more pressing question asks what models it offers for students' social comparison, that is, with whom *should* the students compare their capabilities?

Generally, the students were more worried about their craft skills than about their pedagogical understanding, except for special education. This could be understood in at least three different ways. Firstly, the students could be less than satisfied with their craft skills. Secondly, these students spent four to five years learning craft skills but had much less practice in classroom interaction and differentiation. Therefore, along with their improved craft skills, their understanding of the level of adequate performance also rose (cf. Bandura, 1997), but a similar development did not yet occur in regard to their broader pedagogical skills. Thirdly, this could signal intrinsic motivation (Ryan & Deci, 2000) towards mastering crafts.

Having subject mastery as a primary concern aligns with Takala et al. (2024), who found that for student subject teachers, their subject was a central motivator for becoming a teacher. Notably, the subject was far more important than their desire to work with children, which was the main motivator for student class teachers and special teachers (Takala et al., 2024). Even if this sounds alarming, in Havia et al. (2024), high interest in the subject was linked with high-quality teaching characterised by better lesson planning and the provision of deeper knowledge. It could be that worrying about and developing one's subject skills are elemental parts of being a subject teacher.

By definition, subject-specific skills are elemental for subject teachers. Moreover, the development of teaching competence begins with a focus on taught content and, after that, on interaction with pupils (Jyrhämä, 2021). However, these students' confidence in their pedagogical skills is not fully supported by recent research on the realities of Finnish schools (Aro et al., 2023; Bernelius & Huilla, 2022; Jantunen et al., 2021; Taajamo et al., 2025). The need to differentiate teaching challenges craft teachers to shape learning in a way that is inspiring, motivating and supportive for all students, regardless of, for example, students' fine motor, cognitive, reflective, language or collaborative skills (cf. Vrencoska, 2013). For this, craft teachers' subject-specific and broader pedagogical skills need to be in balance, as one of the interviewees noted. On the one hand, do the current curricula for craft teacher education support all students in building this balance? On the other hand, it is worth discussing whether the balance is primarily produced by teacher education curricula or if it is individually constructed.

During the last few decades, the Finnish educational landscape has encountered several changes, and these changes will continue. During its 160-year history, the subject of crafts has been renewed several times. Renewal is necessary for the subject to stay topical and forward-looking; thus, discussions and negotiations on basic education crafts are likely to continue. However, curriculum renewal and implementation are slow (Goodlad et al., 1979). The transition of the craft teacher education programmes began only after the introduction of the NccBe-2014 foundation. In the field, the transition is likely to take longer. Some related in-service training has been available (e.g., Härkki et al., 2023), but is not sufficient enough to reach all craft teachers. No doubt, student craft teachers' perceptions of their preparedness will continue to be diverse.

Early career teachers' feelings of being unprepared for their job are common (Reeves et al., 2022). Finnish teachers enjoy broad autonomy to implement the National Core Curriculum (Tirri, 2014), and all this trust and freedom can be confusing. Teacher education needs to support students in developing an initial professional identity strong enough to enter working life and to accept that graduation is only a starting point for lifelong, continuous professional learning. Crafts is a subject that provides practically endless possibilities to learn and excel, both for pupils and their craft teachers. This is as much of a blessing as it is a challenge, both for craft teachers and for the subject itself. Teachers have the freedom to design new learning experiences for pupils, to introduce novelties trending on social media or traditions rooted in local communities or faraway cultures, and to diversify according to pupils' skills and motivation to renew crafts teaching so that the subject stays fresh and topical.

