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Enhancing Early Childhood Educators' Skills in Co-regulating Children's Emotions: A Collaborative Learning Program

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The aim of this article is to introduce a research-based work-integrated collaborative learning program that focuses on early childhood education and care (ECEC) professionals' skills in co-regulation of emotions. The collaborative learning program draws on the theoretical framework that acknowledges the situated and socially shared nature of regulated learning and emotion regulation as well as years of research highlighting the importance of versatile and sensitive adults in supporting children's learning of regulation skills during their early years. The program aims to improve professionals' shared awareness of children's emotion regulation development and abilities to identify and develop practices that support children in learning these skills, so that professionals can provide conscious and consistent co-regulation of emotions for children in everyday interactions. The design of the program has been developed by considering the aspects of effective collaborative and professional learning. This paper focuses on describing the theoretical grounding and implementation of a 32-week long collaborative learning program for ECEC professionals in Northern Finland (N = 450). Also, the development of a video-stimulated questionnaire (VSQ) for assessment of professionals' learning during the program will be described. VSQ measures professionals' abilities to identify and interpret everyday ECEC interactions from the point of view of (co-)regulation of emotions. Developing research-based collaborative programs that increase systematic support for children to learn regulation skills is essential, as these skills affect children's lives well into adulthood. They set a basis for children's learning and social skills and general wellbeing.

Keywords: early childhood education, co-regulation, emotion regulation, collaborative learning, professional learning

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INTRODUCTION

Years of research have acknowledged the importance of early childhood interactions in children's learning of various essential skills, including emotion regulation. Particularly positive, warm, sensitive, and emotionally expressive interactions with caregivers have been proven to foster favorable development of these skills in children (Rimm-Kaufman et al., 2002; Colman et al., 2006). Children are assumed to gradually learn emotion regulation skills by modeling and practicing with the help of a more competent adult (Calkins and Hill, 2007; Morris et al., 2007; McClelland and Cameron, 2011). Lately, the development

of educational practices that best support children in learning emotion regulation have been seen worldwide as worthy of investment (OECD, 2015). This investment gets support from research linking these skills to various important outcomes in children's lives: abilities to maintain and build social relations (Trentacosta and Shaw, 2009; Blair and Raver, 2015) as well as mental health and wellbeing (Hofmann et al., 2014). Furthermore, they are a part of regulated learning skills (Whitebread et al., 2007; Grau and Preiss, 2019; Perry, 2019) and have been linked to academic success (e.g., Graziano et al., 2007).

Along with increasing interest to children's emotional development in Early Childhood Education and Care (ECEC) and school contexts, various programs and materials have been developed for teaching emotional skills. Despite new teaching material, for example, emotion cards (Määttä et al., 2017), emotion-related story telling (Koivula et al., 2020), or art-based methods (Andersen et al., 2019), there is still lack of pedagogical approaches with a strong theoretical and research-basis for equipping educators with appropriate theoretical knowledge and skills to support children's emotion regulation skills in early years (Määttä et al., 2017). Specifically, educators need abilities to reflect and develop their own practices to both support children in emotion regulation when it is needed and to utilize materials in a meaningful way so that children can connect what they learn to their everyday emotional situations (Dignath and Veenman, 2021; Koivuniemi et al., 2021).

Recent research has applied the concept of co-regulation of emotions to describe the interactions where teachers provide support for children in activating emotion regulation and in learning emotion regulation skills (e.g., Silkenbeumer et al., 2018; Kostøl and Cameron, 2021). Research has also focused on describing teachers' co-regulation strategies (Ulloa et al., 2010; Silkenbeumer et al., 2018) and it has explored how teachers monitor children's need for co-regulation in authentic everyday interactions (Hamre and Pianta, 2007; Kurki et al., 2018). The studies show that teachers often struggle to manage emotional processes in the classroom (Tsouloupas et al., 2010; Fried, 2011) and they do not always identify the moments during interactions when children need support in regulating their emotions (Rosenthal and Gatt, 2010). Teachers also lack knowledge of specific ways to support children in these moments (Dignath-van Ewijk and van der Werf, 2012; Papadopoulou et al., 2014). This can result in inconsistent co-regulation of emotions in everyday interactions with children (Silkenbeumer et al., 2018; Kostøl and Cameron, 2021). In particular, emotion-related discussions and talking about emotions seem to occur less among teachers' authentic interactions with children, even in emotionally challenging situations (Kurki et al., 2016; Silkenbeumer et al., 2018).

These results highlight the need to improve ECEC professionals' awareness and skills in supporting children's development in emotion-related areas. Hence, this paper introduces a long-term, work-integrated collaborative learning program aimed at improving ECEC professionals' knowledge of children's emotion regulation as well as teachers' own skills to co-regulate children's emotions in normal, authentic everyday interactions (Kurki, 2017; Dignath and Veenman, 2021).

Focusing on ECEC professionals' professional development (PD) in an effective manner is important as it has been shown that the more educated the professionals are in ECEC, the better contribution they make to children's learning and development (Hamre et al., 2013; Kluczniok and Roßbach, 2014). Emotion-related interactions with children are a particularly sensitive and meaningful context for children's learning in ECEC (Colman et al., 2006; Ulloa et al., 2010). Therefore, educators need to process and reflect on their own practices long-term, both on an individual and team level. This long-term work helps professionals to employ high quality, systematic, evidence-based practices (Koivuniemi et al., 2021).

Thus, referring to years of research and theoretical work on PD (e.g., Sancar et al., 2021), and regulated learning (Wolters, 2003; Hadwin et al., 2018; Perry, 2019), we argue that enhancing professionals' own learning and reflection around emotion-related themes will further affect professionals' abilities to give conscious support for children (Ciucci et al., 2015; Harkoma et al., 2021) and provide them with the best possibilities to learn emotion regulation skills (Denham et al., 2012; Pakarinen et al., 2020; Pekrun, 2021; Bailey et al., 2022). Moreover, we consider that collaborative learning programs and collaboration-based instructional approaches can support ECEC professionals' learning around emotion-related themes, as socially sharing the learning process can help in reaching mutual understanding of the learned topic and stimulate deeper thinking and knowledge creation (Sawyer, 2014). This, in turn, enables the develop the whole team's professional practices (DeLuca et al., 2017; Ramos et al., 2021).

In this article, we aim to showcase, how research-based knowledge of social and emotional aspects of learning can be used both in the content and the design of a learning program. The aim is to describe and reflect on the theoretical premises and implementation of the long-term work-integrated collaborative learning program for ECEC professionals. The learning program's aim is to provide ECEC professionals research-based knowledge and support them in developing skills and practices to facilitate children's learning of emotion regulation skills in ECEC. In this article, we will first discuss the theoretical grounding of the learning program. Then, we will describe the contents and implementation of the learning program for 450 ECEC professionals in Northern Finland. We will also describe the video-stimulated questionnaire (VSQ) created for research of educators' learning process and explain the rationale and the development of the VSQ.

The results of the questionnaire will be presented in a separate, empirical article. However, in the discussion section of this article, participants' experiences, which elaborate on the usefulness of the program, are reported and showcased.

THEORETICAL BACKGROUND OF THE COLLABORATIVE LEARNING PROGRAM

The theoretical basis of the collaborative learning program, consisting of six key research-based elements (be aware, identify, support, monitor, reflect, and consolidate), is built on the aspects

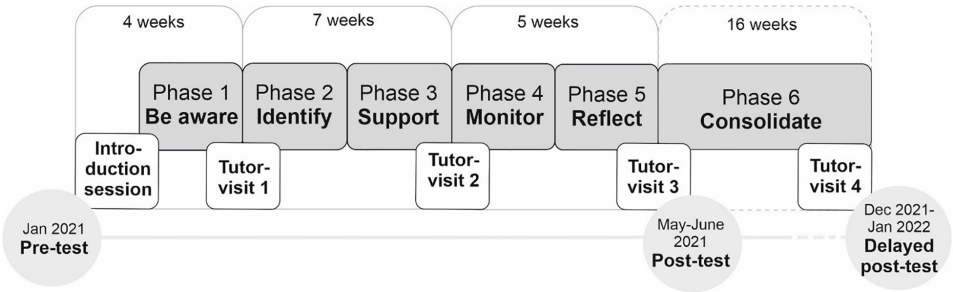

FIGURE 1 | The structure of the learning program.

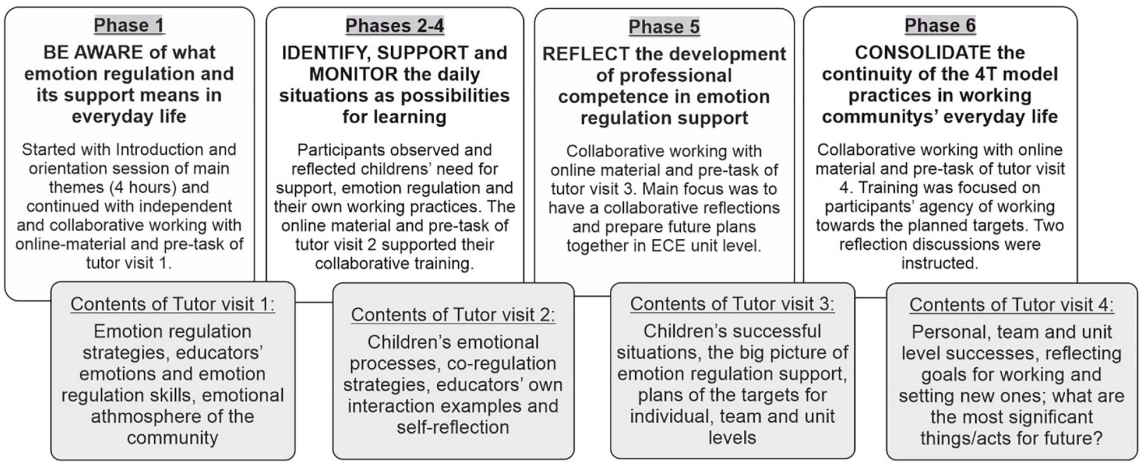

FIGURE 2 | The outline of the topics in Phases 1–6 and the Tutor visits.

that are regarded essential for developing effective co-regulation of emotions in ECEC. The elements also form the phases of the learning program (**Figures 1**, **2**). The first four elements (be aware, identify, support, monitor) are based on theories of emotion regulation and regulated learning, and research conducted particularly in ECEC. They aim to clarify the aspects of regulation that are important to consider when supporting children in learning and rehearsing emotion regulation skills. The last two elements (reflect and consolidate) direct the professionals to utilize the understanding of the first four elements to reflect and develop their practices together. The last elements, as well as the design of the collaborative learning program are based on collaborative learning and PD literature, which form the theoretical grounding for supporting professionals' own learning and team level development of practices.

The order in which the elements are presented in the learning program's phases is also formed based on understanding from regulated learning theory: The theoretical grounding of the learning program emphasizes the importance of: (1) building awareness of what regulation means and its targets (Järvelä et al., 2018). This awareness is the basis for being able to (2) identify the moments when regulation is needed and can be supported and (3) to activate appropriate (co-)regulation strategies (Dignath-van Ewijk and van der Werf, 2012; Mänty et al., 2020). Effective regulation also requires (4) monitoring the effects and products of (co-)regulation and adjusting regulation activities accordingly (Kurki et al., 2018). Furthermore, the literature also supports the notion that in supporting ECEC professionals' learning and development of practices to foster children's emotion regulation, the learning program needs to be designed to prompt (5) theory-based reflection of practices and collaborative co-constructions of knowledge as well as ideas for (6) consolidation of new practices (Chai and Tan, 2009; Hmelo-Silver and DeSimone, 2013). In the present learning program, theory-based reflection in the last two phases is therefore built on knowledge provided by the first four elements. Next, the theoretical background of all these elements is discussed in detail.

Being Aware: Building Theoretical Understanding

In this learning program, the first element, awareness, covers the theoretical knowledge of all the key elements of co-regulation (being aware, identifying, supporting, and monitoring). It is assumed that ECEC professionals' awareness of emotional processes in their work interactions influence their abilities to co-regulate children's emotions, and thus to consciously support children's learning of emotion regulation skills (e.g., Ciucci et al., 2015; Braun et al., 2020).

Awareness entails knowledge about how emotion regulation manifests among young children (e.g., what emotion regulation can look like, and how children regulate and learn it), the importance of these skills for children's lives, and theoretical and research-based information about the aspects of support. In the program, emotion regulation was defined as a self-regulation skill, consisting particularly of awareness of own emotional reactions and their source (Wolters, 2003; Schutz et al., 2006) as well as flexible use of strategies to modify, change, or maintain own emotional reactions and emotion related behavior to be able to continue goal-directed actions in relation to one's own goals and environmental expectations (McClelland et al., 2007; Morris et al., 2007; Whitebread and Basilio, 2012).

In the learning program, it was emphasized that children have limited capacities to utilize different strategies to regulate emotions (Cole et al., 2009; Kurki et al., 2017) and they have more narrow perspectives for understanding socio-emotionally challenging situations or identifying their own or others' emotions (Richard et al., 2020; Ruba and Pollack, 2020). This highlights the importance of ECEC professional's support in broadening children's skills and perspectives of situations that trigger emotions (Morris et al., 2007; Ulloa et al., 2010).

In addition, the awareness of professionals' own emotions and their regulation were included in the content of the collaborative learning program. Research suggests that teachers frequently use suppression of emotions as an emotion regulation strategy during work (Taxer and Gross, 2018; de Ruiter et al., 2021). This implies that teachers often put aside their own emotions when they interact with children. Suppression, however, is regarded as a strategy that requires a lot of resources and can (in the long term) increase the emotional labor of the work (Donker et al., 2020; de Ruiter et al., 2021). Prior research has shown that teachers' emotions are not only related to their own wellbeing and health (Chang, 2013; Taxer and Gross, 2018), but that they also have a direct link to children's motivation and emotions (Becker et al., 2014; van Doorn et al., 2014). Furthermore, based on self-regulated learning (SRL) theory, Kramarski and Heaysman (2021) state that to support children's regulation skills, it is essential to pay attention to educators' own regulation skills. This is because deliberate teaching, modeling, and activation of students' self-regulation requires both knowledge and skills in self-regulation (Peeters et al., 2014; Karlen et al., 2020; Kramarski and Heaysman, 2021). In terms of emotion regulation, a similar statement is supported by research that has linked early childhood educators' own emotion regulation skills to their abilities to provide support for children's socio-emotional development (Ciucci et al., 2015; Braun et al., 2020).

Identifying the Possibilities for Learning

In the learning program, "identifying" refers to ECEC professional's abilities to connect theoretical knowledge to real-life situations in ECEC. It is about identifying and acknowledging children's emotions and the opportunities for supporting children in rehearsing emotion regulation in naturally occurring situations. The aspect of identifying has been acknowledged as essential in regulated learning research because appropriate regulation activities need to be activated timely and accurately to acquire the most beneficial outcome (Pintrich, 2004; Lavoué et al., 2020). For ECEC professionals, identifying children's learning opportunities from everyday interactions and from emotionally challenging situations (Kurki et al., 2016; Koivuniemi et al., 2021) requires a shift in their own mindset—instead of seeing organized activities as a core for pedagogy, professionals are encouraged to see learning possibilities in various naturally occurring interactions. It is considered essential to support ECEC professionals' skills in this area as even adults may lack the ability to identify the moments where regulation needs to be activated (Järvenoja et al., 2013; Lobczowski et al., 2021) and therefore they may fail to support children in learning to do the same (Denham et al., 2012; Kurki et al., 2016; Braun et al., 2020; Pekrun, 2021).

Supporting Children in Learning Emotion Regulation

Studies indicate that sensitive and responsive interactions (Rimm-Kaufman et al., 2002; Colman et al., 2006; McCoy and Raver, 2011; Kopystynska et al., 2016) and emotionally expressive and collaborative environments that give rise to experiences of belonging (Eisenberg et al., 1998; Fried, 2011) have positive relations to children's abilities to regulate emotions and behavior. Some evidence suggests that children with higher negative reactivity seem to particularly benefit from supportive caregiving behaviors (Bakermans-Kranenburg and van IJzendoorn, 2007).