References

Abraham, J., Ferfolja, T., Sickel, A., Power, A., Curry, C., Fraser, D., & Mackay, K. (2021). Development and Validation of a Scale to Explore Pre-Service Teachers' Sense of Preparedness, Engagement and Self-Efficacy in Classroom Teaching. *Australian Journal of Teacher Education, 46*(1). http://dx.doi.org/10.14221/ajte.202v46n1.1

Autio, O. (2023). Development of Students' Technical Abilities between 1993-2022 in Finnish Comprehensive Schools. *Design and Technology Education: An International Journal, 27*(3), 76–93. https://doi.org/10.24377/DTEIJ.article1142

Alajoki, J., & Mäkinen, M. (2023). Aineenopettajan uudistuva työ inklusiivisessa yläkoulussa – itseorganisoitumisen näkökulma. [The Evolving Work of Subject Teachers in Inclusive Lower Secondary Schools – A Self-Organization Perspective.] *Kasvatus, 54*(2), 130–144. https://doi.org/10.33348/kvt.129147

Aro, R., Aro, T., Hongisto, P., Kaarakainen, S.-S., Kalland, M., Kyösti, A., Puumalainen, J., Salovaara, V., Varjo, J., & Volmari, S. (2023). Väestönmuutoksen vaikutukset varhaiskasvatuksen sekä esi- ja perusopetuksen järjestämiseen. [Effects of population change on the organisation of early childhood education, pre-primary education and basic education.] Opetus- ja kulttuuriministeriön julkaisuja, 2023:52. [Ministry of Education and Culture, MEC] https://urn.fi/URN:ISBN:978-952-263-961-5

Arvelo-Rosales, C. N., Alegre de la Rosa, O. M., & Guzmán-Rosquete, R. (2021). Initial Training of Primary School Teachers: Development of Competencies for Inclusion and Attention to Diversity. *Education Sciences, 11*(8), 413. https://doi.org/10.3390/educsci11080413

Aybek, B., & Aslan, S. (2019). The Predictive Power of the Pre-Service Teachers' Self-Efficacy Beliefs upon Their Preparedness to Teach. *International Education Studies, 12*(9), 27. https://doi.org/10.5539/ies.v12n9p27

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review, 84*(2), 191–215.

Bandura, A. (1997). Self-efficacy. *The Exercise of Control*. W.H. Freeman and Company.

Barriball K.L., & While A. (1994). Collecting data using a semi-structured interview: a discussion paper. *Journal of Advanced Nursing, 19*(2), 328–335. https://doi.org/10.1111/j.1365-2648.1994.tb01088.x

Bernelius, V., & Huilla, H. (2021). Koulutuksellinen tasa-arvo, alueellinen ja sosiaalinen eriytyminen ja myönteisen erityiskohtelun mahdollisuudet. [Educational equity, social and spatial segregation and opportunities for targeted support.] Valtioneuvoston julkaisuja [Publications of Finnish Government] 2021:7. http://urn.fi/URN:ISBN:978-952-383-761-4

Brown, A. L., Myers, J., & Collins, D. (2021). How pre-service teachers' efficacy and preparedness to teach impact performance during student teaching. *Educational Studies, 47*(1), 38–58. https://doi.org/10.1080/03055698.2019.1651696

Cains, R.A., & Brown, C.R. (1996). Newly qualified teachers: a comparative analysis of the perceptions held by B.Ed. and PGCE-trained primary teachers of their training routes. *Educational Psychology,* 16, 257–270. https://doi.org/10.1080/0144341960160303

Darling-Hammond, L. Chung, R., & Frelow, F. (2002). Variation in Teacher Education. *Journal of Teacher Education, 4*(53), 286–302. https://doi.org/10.1177/0022487102053004002

Darling-Hammond, L., Amrein-Beardsley, A., Haertel, E., & Rothstein, J. (2012). Evaluating Teacher Evaluation. *Phi Delta Kappan, 8*(15). https://doi.org/10.1177/003172171209300603

EDUFI (2025). Käsityön opetuksen järjestäminen. [Organizing crafts teaching.] https://www.oph.fi/fi/koulutus-ja-tutkinnot/kasityon-opetuksen-jarjestaminen

EDUFI (2026a). National core curriculum for primary and lower secondary (basic) education. https://www.oph.fi/en/education-and-qualifications/national-core-curriculum-primary-and-lower-secondary-basic-education

EDUFI (2026b). Tutkintojen viitekehykset. [Degree frameworks.] https://www.oph.fi/fi/isced-koulutusasteet-suomessa#

Elyashiv, R.A., & Rozenberg, K. (2024). Fostering early career teachers' preparedness, self-efficacy and professional commitment: The role of teacher education. *Teaching and Teacher Education, 148*, 104691. https://doi.org/10.1016/j.tate.2024.104691

Ericsson, K. A. (2002). Attaining excellence through deliberate practice: Insights from the study of expert performance. In (M. Ferrari, (Ed.), *The Pursuit of Excellence Through Education* (pp. 21–56). Lawrence Erlbaum.