But what does supportive, sensitive, and response interaction mean in practice? In the learning program, this was considered on two levels. On a broader level, it was described as promoting a positive atmosphere among children and professionals, and motivation for children in ECEC activities (Mantzicopoulos et al., 2018) by encouragement, positive interaction, and warmth, and avoiding direct judgments of children's behavior (see Jennings and Greenberg, 2009). These supportive and caring relationships are assumed to create a safe environment and motivation for children to learn specific regulation skills and to problem-solve (Hutchinson, 2013; Gärtner et al., 2018). On a more detailed level, recent research shows that educators' co-regulation strategies focus on different aspects of the emotion-related process: support focused on children's emotional reactions (emotion-focused co-regulation), children's cognitive processes (cognitively focused co-regulation), and/or children's behavior/activities (behavior/activity focused co-regulation; Kurki et al., 2016; Silkenbeumer et al., 2018).

Different strategies to co-regulate children's emotions are in line with Gross's (2014) theory of emotion regulation strategies and are understood as ways to support children in learning various strategic skills. First, strategies of validating children's emotions, or a strategy of calming and soothing, are considered emotion-focused co-regulation strategies (Kurki et al., 2016; Silkenbeumer et al., 2018) that can have a direct impact on children's emotions (Gross, 2014; response modulation). Cognitively focused co-regulation strategies (Gross, 2014; cognitive change) are aimed at broadening children's understanding of own or others' emotions, perspectives, and their origin (Kurki et al., 2016; Silkenbeumer et al., 2018).

For example, research shows that naming emotions, supporting children in perspective taking, and communicating their issues can be beneficial for children's learning of emotion regulation (Hutchinson, 2013; Gärtner et al., 2018).

Finally, behavior/activity-focused co-regulation (Gross, 2014; situation modification, situation selection, and attentional deployment) focuses on supporting and modeling the use of strategies so that children can solve issues and conflicts, manage situations that trigger emotions, or shift attention when needed (Kurki et al., 2016). This support can broaden the children's understanding of a repertoire of actions to resolve conflicts and problems, or to make changes to the situation to regulate their own or others' emotions. This type of support can also ensure a successful and a fair outcome in emotionally challenging situations (Kurki et al., 2017).

Monitoring How Children Respond to Given Support

Prior research indicates that children's emotion regulation skills develop most effectively when children are supported in taking an active role in rehearsing regulation skills. To facilitate this, ECEC professionals need abilities to recognize the level of children's skills and the level of support needed (Pianta et al., 2012). Therefore, in the learning program, active monitoring of children's emotion regulation, problem-solving, and the children's response to support was considered an important part of effective co-regulation of emotions (Kurki et al., 2018).

According to Hamre and Pianta (2007), emotionally supportive teachers monitor and notice when students need either academic or social support, and they respond accordingly. In addition, earlier research has emphasized the importance of monitoring children's engagement in learning activities in order to direct and prevent disruptive and off-task behavior and ensure productive learning (La Paro et al., 2004). For example, Silkenbeumer et al. (2018) research in ECEC settings with 4–6-year-old children showed that teachers adapted their co-regulation strategies based on their understanding of the specific child's independent regulation skills. This research also indicated that co-regulation increased children's regulatory activities, which is similar to the findings from Kurki et al. (2017). Another Kurki et al. (2018) study showed that teachers' co-regulation, including active monitoring, was related to children's adaptation of emotion and behavior regulation in socio-emotionally challenging situations. Overall, monitoring has been seen as a part of flexible classroom management, where teachers monitor, prevent, and redirect children's behavior in a way that considers children's interests and fosters children's autonomous behavior (La Paro et al., 2004; Hamre and Pianta, 2007).

Reflecting Current Practices Together

To support ECEC professionals learning in relation to the elements of effective co-regulation of emotions, it was considered important to support ECEC professionals' active reflection, and co-construction of knowledge and practices (Cherrington and Loveridge, 2014; Sancar et al., 2021) by different individual and collaborative tasks. Research indicates that the educators' reflexivity—reflecting on information and changing their thinking and practice, accordingly—has been connected to their teaching approach, the strategies they use in the classroom, and the expectations they have for their students (Lunn Brownlee et al., 2017).

Traditional professional training approaches have been criticized for being decontextualized and too short on professional growth (Grossman et al., 2001; Chai and Tan, 2009). Recently, the need for long-term learning programs with close connections to practice has been acknowledged (e.g., Tomperi, 2015). When the aim is to develop individual reflection and team-level practices, short lectures or training may not be adequate. Instead, development of practices requires committed, long-term learning and reflection from the training and from the participants (Green et al., 2012; Brackett et al., 2019).

In the PD literature, collaborative aspects are one of the essential components of effective PD (Sancar et al., 2021). Peer communication can build a learning community, where educators can reflect and gain feedback from each other (Spiteri and Chang Rundgren, 2017). When connected to educators' daily teaching practices and concerns, the PD process done in collaboration also provides an opportunity to systematically examine and develop these practices together (Willemse et al., 2015; Sancar et al., 2021). Collaborative learning approaches are based on the idea that when learners build shared understanding by verifying and negotiating the issues and their individual experiences and views, their learning can become even more beneficial than in individual learning approaches (Dillenbourg, 1999; Barron, 2003; Stahl et al., 2006). A collaborative approach is assumed to be beneficial especially in ECEC, where professionals work in teams and where the team's shared knowledge and practices are at the core of pedagogy. Hence, the collaborative approach can be beneficial through collaboration (team members together building a shared understanding of the studied issue) and reflection (identifying gaps in knowledge and practice). By collaboratively processing the information, professionals can overcome these gaps and apply learned skills and knowledge to practice at both the individual and team level (Chai and Tan, 2009; Hmelo-Silver and DeSimone, 2013).

Consolidating New Practices by Collaborating With Colleagues

With a collaborative approach, by fostering professionals' knowledge, reflexivity, and agency, it can be assumed that consolidation of new emotionally supportive practices in teams and in whole ECEC centers can become more effective. Chai and Tan (2009) argue that promoting teachers' collaborative knowledge-building can lead to a deeper understanding. They explored teachers' knowledge-building community in a computer-supported collaborative learning environment, and identified five factors contributing to successful collaborative learning in these communities: (1) commitment of participating teachers; (2) working on authentic problems that are relevant in the school environment; (3) promoting teachers' agency to reflect their learning and problem-solving; (4) ensuring time for linking

theories to practice and reflection of implementation; and (5) learning support that helps the teachers to learn and utilize the pedagogical model based on appropriate learning theories (Chai and Tan, 2009). These were also the aspects considered important in the present learning program for effective, collaborative consolidation of new emotionally supportive practices.

According to Spiteri and Chang Rundgren (2017), collaborative working can encourage educators to support each other, which helps them to take risks and accommodate new practices in their work. Furthermore, promoting professionals' own agency and respecting and utilizing their existing knowledge about their work environment, can help them to better commit to developmental work (DeLuca et al., 2017). A collaborative approach can be a platform where all team members' views can be heard and mutual trust and a supportive environment can be created among the team members (DeLuca et al., 2017). This is important, because distrust or competition within a team can endanger the team's PD (Aubé et al., 2014).

In the present collaborative learning program, it was important to strengthen ECEC professionals' theoretical knowledge of emotion regulation, and to provide opportunities for collaboration to reflect, develop, and consolidate practices in teams and ECEC centers. The content of the learning program as well as the design and the tasks gave the ECEC teams an active role in long-term developmental work of their own practices. This was done by supporting them in collaboratively identifying their own developmental goals and making both individual, team and ECEC unit level plans for developing emotionally supportive practices. Overall, the program is based on the idea that by increasing shared theoretical understanding of children's emotional processes between the team members and linking this knowledge to their own work practice, ECEC professionals can together develop research-based early childhood education practices more profoundly than if the goal is only to learn one isolated skill, for example the use of a certain tool or material for teaching emotion regulation skills (Koivuniemi et al., 2021).

IMPLEMENTATION OF THE COLLABORATIVE LEARNING PROGRAM IN THE FINNISH EARLY CHILDHOOD EDUCATION AND CARE CONTEXT

The Aims

In the collaborative learning program (called the Tunnesäätelyn Tuki Varhaiskasvatuksessa [TunTuVa], in English, emotion regulation support in ECE), previously mentioned elements of supporting children's learning of emotion regulation skills as well as effective PD have been considered.

In the program, learning is viewed from at least three interconnected perspectives (see Kramarski and Heaysman, 2021). The final aim is to provide opportunities for children to learn emotion regulation skills in their early years. Therefore, the aim of the learning program is to improve ECEC professionals' skills and practices in effectively and systematically supporting children's learning of emotion regulation skills in ECEC. To achieve this, a work-integrated collaborative learning program based on research-based practices of collaborative learning and regulation of learning was implemented. The program provides professionals with research-based awareness and skills to identify, support, and monitor children's emotion related processes in authentic everyday interactions and to collaboratively reflect, develop, and consolidate emotionally supportive practices. The CEESQ and VSQ questionnaires for capturing professionals' learning are an integral part of this program.

Context and Participants

The learning program was implemented in the context of the ECEC setting. In Finland, ECEC is provided via ECEC center-based activities, family-based day-care, or open ECEC activities, arranged by a municipality, joint municipal authority, or private service provider. In Finnish ECEC, the children are commonly divided into groups of a maximum of 21 children (over 3-year-olds) or 12 children (under 3-year-olds). Within one child group, there is often a multi-professional group of three educators including both ECEC teachers (at least a bachelor's degree in education or in healthcare and social services) and childcare workers (with a lower educational degree). This team of professionals, referred as a *team* in this article, is in charge of the education and care of the child group, with a special emphasis on pedagogy led by an ECEC teacher. The size of the ECEC centers vary from one to several child groups and teams.

Participants of the learning program were 450 ECEC professionals from 60 different ECEC centers in seven different municipalities in Northern Finland. Four of these centers were family-based day-care units and nine were privately organized ECEC centers. The majority (47) were ECEC centers run by municipalities. Most of the participants participated as teams but some were the only participants from their teams.

Most of the participants (377) were working as ECEC professionals in various positions, such as ECEC teachers and as childcare workers; 42 participants were ECEC center directors, 4 of whom were working both as a teacher and as a center director. Additionally, 27 participants were early childhood special education teachers. The participants' work experience in the ECEC field ranged from 1 to over 30 years. Around 20 % of the participants had previous experience of emotion-related training.

The collaborative learning program was conducted remotely due to the COVID-19 pandemic. During the program, 36 participants dropped out of the program. Reasons for dropping out included scheduling issues, lack of time to participate, changes in resources needed to attend the program and personnel changes at the ECEC center. Ultimately, a total of 414 ECEC professionals finished the program successfully.

In the beginning of the program, the participants were given recommendations for good collaborative program practices (e.g., Chai and Tan, 2009), such as participating in the tutor visits as a team, organizing regular time for the reflective group discussions, and arranging possibilities to reflect thoughts during the everyday working. Additionally, the role of the ECEC center directors for discussing and participating in goal setting and planning together with teams was highlighted. The directors' role was to enable and

support the practice so that the teams could organize time for the program, especially for tutor visits.

Early childhood special education teachers were regarded as co-developers and supporters of the learning process of the ECEC professionals. However, the participating centers decided how ECEC centers and teams organized the program in practice. All the team members tended to participate in tutor visits and group discussions, but sometimes only one member of the team took part in the tutor visits and informed key points to the rest of the team later. The participation of the ECEC center directors and early childhood special education teachers varied during the program. They participated actively in the first orientation phase as well as in last two phases: reflection and integration.

Outline of the Collaborative Learning Program

The collaborative learning program consists of six phases, which the ECEC professionals studied independently either individually or in groups (**Figure 1**). Independent working was supported by material in a Moodle-learning environment (video lectures, learning log-notebook, and example videos from the ECEC practice), and by one lecture and four tutor visits between the phases. The tasks were mainly integrated into ECEC professionals' everyday work routines. The length of the program and the link to ECEC everyday practices were considered important. Ensuring time to link all the important elements of co-regulation of emotions and their implementation in practice was expected to increase the effectiveness of the participants' PD (see Chai and Tan, 2009; Sancar et al., 2021). The participants' learning in emotion-related themes were assessed during three time points. The questionnaires were sent to the participants before the program, after the Phase 5, and as a delayed post-test in December 2021–January 2022 (see **Figure 1**).

The Phases of the Learning Program

The first phase (Be aware) of the program included orientation to the theme of emotion regulation. It aimed to promote ECEC professionals' theoretical knowledge of learning, emotions, emotion regulation, and co-regulation of emotions in ECEC (**Figure 2**). Based on previous findings in interventions and reviews on PD (e.g., Willemse et al., 2015; Lunn Brownlee et al., 2017; Wallace, 2020), it was assumed that building theoretical knowledge and reflecting it in practice will provide professionals with a basis for understanding the phenomenon, applying it to various levels of working (curriculum, ECEC center guidelines, team goals, interactions with children), and making the use of pedagogical materials related to emotions more conscious.

In this phase, the introduction session, tutor visit, and the materials introduced the key elements of supporting children's emotion regulation (be aware, identify, support, monitor) and the phenomenon of self-regulation and emotion regulation. Additionally, the professionals' own emotions, emotion regulation, and socio-emotional climate in the ECEC group were discussed. Furthermore, in this phase, the professionals were given instructions for planning and working individually and collaboratively. The phases of regulated learning were used to guide systematic planning of the collaborative learning process. The participants' group learning process was prompted by helping in setting careful and specific goals for the learning process and in planning it accordingly (Hadwin et al., 2018). All the next phases were built on this first, theoretical phase.

In phases 2–4 (Identify, Support, and Monitor), the participants were prompted to observe their own and their teams' everyday practices. This was done to connect the theoretical themes of emotions, emotion regulation, and co-regulation of emotions to the participants' own everyday interactions with children. The teams were prompted to observe and together reflect on both their own and the children's actions based on the theoretical understanding (see an example of the task parts in **Figure 3**). This was assumed to help in building shared awareness and learning (see Willemse et al., 2015; Ríordáin et al., 2017). Participants' observations were supported with theoretical material as well as case videos from various ECEC situations, where the analysis of interactions was showcased in terms of emotion related themes (see section "Visits, materials, and tasks").

The second phase of the program (*Identify*) was aimed at prompting participants to identify learning situations from everyday interactions, where children experience emotions and can rehearse emotion regulation skills (Kurki et al., 2016; Silkenbeumer et al., 2018). The participants were supported, particularly in identifying the cues in children's behavior that indicated a need for regulation support. Participants were encouraged to share their notions with the team.

The third phase (*Support*) was aimed at identifying and activating various co-regulation strategies that help children to learn different ways to regulate emotions as well as providing a safe environment for children to rehearse emotion regulation skills (Kurki et al., 2016; Silkenbeumer et al., 2018). Finally, the focus of the fourth phase (*Monitor*) was on prompting professionals to monitor and observe children's activities to identify the level of children's regulation abilities and the need for (further) co-regulation (Hamre and Pianta, 2007; Kurki et al., 2018). This phase also included noticing the successful moments in both professionals' and children's regulation activities.

Phases 5 and 6 (Reflect and Consolidate) were dedicated to reflection as well a further planning and consolidation of practices. In Phase 5, professionals reflected on their learning process to identify good practices and developmental needs for improving practices at individual, team, and ECEC center levels. This was supported by different collaborative tasks, discussions, and materials. Furthermore, the teams were prompted to collaboratively plan emotionally supportive practices and activities to support everyday interactions. Finally, in Phase 6, the participants were supported to put these plans into action and to develop long-term pedagogy of emotion regulation support. The participants were prompted to continue their own developmental and consolidation work with the theoretical support provided during the program (see Willemse et al., 2015). The aims, therefore, were to make these developed pedagogical practices a part of educators' everyday working routine and to also train new workers in these themes.