Finlex. Valtioneuvoston asetus yliopistojen tutkinnoista ja erikoistumiskoulutuksista 794/2004. [Government Decree on University Degrees and Professional Specialization Programmes 794/2004]. https://www.finlex.fi/fi/lainsaadanto/2004/794

Goodland, J.I. & Associates. (1979). Curriculum inquiry. McGraw-Hill.

Giallo, R., & Little, E. (2003). Classroom behaviour problems: The relationship between preparedness, classroom experiences, and self-efficacy in graduate and student teachers. *Australian Journal of Educational & Developmental Psychology, 3*(1), 21–34.

Havia, J., Lutovac, S., & Kaasila, R. (2024): Preservice subject teachers' beliefs about teacher subject interest: love for a subject as a resource and a challenge. *European Journal of Teacher Education*, 1–18. https://doi.org/10.1080/02619768.2024.2440714

Hilmola, A. (2023). Käsityön arviointitutkimus. Perusopetuksen käsityön oppimistulosten arviointi pakollisen oppimäärän päättövaiheessa keväällä 2021. Suomen ainedidaktisen tutkimusseuran julkaisuja. Ainedidaktisia tutkimuksia 23. [Crafts Education Assessment Research. Evaluation of Learning Outcomes in Basic Education at the Completion Stage of the Compulsory Craft Curriculum in Spring 2021. Publications of the

Finnish Association for Subject Didactic Research. Subject didactic Studies 23.] https://doi.org/10.23988/sats.670

Housego, B.E.J. (1990). Student Teachers' Feelings of Preparedness to Teach. *Canadian Journal of Education, 15*(1), 37–56. https://doi.org/10.2307/1495416

Hunter (2019). D., McCallum, J., & Howes, D. (2019) Defining Exploratory-Descriptive Qualitative (EDQ) research and considering its application to healthcare. *Journal of Nursing and Health Care*, *4*(1). https://dl6.globalstf.org/index.php/jnhc/article/view/1975

Hsieh, H.-F., & Shannon, S.E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research, 15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Härkki, T., Seitamaa-Hakkarainen, P., Vartiainen, H., Saarinen, A., & Hakkarainen, K. (2023). Non-linear maker pedagogy in Finnish craft education. Techne Series, 30(1), 1–17. https://doi.org/10.7577/technea.4998

Härkki, T., Vartiainen, H., & Rönkkö, M.-L. (2024). Three approaches to multi-materiality through co-taught learning projects. *Techne Series, 31*(3), https://doi.org/10.7577/TechneA.5921

Jantunen, A., Ahtiainen, R., Lahtero, T., & Kallioniemi, A. (2022). Finnish comprehensive school principals' descriptions of diversity in their school communities. *International Journal of Leadership in Education*, 1–2. https://doi.org/10.1080/13603124.2022.2117416

Ji, J. S., Yip, S. Y., & Saito, E. (2025). Preparing future teachers for multicultural classrooms: the state of play in Australia. *Journal for Multicultural Education, 19*(2–3), 255–269. https://doi.org/10.1108/jme-11-2024-0150

Johnson, R.B., & Onwuegbuzie, A.J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher, 33*(7), 14–26. https://doi.org/10.3102/0013189x033007014

Johnson, R.B., & Turner, L.A. (2003). Data collection strategies in mixed methods research. In A.Tashakkori, and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 297–319). Sage.

Jyrhämä, R. (2021). *Opettajan pedagogiset opinnot 60 op. Laaja-alainen opettajankelpoisuus - tilannekuvaus 2021*. [Teacher's pedagogical studies 60 credits. Broad-based studies for teacher qualification – situation description 2021.] Opetus- ja kulttuuriministeriön julkaisuja 2021:41. [Publications of MEC 2021:41.] https://okm.fi/sv/publikationen?pubid=URN%3AISBN%3A978-952-263-866-3

Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing, 72*(12), 2954–2965. https://doi.org/10.1111/jan.13031

Kokko, S. (2012). Learning crafts as practices of masculinity. Finnish male trainee teachers' reflections and experiences. *Gender and Education 24* (2), 177–193. https://doi.org/10.1080/09540253.2011.602331

Kokko, S., Kouhia, A., & Kangas, K. (2020). Finnish craft education in turbulence: Conflicting debates on the current National Core Curriculum. *Techne series, 27* (1), 1–19. https://journals.oslomet.no/techneA/article/view/3562

Korte, S.-M., Körkkö, M., Paksuniemi, M., Hast, M., Mommo, S., Selkälä, A., & Keskitalo, P. (2022). Experiences of remote teaching, technological pedagogical competencies and workload of teachers in northern Finland during the COVID-19 pandemic. *Education in the North, 29*(2), 69–93. https://doi.org/10.26203/p6gp-9729

Kouhia, A., Kokko, S., & Kangas, K. (2021). The effects of remote pandemic education on crafts pedagogy: Opportunities, challenges, and interaction. *Center for Educational Policy Studies Journal 11*, 309–333. https://doi.org/10.26529/cepsj.1126

Krzywacki, H. (2009). *Becoming a teacher: emerging teacher identity in mathematics teacher education*. [Doctoral Dissertation. University of Helsinki.] http://hdl.handle.net/10138/20029

Kröger, T., Turunen, V., & Kaipainen, M. (2024). Student teachers' attitudes to materials in the contexts of crafting and consuming. *Techne series A, 31*(1), 14–28. https://doi.org/10.7577/TechneA.5342

Kvale, S. (2011). Doing Interviews. Sage. https://dx.doi.org/10.4135/9781849208963

Lavonen, J., & Salmela-Aro, K. (2022). Experiences of Moving Quickly to Distance Teaching and Learning at All Levels of Education in Finland. In F.M. Reimers (Ed.), *Primary and Secondary Education During Covid-19* (pp. 105–124). Springer.

Leal, J.P., Gabinete, S.G., Ambos, M.R., Joaquin, H.D., Castro, E.F., & Magbanua, R.S. (2026). Mainstreaming the sustainable development goals in teacher education curricula. *Frontiers in Education, 11*:1684991. https://dx.doi.org/10.3389/feduc.2026.1684991

Lepistö, J., & Lindfors, E. (2015). From Gender-segregated Subjects to Multi-material Craft: Craft Student Teachers' Views on the Future of the Craft Subject. Formakademisk, 8, Art 4, 1–20.

https://doi.org/10.7577/formakademisk.1313

Lindberg, N., Ranta, K., Gergov, V., Strandholm, T., Tainio, V.-M., Ehrling, L., & Marttunen, M. (2015). Nuorten käytöshäiriön ja antisosiaalisen käyttäytymisen psykososiaaliset hoitomuodot. *Suomen Lääkärilehti,* 26–32. http://www.fimnet.fi/cl/laakarilehti/pdf/2015/

Lutovac, S., & Körkkö, M. (2024). A teacher's work is many things, but one thing it is not is easy: pre-service teachers' conceptions of teachers' work. *European Journal of Teacher Education,* 1–18. https://doi.org/10.1080/02619768.2024.2388630

Mankki, V., Koski, J., Stenberg, K., & Poikkeus, A. M. (2025). Teaching practicum research in Finland: a scoping review. *Educational Review*, 1–20. https://doi.org/10.1080/00131911.2025.2506794

Mays, N., & Pope, C. (2000). Assessing quality in qualitative research. *BMJ, 320*(7226), 50–52. https://doi.org/10.1136/bmj.320.7226.50