Task parts	Examples of questions/tasks from the task part (Phase 2, Identify)
Learning navigator	Consider what you think about the emotionally challenging situations the children face. What kinds of challenges are there? How do you feel about them? Write down your answer.
Get to know the theme (material, videos)	Look at the expert video material about "Emotionally challenging situations as opportunities for learning". After this, consider again, what kinds of challenges children face in your daycare and why. Write down your answer.
Observe	Observe children's emotional challenges during one workday in daycare. Write down as many situations as possible and answer to following questions: What happened in the situation? What led to the situation? How did the child react? What kinds of emotion regulation strategies did the child use in the situation?
Group discussion	Discuss together with your team based on following questions: What kinds of emotional challenges did you all write down? What makes these situations learning situations for children and why? What kinds of emotion regulation strategies were the children able to use? What other emotion regulation strategies the children would have needed? Next, look at CASE1 video: Compare your own previous observations to the video's analysis and consider, what things you could have focused on more in observing children. How can the CASE1 video's analysis help you in your work?
Learning navigator	Consider what you think about the emotionally challenging situations the children face now. Do you notice any changes in your thinking? Share these thoughts with your team.

FIGURE 3 | An example of the contents of the task parts from the Phase 2, Identify.

Visits, Materials, and Tasks

Different supportive activities and materials were provided to enhance the participants' collaborative learning processes throughout the program period. The whole program began with the first, introduction session (**Figure 1**), where the outline of the theoretical background of the program and the steps of the program were presented. In addition, already in the introduction session, participants' theoretical understanding and its link to practice was promoted with both video and written examples of authentic situations from ECEC (Michalsky, 2020; Ramos et al., 2021). The materials of the introduction lecture were available for the participants throughout the entire program.

The four tutor visits (**Figure 2**) were meetings, where the learning process got support from the tutors and where the issues and thoughts were discussed and shared with other team members (DeLuca et al., 2017; Sancar et al., 2021). During the tutor visits, the teams were encouraged to share their experiences and collaborate in reflecting and identifying the good practices as well as those that needed development. The tutors made sure that discussions were connected to research-based knowledge. The first tutor visit aimed to strengthen the theoretical understanding of emotion regulation and its support (*Be aware*). In the next two tutor visits (visits 2 and 3), the professionals were guided in connecting theoretical knowledge and practice to the phases of the program (*Identify, Support, and Monitor*) and making plans for supportive practices based on these phases. The last tutor visit (visit 4) was for consolidation of the new emotionally supportive practices and making new, more practical goals for ongoing work in developing and maintaining practices in teams and the centers (**Figure 2**).

The whole learning material were found on Moodle and consisted of 14 video materials (different videos for different phases), tutor visit materials, instructions for tasks, and learning log-notebooks. The theoretical handbook of the learning model (Koivuniemi et al., 2020) and learning log were part of the materials. The video material consisted of longer expert videos and shorter information clips, where the researchers and tutors explained in detail and with practical examples the theoretical content of the programs' phases (e.g., what emotion regulation and co-regulation means, how to identify possibilities for support, how to support and monitor children's emotion regulation, but also, how to plan and consolidate practices). In addition, there were three case videos (**Figure 4**), with an analysis compiled by the tutors for identifying the theoretical

FIGURE 4 | A screenshot of a case video with analysis.

phenomenon occurring in that authentic ECEC situation among the children (Ramos et al., 2021). These case videos contained interaction examples where children experienced emotions and got different types of support from the teachers. The interactions were then theoretically explained both with illustrations and orally, to support the participants' ability to connect theoretical understanding with real life examples.

The independent working of the participating teams within Phases 1–4 always consisted of a similar working model with four different task parts that supported each other (**Figure 3**). (1) Learning navigator -tasks aimed to help participants to reflect on their learning and current practices and to identify what they know and do and what they do not yet know or do. (2) Get to know the theme -tasks guided the participants to increase their theoretical knowledge. In this task, expert videos, information clips, guiding questions, or learning material were used. (3) Observe everyday activities -tasks concerned with observation related to a specific theoretical theme and how it could be identified in everyday activities with children in the professionals' own work environment. The observation target could be either their own practices and interaction, or children's actions and expressions, or both (see example in **Figure 3**). (4) In the group discussion task, the team was prompted to collaborate in order to share their thoughts and to form a consensus based on the observations and the theoretical understanding they had gathered during other task parts. Guiding questions were provided for each of the task part to prompt individual and collaborative working. The participants used learning log-notebooks as hands-on material for documenting their answers and the contents of their discussions. Furthermore, the participants were asked to respond to the CEESQ and VSQ questionnaire before, during, and after the program to collect information about their learning.

CAPTURING INDIVIDUAL LEARNING IN COLLABORATIVE LEARNING PROGRAM

Developing an effective professional learning program requires appropriate assessment of learning. When learning deals with a phenomenon that occurs on multiple levels, such as in emotion-related learning and giving emotional support, the assessment tools need to capture the change in ECEC professionals' attitudes, knowledge, and interactions with children (e.g., Desimone, 2009; Sancar et al., 2021).

When exploring the effects of the present collaborative learning program for participants' skills in supporting children's emotion regulation, it was not possible to go to several ECEC centers to observe how the participants developed their skills in emotion-related interactions with children. Therefore, online questionnaires were used for assessing participants' learning. Crèche Educator Emotional Styles Questionnaire (CEESQ, Ciucci et al., 2015) was used to explore the participants' own views of their emotion regulation skills, emotional interaction styles, and efficacy in supporting children's emotion regulation. The questionnaire was translated from English to Finnish.

Although CEESQ is assumed to provide valuable information about the participants' skills to support children's emotion regulation, this questionnaire alone does not capture all the aspects of their skills and learning during the program, as it measures only the participants' general tendencies in emotional interaction styles. Therefore, an open-ended video stimulated questionnaire (VSQ) was developed to complement the general questionnaire. VSQ explores how the participants interpret actual ECEC interactions in relation to emotions, emotion regulation, and emotion regulation support. The assumption is that the participants' abilities to notice relevant things in authentic

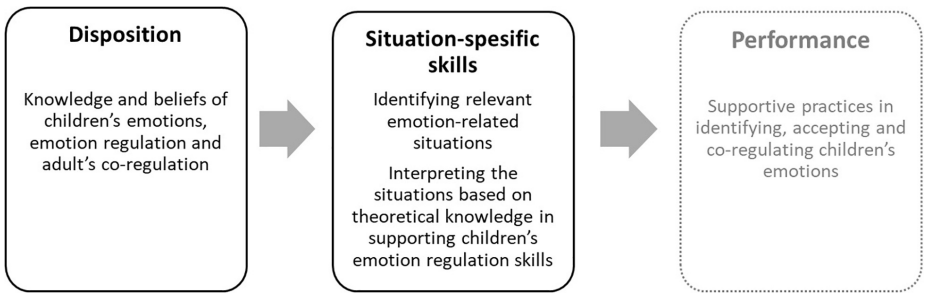

FIGURE 5 | Rationale behind capturing ECEC professionals' learning in terms of (co-)regulation of emotions. Edited based on the model of competence as a continuum (Meschede et al., 2017).

situations and to analyze them in connection to theoretical knowledge can give more information about their skills than a general questionnaire can (see, König et al., 2014; Meschede et al., 2017; **Figure 5**). Both questionnaires (CEESQ and VSQ) were given to the participants three times: before the intervention, after *Reflection* Phase 5 of the intervention, and 3 months after the intervention was finished. That way it was possible to compare their initial responses before the intervention to the ones after the theoretical phases of the intervention. Furthermore, the third questionnaire made it possible to see whether the effects of the program were long-lasting. The questionnaires and video examples in them, remained the same throughout the data collection.

The Background of Video Stimulated Questionnaire

Video stimulated questionnaire is based on the idea that learning is situated: it occurs and can be captured best when it is connected to its context (Järvelä et al., 2013). VSQ was developed based on the ideas from video-based analysis of professional vision (e.g., König et al., 2014; Meschede et al., 2017) and video-stimulated recall interviews (VSRI, Kurki et al., 2016; see also Vesterinen et al., 2010; Alonzo and Kim, 2016). Research on professional vision emphasizes the abilities of the teacher to identify and evaluate relevant educational situations (Dunekacke et al., 2015) and thus, they utilize video-stimulated methods to explore professional knowledge. For example, Meschede et al. (2017) suggested measuring more situation-specific aspects of teacher competence, which can capture how teachers activate their knowledge in a classroom situation. They used a video-based assessment approach for professional vision to study relations of teachers' pedagogical content knowledge and their beliefs. Earlier research, particularly on teachers' skills in professional vision in terms of knowledge-based reasoning of interactions, has been connected to better interaction qualities in the classroom (Blomberg et al., 2011; Wolstein et al., 2021). Using video-based assessment, Dunekacke et al. (2015) also found that knowledge of preschool teachers in mathematics content positively connected with how well they perceived learning situations and planned educational actions to foster learning.

Based on the ideas from earlier literature, VSQ aims to capture the ECEC professionals' situation-specific skills in (1) identifying relevant situations where children experience emotions and learn emotion regulation skills, and (2) interpreting and analyzing these situations based on research-based knowledge of children's emotion regulation skills and how they can be supported (**Figure 5**).

The Development of Video Stimulated Questionnaire

The first version of the VSQ questionnaire was created, when the collaborative learning program was piloted for 36 participants. Based on experiences from piloting, some changes were made for the updated version of VSQ (**Supplementary Appendix 1**). The development of the updated version started with choosing three 2–5-min-long video clips for the questionnaire from different types of authentic ECEC situations, where children experienced emotions and they were interacting with peers and teachers (see short descriptions of the video clips in **Supplementary Appendix 2**). In the pilot questionnaire, different video clips were used in pre- and post-tests. This was assumed to prevent the effect of familiarity of the video clips. However, this reduced the comparability of the pre- and post-tests in relation to each other. Therefore, in the updated version of VSQ, the same video clips and questions were used in both pre, post, and delayed post-test (**Figure 6**). It was assumed that after a long time (approximately 6 months) between each questionnaire, the participants were able to look at the same video clips without it affecting their answers. The video clips or the questions were not the same as the ones used in the learning material to ensure that the interpretations were not directly taken from the program and that the participants had to interpret the situation themselves.

The criteria for the chosen video clips were that they included a variety of socio-emotionally challenging situations, for example play or transition situations, where the normal action was interrupted and challenged the children emotionally (see Järvenoja et al., 2013; Kurki, 2017). Also, various aspects of emotions, emotion regulation, and its support needed to be present in the example situations. This was assumed to prompt versatile answers and a coherent picture of participants' professional noticing based on theoretical understanding (van Es and Sherin, 2002). The participants themselves were not in the videos nor did they know the adults and children in the video clips. Therefore, they did not reflect their own actions but rather

FIGURE 6 | A screenshot from a part of online VSQ.

analyzed the video clips' educators' and children's actions based on their own understanding of emotion regulation.

Next, the questions that were asked from the participants about these video clips were created, negotiated, and edited with several researchers to ensure their fit in the VSQ and for measuring the individual learning outcomes (Kinnunen et al., 2021). For this, the experience from the piloting of the first version of VSQ was used. The fit of the questions was ensured by forming the questions based on theories and research of emotion regulation and emotion regulation support (Gross, 2015; Kurki et al., 2017; Silkenbeumer et al., 2018), but also making them understandable for the participants, regardless of their background knowledge. The questions were adapted partially from VSRI in Kurki et al.'s (2016) research on teachers' co-regulation in ECEC, where the ECEC teachers analyzed their own co-regulation of emotions in authentic interactions they engaged in with children. Even though the questions were formed based on theoretical basis of the program, they were formed to be broad enough to avoid too much prompting or directing the answers of the participants. To analyze the fit of the open-ended questions required also testing what kinds of answers the questions produced: whether there was a clear variability in the answers between the participants in terms of theoretically relevant aspects of emotion regulation and whether the answers showed within-person change in pre- and post-tests. The pilot study showed that the questions used were able to produce variability and change in participants' answers (Kinnunen et al., 2021). The change shows also in the examples in **Supplementary Appendix 2**.

Some changes were made to the questions based on the feedback from the participants of the pilot study. The changes were made to ensure that the participants were able to understand the questions better in the pre-test, before they were given information about theoretical concepts such as emotion regulation (term "emotion regulation" was changed into "emotions or/and emotion regulation"; see questions below). In addition, one question was added: "What do you think the children learned in the situation?" This was added to explore how the participants interpreted the emotion-related interactions as learning situations for children (Kurki et al., 2016; Silkenbeumer et al., 2018). The questions in the updated version of VSQ were: "What caught your attention in the situation in terms of emotions and emotion regulation?," "How do children act in the situation in relation to emotions or emotion regulation?," "What kind of support does the adult give to children in terms of emotions and emotion regulation?," "How does the adult monitor children's activities in the situation?," "How else could the adult have acted in the situation and why?," and "What do you think the children learned in the situation?" (see **Supplementary Appendix 1**). The video clips or the questions were not the same as the ones used in the collaborative learning program's learning material to ensure that the participants' interpretations were not directly taken from the program.

The Analysis of Video Stimulated Questionnaire Answers

The analysis of the updated VSQ answers was developed based on experience from the pilot study, where the questionnaire's video clips were first analyzed by the researchers and then the analysis was compared to the participants' answers.

For the updated VSQ, a detailed theoretically based thematic analysis to the chosen video clips was conducted to identify relevant aspects in effective co-regulation of emotions from the interactions. This type of approach has been used also in earlier video-based assessment methods (e.g., Dunekacke et al., 2015, TARKISTA). The analysis in the present study was conducted based on identifying the following themes from the video clips: (1) the challenge in the situation (e.g., peer conflict, transition, a child's fear), (2) children's signs of need for support (e.g., crying, disorientation, apathy, aggression) (3) children's' activated emotion regulation (e.g., asking for help, attempts to modify the situation, refocusing attention) (4) adult's interaction style (sensitivity, warmth) (5) adult's co-regulation of emotions (cognitive, behavioral and emotional co-regulation strategies), (6) monitoring activities during and after the given support, and (7) the children's possibilities for learning. The analysis was discussed and tested for reliability by two researchers. Based on this analysis, the reference values were created for participants' answers.

The next step (4) was to perform a thematic analysis for the questionnaire answers to explore, whether the participants were able to identify or interpret the similar theoretical aspects from the video clips' interactions as the researchers did. The participants' answers were therefore rated based on the created reference values. The criteria for scoring were as follows: The participant does not mention the notion made by the researcher about the video clip (0 points). They mention it on a general level (1 point). They provide a detailed description of a specific theme

(2 p) (see **Supplementary Appendix 2** for examples of analysis of answers). The analysis of questionnaire answers was also discussed in detail and tested for reliability by two researchers.

For the present VSQ questionnaire data, the plan is to take the analysis further by applying a professional vision perspective to explore the participants' level of reasoning skills (Stürmer and Seidel, 2017). This analysis will not only capture the theoretically accurate interpretations of the participants, but also shows the participants' abilities to make conclusions and recommendations for further actions and analyze the reasons behind children's actions more profoundly.

The preliminary results from VSQ in the pilot version of the collaborative learning program showed encouraging results in the participants' improvement from pre- to post-test particularly in identifying the children's' need for support and adults' co-regulation strategies (Kinnunen et al., 2021). Also, in the present learning program, the preliminary analysis of CEESQ questionnaire showed improvement in participants' self-efficacy as an emotional supporter. The detailed descriptions of the questionnaire data and the analysis results of the pre-, post- and delayed post-tests will be reported in an empirical paper.

DISCUSSION

This paper showcases how research-based knowledge of social and emotional aspects of learning can be used both for the content and the design of a professional learning program. The development of the program was closely connected to the literature of regulated (Hadwin et al., 2018; Perry, 2019), collaborative (Hmelo-Silver and DeSimone, 2013), and professional learning (Cuyvers et al., 2020), as well as research linking early childhood interactions to children's learning of emotion regulation skills (Rimm-Kaufman et al., 2002; Colman et al., 2006; Cole et al., 2009). For measuring ECEC professionals' learning, a VSQ tool that captures the connection of theoretical knowledge and situation-specific interpretations of interactions, is based on the idea of situation-specific nature of regulated learning (Järvelä et al., 2013) and teaching (Meschede et al., 2017).