MEC. (2007). Erityisopetuksen strategia. [Special education strategy.] Opetusministeriön työryhmämuistioita ja selvityksiä 2007:47. [Reports of MEC: 2007:47] http://urn.fi/URN:ISBN:978-952-485-444-3

Pöllänen, S., Rönkkö, M.-L., Salonen, A., Härkki, T., & Lindfors, E. (2021). Monimateriaalisuus perusopetuksen käsityössä. [Multi-materiality in Basic Education Crafts]. Ainedidaktiikka [Subject didactics] 5(2), 3-24. https://doi.org/10.23988/ad.90017

Mikkola, T.-S. (2023). *Inkluusion diskurssit uutismediassa*. [Media discourses on inclusion.] [Masters' thesis, University of Lapland.] https://lauda.ulapland.fi/bitstream/handle/10024/65554/Mikkola_Tia-Sofia.pdf?sequence=1&isAllowed=y

Metsäpelto, R.-L., Poikkeus, A.-M., Heikkilä, M., Husu, J., Laine, A., Lappalainen, K., Lähteenmäki, M., Mikkilä-Erdmann, M., & Warinowski, A. (2021). A Multidimensional Adapted Process Model of Teaching. *Educational Assessment, Evaluation and Accountability*. Center of Open Science. https://doi.org/10.31234/osf.io/52tcv

Niemi, H., & Nevgi, A. (2014). Research studies and active learning promoting professional competences in Finnish teacher education. *Teaching and Teacher Education, 43*, 131–142. https://doi.org/10.1016/j.tate.2014.07.006.

Niiranen, S. (2016). *Increasing girls' interest in technology education as a way to advance women in technology*. Jyväskylä studies in education, psychology and social research 71. Jyväskylän yliopisto.

Niiranen, S., Rasinen, A., Rissanen, T., & Ikonen, P. (2021). Identifying Past and Current Trends in Technology Education in Finland. *Techne Series A, 28*(2), 17–24. https://journals.oslomet.no/techneA/article/view/4265

Ojala, T. (2017). Kun perusopetuksen oppilaat oireilevat psyykkisesti: opettajien kokemuksia. [When basic education pupils have psychic symptoms: teachers' experiences.] *Oppimisen ja oppimisvaikeuksien erityislehti: NMI-Bulletin, 27*(4), 4–11. https://bulletin.nmi.fi/2019/12/01/kun-perusopetuksen-oppilaat-oireilevat-psyykkisesti-opettajien-kokemuksia/

Onnismaa, J. (2010). *Opettajien työhyvinvointi. Katsaus opettajien työhyvinvointitutkimuksiin 2004–2009.* [Teachers' wellbeing at work.] Opetushallituksen raportit ja selvitykset 2010:1. [FNAE reports 2010:1.] http://www.oph.fi/download/124603_Opettajien_tyohyvinvointi.pdf

Porko-Hudd, M., & Hartvik, J. (2021). "Coronaslöjd": Lärares omställning till ofrivillig distansundervisning. *Techne Series A, 28*(4), 1–20. https://doi.org/10.7577/TechneA.4722

Porko-Hudd, M., & Hartvik, J. (2023). Pedagogisk slöjd i post-pandemitid: Från förändring och lärdomar till utveckling. *FormAkademisk, 16*(3). https://doi.org/10.7577/formakademisk.5088

Porko-Hudd, M., Pöllänen, S., & Lindfors, E. (2018). Common and holistic crafts education in Finland. *Techne Series A, 25*(3), 26–38. https://journals.oslomet.no/techneA/article/view/3025

Pörn, R., Hemmi, K., & Kallio-Kujala, P. (2021). Inspiring or confusing—a study of Finnish 1–6 teachers' relation to teaching programming. LUMAT General Issue, 1(9), 366–396. https://doi.org/10.31129/LUMAT.9.1.1355

Queirós, A., Faria, D., & Almeida, F. (2017). Strengths and limitations of qualitative and quantitative research methods. *European Journal of Education Studies, 3*(7), 369-387. https://doi.org/10.5281/zenodo.887089

Reeves, T. D., Hamilton, V., & Onder, Y. (2022). Which teacher induction practices work? *Teaching and Teacher Education, 109*. https://doi.org/10.1016/j.tate.2021.103546

Rutledge, P.B., & Hogg, J.L.C. (2020). In-Depth Interviews. *The International Encyclopedia of Media Psychology.* Wiley Online Library. https://doi.org/10.1002/9781119011071.iemp0019

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Saloviita, T. (2019). Outcomes of teacher education in Finland: subject teachers compared with primary teachers. *Journal of Education for Teaching, 45*(3), 322–334. https://doi.org/10.1080/09589236.2019.1599504

Saloviita, T. (2020). Attitudes of Teachers Towards Inclusive Education in Finland. *Scandinavian Journal of Educational Research, 64*(2), 270–282. https://doi.org/10.1080/00313831.2018.1541819

Saloviita, T., & Tolvanen, A. (2017). Outcomes of Primary Teacher Education Finland: An Exit Survey. *Teaching Education, 28*(2), 211–225. https://doi.org/10.1080/10476210.2016.1245281

Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing &Amp; Health, 23*(4), 334–340. https://doi.org/10.1002/1098-240x(200008)23:4<334::aid-nur9>3.0.co;2-g

Shulman (1986). Those Who Understand: Knowledge Growth in Teaching. *Educational Researcher, 15*(2), 4–14. https://doi.org/10.2307/1175860

Siwatu, K.O. (2011). Preservice teachers' sense of preparedness and self-efficacy to teach in America's urban and suburban schools. *Teaching and Teacher Education, 2*(27), 357–365. https://doi.org/10.1016/j.tate.2010.09.004

Skjelbred, B. H. & Veka, I. (2025). Teaching Practices in Arts and Crafts and Food and Health in Primary Schools – Tension Between Established Decisions and Subjective Perceptions. *Nordic Studies in Education, 45*(2), 92–109. https://doi.org/10.23865/nse.v45.6638

Swabey, K., Castleton, G., & Penney, D. (2010). Meeting the Standards? Exploring Preparedness for Teaching. *Australian Journal of Teacher Education, 35*(8). https://doi.org/10.14221/ajte.2010v35n8.3

Taajamo, M., Puhakka, E., & Markkanen, I. (2025). *Opetuksen ja oppimisen kansainvälinen tutkimus TALIS 2024: Perusopetuksen vuosiluokkien 7–9 opettajien ensituloksia*. [Teaching and Learning International Survey (TALIS) 2024. First results on teachers in grades 7 to 9 in lower secondary education.] Opetus- ja kulttuuriministeriön julkaisuja 2025:31. [Publications of MEC 2025:31]. https://urn.fi/URN:ISBN:978-952-415-268-6

Takala, M., Pihlaja, P., & Viljamaa, E. (2023). 'Yes it's good, but …'– student teachers' inclusion narratives. *Scandinavian Journal of Educational Research, 67*(7), 1056–1068. https://doi.org/10.1080/00313831.2022.2115133

Takala, M., Sirkka, R., Räty, K., & Raudasoja, A. (2024). Motives behind Finnish student teachers' career choices. *Education in the North, 31*(1), 39–61. https://doi.org/10.26203/fe6z-e393

Tirri, K. (2014). The last 40 years in Finnish teacher education. *Journal of Education for Teaching, 40*(5), 600–609. http://dx.doi.org/10.1080/02607476.2014.956545

Toom, A., & Husu, J. (2024). Research-based Teacher Education Curriculum Supporting Student Teacher Learning. In G. Doetjes, V. Domovic, M. Mikkilä-Erdmann & K. Zaki (Eds), *Coherence in European Teacher Education* (pp. 173–188). Springer. https://doi.org/10.1007/978-3-658-43721-3_10

Ukkonen-Mikkola, T., Ek, T., Piiroinen, R., Lehtinen, E., Berg, A., Sviili, E., & Liinamaa, T. (2021). Relationaalisen asiantuntijuuden rakentuminen varhaiskasvatuksen opettajankoulutuksen ohjatun harjoittelun diskursseissa. [Building of relational expertise in discourses of early childhood teaching practicum.] *Journal of Early Childhood Education Research, 10*(3), 182-207. https://journal.fi/jecer/article/view/114175