Next, we will discuss important notions about the program's implementation and participants' feedback and connect them to earlier research and theoretical literature. The feedback has been collected as part of the program via an anonymous feedback tool in the learning environment as well as during discussions with the participants on tutor visits. The feedback is not necessarily in line with all the participants' thoughts and does not reflect the actual learning results of the program. However, it showcases some thoughts and issues raised during the learning program. We will reflect on them based on the literature to make conclusions of the takeaway issues and possible benefits of a long-term, work-integrated collaborative learning program.

Importance of Theoretical Knowledge

In research on learning and social interactions, awareness of emotional reactions, challenging situations, and motivational conditions are at the core of activating regulation (Op't Eynde and Turner, 2006; Järvenoja et al., 2015). Increasing professionals' theoretical awareness and its relationship to their practices have also been at the core of this collaborative learning program. This approach is supported by research on teachers' classroom interactions where teachers' content knowledge (Dunekacke et al., 2015), noticing, and reasoning skills (Stürmer and Seidel, 2017; Wolstein et al., 2021) have been positively connected to teachers' interaction qualities. It has also been shown that teacher beliefs, knowledge, skills, and self-efficacy in relation to emotional interactions in ECEC make a difference to both the quality of interactions (Tsouloupas et al., 2010; Castle et al., 2016) and the teachers' own emotional wellbeing (Tsouloupas et al., 2010). Moreover, research shows that training for socio-emotional learning can boost teachers' own social and emotional skills (Oliveira et al., 2021).

The participants' feedback of the present learning program included mentions of getting useful new information from the learning program. For example, the term "co-regulator" was considered useful. The participants mentioned a shift in thinking, in terms of what it means to be a co-regulator of emotions for children in everyday interactions. Indeed, theoretical knowledge helped them to reflect their own actions and practices and develop them (see Dignath-van Ewijk and van der Werf, 2012).

> *"It has become clearer that the adult's role in children's emotion regulation is to be the person who walks beside and supports children through emotions. And that rehearsing emotion regulation can be supported best in normal everyday situations. Of course, identifying and discussing emotions with different materials supports this process, but the process is more holistic and there is a need for a sensitive adult who is aware in different everyday moments in children's lives."* (Quotation from a participant).

Collaborative Learning and Working

Based on the feedback, strengthening the participants' theoretical knowledge helped them to collaboratively build common language and awareness of how to support children when they experience emotions and rehearse emotion regulation. The usefulness of building common language has also been acknowledged in previous research in professional team learning context (Wallace, 2020). When working collaboratively, building shared understanding of the learned topic (Dillenbourg, 1999; Stahl et al., 2006; Hmelo-Silver and DeSimone, 2013) as well as shared awareness of the group processes (Bakhtiar et al., 2018; Järvenoja et al., 2019) are at the core. This is also the strength of the present learning program, as collaboratively engaging in supporting children's learning with mutual goals and understanding can make pedagogical practices more systematic, coherent, and efficient within the working teams and in the ECEC centers as well (e.g., Cherrington and Loveridge, 2014).

DeLuca et al. (2017) research on collaborative inquiry in professional learning showed that collaborative activities increased the culture of collaboration, where discussions about practices and sharing professional expertise became more common. Similarly, in the present project, tasks that encouraged collaborative working and group discussions were considered meaningful, interesting, and thought-provoking by many of the

participants. The participants felt that through discussion they could get new viewpoints for supporting children's emotion regulation from their co-workers and then also apply them to their own work and self-reflection. Participants found that discussions led into more unified, effective practices, which they were able to transmit, even to the children's families. Openly sharing thoughts, feelings, and observations were considered especially useful for promoting general wellbeing at work.

Forming a successful collaborative learning environment for PD is, however, not always easy. DeLuca et al. (2017) research shows that successful collaborative working requires building trusting relations and a secure atmosphere among colleagues. This can be supported and created in collaborative working in various ways: listening to and respecting others, encouragement, and engaging in regulating emotions and motivation as a group (Kwon et al., 2014; Isohätälä et al., 2018; Mänty et al., 2020). In the present intervention, this was enabled by establishing ground rules for respectful and ethically sustainable discussions and directing discussions toward a good work atmosphere and supporting colleagues in emotional issues at work. These aspects are considered essential in collaboration—as power struggles, lack of commitment, or distrust within a team can endanger the team's learning (Aubé et al., 2014; Näykki et al., 2014). At the end of the program, building a favorable atmosphere for both children and professionals was also raised in participants' comments regarding developing emotion-related practices in their ECEC teams.

> *"The program has made us pull together as a group more. Together we have become more aware of children's and adults' feelings. There are no taboos, but we can talk about everything—this way everyone feels better and more at ease."* (Quotation from a participant).

Reflection and Agency in Developing Own Practices

Previous literature has highlighted the importance of teachers' abilities to identify and evaluate educational situations every day while working (van Es and Sherin, 2002). These skills refer to professional vision, which includes abilities to notice the relevant situations, evaluate them, and adapt one's own teaching strategies to different and unpredictable situations (Wolstein et al., 2021). Earlier research has connected these abilities in ECEC with interaction qualities and teachers' beliefs (Hamre et al., 2012; Pianta et al., 2014; Wolstein et al., 2021). However, as everyday emotion-related interactions are a very sensitive area both for adults and children, reflecting and evaluating one's own as well as colleagues' practices and interactions is not an easy task. When professionals develop their knowledge and expertise in professional vision and co-regulation skills, it requires a lot of potentially emotionally eliciting reflection of one's own attitudes and emotions as much as of actual (inter)actions (Lunn Brownlee et al., 2017). However, reflexivity—taking a critical look at the practices and developing them based on new knowledge (Lunn Brownlee et al., 2017)—may be made easier by supporting teachers' confidence, professional agency, and self-efficacy.

In the present learning program, the participants were continuously asked to observe their own everyday interactions in terms of how children expressed emotions and need of support, how they regulated emotions, and what types of approaches the professionals themselves took in co-regulating children's emotions and reacting to emotional situations. The participants were encouraged to identify practices that needed developing but also to notice even small successful moments in children's emotion regulation activities as well as their own successes along with good practices as professionals and teams. The prompting questions were developed for these observations to increase participants' productive reflection, which includes questioning the underlying assumptions, openness to different perspectives, integrating knowledge, analytical thinking, and being able to notice connections and relationships in activities and reactions (Davis, 2006). In the discussions that derived from these examples from their everyday interactions, the participants were able to spot various important aspects in relation to supporting children's emotion regulation skills, such as adults using a calm, sensitive approach in emotional interaction with children (Rimm-Kaufman et al., 2002; Colman et al., 2006; McCoy and Raver, 2011; Kopystynska et al., 2016) or listening to children's own point of views and having discussions with them (Hutchinson, 2013; Gärtner et al., 2018). However, in many cases, deepening the reflection required collaborative discussion and support from the tutors. Therefore, appropriate coaching for PD, in addition to providing theoretical knowledge, was clearly needed. With the help of the tutors, discussing these real-life situations allowed the participants to study the roles, aims, and attitudes of adults in different situations as well as children's and adults' own emotions. Many of the participants highlighted, for example, how collaborative reflections of daily situations and children's actions had broadened their views of children's needs and helped to figure out and share solutions for individual support in emotion regulation.

> *"The program has stirred up a lot of conversations, and from these conversations we have been able to get new perspectives to our own work. Correspondingly, I have contemplated my own actions more. For example, I have now focused more on talking about children's emotions in different situations."* (Quotation from a participant).

It is noteworthy that during discussions with the tutors the participants seldom brought up their own emotions when describing examples. This had to be prompted by the tutors, as based on earlier research findings (e.g., Chang, 2013; Becker et al., 2014; Castle et al., 2016), it was regarded as important to also focus ECEC professionals' attention on their own attitudes and emotional reactions in various interactions with children. At the end of the program, the emotional toll of the work was discussed more.

Materials Supporting Reflection and Learning (VIDEO-Based Learning)

As the present collaborative learning program aimed to build a link between ECEC professionals' theoretical awareness and

the practices and interactions in their work environment, video-based methods and observation of own practices were considered important in the learning process. This showed, for example, in materials which consisted of case video examples where the tutors prompted the identification of children's emotions, regulation strategies and professionals' co-regulation.

The participants mentioned in their feedback that the videos helped them draw the connections from theory to practice and they were a useful tool for learning. In addition, studies in various educational contexts highlighted the usefulness of video-based learning for teachers (e.g., Fukkink and Tavecchio, 2010; Cherrington and Loveridge, 2014; Michalsky, 2020). It has been stated that a video can act as a tool for reflection and feedback, and as a way to identify children's learning and thinking (van Es and Sherin, 2002). It has also been a useful tool particularly in collaborative learning in teachers' PD and as an effective strategy to promote teachers' agency (Ramos et al., 2021).

Observing own teaching and interaction practices from the video data can be an effective way of reflection and professional learning in ECEC (Fukkink and Tavecchio, 2010). However, with the present learning program, that would have been impractical to implement. Therefore, observation of one's own practices was prompted by observation tasks, and in video examples the participants interpreted the interactions from an anonymous ECEC context. For the participants, this was potentially also a good thing: reflecting on the ECEC practice without needing to focus on their own appearance and performance or that of the colleague could possibly help them become more observant, critical, and analytical in their reflections.

Long-Term Learning Program

In earlier research on collaborative inquiry, the participating teachers acknowledged the importance of time in the learning process (DeLuca et al., 2017). Furthermore, Desimone (2009) and Bakkenes et al. (2010) recommended long-term professional learning and developmental programs. However, there is no direct answer on how long these supported learning processes should last to achieve the most fruitful outcome (Sancar et al., 2021). In the present learning program, the length of the program got some criticism from the participants during the process. Some participants, particularly at the beginning of the program, were concerned about whether they would be able to go through the independent exercises and tutor visits without them disrupting their main work with the children. However, the value of a long-term program was also seen among the participants: it was expressed that the topics related to emotion regulation support could fade away during hectic ECEC daily work without some prompting given by the program and the tutor visits.

Overall, building an understanding of what emotion-related work in ECEC is and how emotions are intertwined in everything, prompted the participants to seek goal-directed development of their practices in emotion regulation support at individual, team, and ECEC center level. This helped them to implement the ECEC curriculum in their work. The feedback shows that, for some of the participants, the program helped in identifying their own strengths, levels of expertise, and areas that need developing. Some participants mentioned that program increased their self-efficacy and trust in their own and team's expertise.

> *"It was important to hear and think that I have been on the right path, but correspondingly it is important to reflect on how I could keep on improving my work in the future as well. Thought-provoking. I will probably tackle this on my own and together with my team. It is an important journey to me!"* (Quotation from a participant).

It is assumed that the effects of the long-term collaborative learning program to participants' knowledge and skills are affected by various factors that did not appear in the feedback. Some of the factors were identified during the implementation of the program: For example, the motivation of the participating teams, their overall workload, and the support from the ECEC unit directors seemed to make a difference to how the teams arranged time for going through the materials and for the collaborative working. It also seemed that the expectations for a professional learning program varied: some seemed to be expecting traditional, one weekend workshops or lectures. Others were expecting that the learning program will provide specific practical tools and solutions for children's behavioral problems. However, as the program continued, the idea that the ECEC professionals themselves are the developers of their own practices became clearer to the participants. It needs to also be considered that the effectiveness of the program may depend on the background of the participants: for example, the level of their previous knowledge of emotion-related themes. These differences will be explored in more detail in the empirical paper.

Assessing Learning With Video Stimulated Questionnaire

Video stimulated questionnaire was developed to capture ECEC professionals' abilities and learning to identify and analyze relevant aspects of real ECEC interactions: children's emotions and emotion regulation, need for support, and the learning opportunities and co-regulation of emotions (Kinnunen et al., 2021). VSQ aims to capture a central component of teacher competence: noticing and knowledge-based reasoning; namely, the ability to pay attention to situations that foster or constrain learning and to reflect on them based on one's own professional knowledge (e.g., Meschede et al., 2017). Wolstein et al. (2021) research shows that the low competences in reasoning skills seen among preschool teachers was connected to low interaction qualities with children. In turn, Stürmer et al. (2013) found that video-based learning in teacher education can improve pre-service teachers' professional vision competencies as measured by observation tools. These earlier studies, among others on professional vision, support our notion that being able to analyze the fine-grained emotional interactions one has with children and how it affects children's behavior at that moment and their learning overall is at the core when we explore ECEC professionals' development at supporting children's emotion regulation skills.

Video-stimulated questionnaire provides possibilities to capture professionals' learning, particularly in terms of interpreting emotional interactions. It is a tool that can be

applied to a larger sample of professionals, as it was developed in an online questionnaire mode. On the downside, an open-ended questionnaire is labor intensive, which may affect the willingness of the participants to finish the questionnaire. This needs to be considered when the questionnaire is developed further. Overall, we believe that assessment tools for learning of teachers could, in the future, be even more focused on situation-specific abilities to identify and interpret real educational situations. However, we state this with caution, as the analysis of the questionnaire data is still ongoing.

CONCLUSION

In the present collaborative learning program, the ECEC professionals were prompted in connecting research-based knowledge to their own practices. Likewise, this paper contributes to research and developmental work on emotions, emotion regulation and collaborative learning by taking a close look at how to translate theoretical and research-based knowledge to support learning in ECEC at multiple levels and in a meaningful way. Strong, research-based support for educators as well as for children are needed now more than ever. The present collaborative learning program was implemented during the global COVID-19 pandemic when worldwide, teachers and educators have been pushed to their limits and among ECEC professionals in the field, exhaustion and stress has been visible (Eadie et al., 2021; Pereira et al., 2021; Pressley, 2021). Supporting ECEC teams in building new, emotionally supportive practices, and increasing professionals' understanding of their own emotions and needs, can boost professionals' work satisfaction and wellbeing (Tsouloupas et al., 2010; Oliveira et al., 2021). Tsouloupas et al. (2010) study showed that teachers who feel efficacious in managing emotion-related issues in the classrooms, such as children's misbehavior, also experience less emotional exhaustion in their work. Collie et al. (2011), in turn, found that teachers who integrate socio-emotional learning approach in their work, also show more commitment to their profession and to their school. Furthermore, the meta-analysis of Oliveira et al. (2021) indicated that socio-emotional learning interventions targeted at teachers increases their social and emotional competence. Thus, PD in improving emotion regulation skills and related practices can be regarded as an essential aspect in building an emotionally supportive environment for children.

The most important reason for strengthening emotionally supportive practices in ECEC are of course the children who have been strongly affected by uncertainties and stresses during the COVID-19 pandemic (e.g., Cowie and Myers, 2020; Reimers et al., 2020). Children need support from the people around them so that they can learn skills to identify their emotions and their own needs, as well as understand those of others, and to regulate emotions in a way that provides them with a good basis for future learning, health, and a healthy social and work life (e.g., Robson et al., 2020; Riedigier and Bellingtier, 2021).

Children in Finland, particularly, spend a lot of their early childhood years in early childhood education. Therefore, we see the importance of equipping ECEC professionals with strong expertise as supporters of children's emotional development and learning. Early childhood is the time and ECEC is the context where these skills can be rehearsed and modeled, and various unfavorable developmental trends among children can be reversed when addressed early, systematically, and appropriately (Määttä et al., 2017; Robson et al., 2020).

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/**Supplementary Material**, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

KM, SK, and MK were responsible for the theoretical, research-based aims of the research project as well as the design of the collaborative learning program along with its implementation and data collection. KM was primarily responsible for structuring the manuscript. OR-H was responsible for describing the context, participants, and implementation of the learning program. All authors contributed to the writing and editing of the manuscript and participated in designing the learning program and the data collection.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2022.865161/full#supplementary-material

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