UNESCO. (2020). *Inclusive teaching: preparing all teachers to teach all students*. Global education monitoring report: policy paper, 43. https://unesdoc.unesco.org/ark:/48223/pf0000374447

UEF. (2014). *Tutkintorakenne 2014–2017*. [Curriculum 2014–2017.] Filosofinen tiedekunta. [Faculty of Philosophy.] University of Eastern Finland.

UEF. (2018). *Käsityönopettaja, monimateriaalinen käsityö - tutkintorakenne 2018–2021*. [Craft teacher, multimaterial crafts - Degree structure 2018–-´2021.] University of Eastern Finland.

UEF. (2022). *Käsityönopettaja, monimateriaalinen käsityö - tutkintorakenne 2022–2025*. [Craft teacher, multimaterial crafts - Degree structure 2022–2025]. University of Eastern Finland.

UH. (2015). *Tutkintovaatimukset, käsityönopettajan koulutus 2016–2021*. [Degree structure, Craft Teacher Education 2016–2021.] [Unpublished curriculum sheet.] University of Helsinki.

UH. (2021). *Tutkintovaatimukset, käsityönopettajan koulutus 2022–2025*. [Degree structure, Craft Teacher Education 2022–2025.] [Unpublished curriculum sheet.] University of Helsinki.

UTU. (2016). Opetussuunnitelma 2016–2018. [Curriculum 2016–2018]. University of Turku.

UTU. (2018). Opetussuunnitelma 2018–2020. [Curriculum 2018–2020]. University of Turku.

UTU. (2020). Opetussuunnitelma 2020–2022. [Curriculum 2020–2022]. University of Turku.

UTU. (2022). Opetussuunnitelma 2022–2024. [Curriculum 2022–2024]. University of Turku.

Virtanen, S., Räikkönen, Ikonen (2015). Gender-based motivational differences in technology education.

International Journal of Technology and Design Education, 25, 197–211. https://doi.org/10.1007/s10798-014-9278-8

Vrencoska, G. (2013). *Low-tech skills in high tech solutions era: The cognitive benefits of basic craft techniques in formal design education*. Proceedings of the 2nd International Conference for Design Education Researchers, 1(1), 217–236.

Äikäs, A., Kyrö-Ämmälä, O., Ojala, S., Waltzer, K., Heinonen, M., & Pihlaja, P. (2024). Inklusiivisen kasvatuksen ja erityispedagogiikan sisällöt opettajaopintojen opetussuunnitelmissa. *Oppimisen ja oppimisvaikeuksien erityislehti - NMI Bulletin, 34*(1), 12–33. https://bulletin.nmi.fi/2024/06/17/inklusiivisen-kasvatuksen-ja-erityispedagogiikan-sisallot-opettajaopintojen-opetussuunnitelmissa/

Appendix A. Survey questions

[Translated from the original Finnish version, which was an adaptation of Saloviita (2019).]

(Scale 1 = Strongly disagree, 3 = Neither disagree nor agree, 5 = Strongly agree)

During my studies in teacher education, I have gained adequate knowledge and experience of...

1.a	Craft content and craft didactics: crafts and teaching crafts in basic education
1.b	Craft content and didactics: facilitation of a complete craft process
2.	Development psychology: learning and development of children
3.	Special education: how to meet diversity in classrooms and how to provide differentiated instruction for diverse learners
4.	Instructional strategies: multiple and variable use of instructional strategies
5.	Motivation and management: how to create individual and group motivation to achieve positive social interaction and active engagement
6.	Communication and technology: effective communication with my pupils
7.	Planning instruction
8.	Assessment: assessing learning outcomes
9.	Reflective practice: teacher as a researcher, and professional development in which one reflects and develops one's practices
10.	Co-operation: co-operation between teacher colleagues, pupils' parents and other stakeholders

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