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Gearing up for sustainability education in Finnish early childhood education and care (ECEC): Exploring practices and pedagogies by means of collegial reflection and discussion

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ABSTRACT

Finnish legislation and policy on early childhood education and care (ECEC) express sustainability as a basic value. The national core curricula state that, during their years in ECEC, all children have the right to develop necessary values, knowledge and skills for living a sustainable life. Furthermore, early years education should be permeated by the principles of sustainability. However, research suggests that there is unclarity concerning how sustainability can be implemented in practice and pedagogy (Repo et al., 2018; 2019; Furu, forthcoming). Hence, the aim of this study was to explore how sustainability is currently done in ECEC settings in Finland. Further, we wanted to look into how the use of the recently developed *Assessment Tool for Promotion of Sustainability in ECEC* (PROSUS) by Furu and Valkonen (2020) might enhance sustainability work among teams (n=15) in ECEC settings in Finland. Based upon the findings, sustainability education is understood and implemented variably by the teams. This indicates that children are provided unequal opportunities for developing the basic capacities needed for leading a sustainable life. The study also makes visible how the PROSUS might enhance collegial learning regarding sustainability work and underlines the importance of collaborative practices in developing sustainability education in the early years' context.

***Keywords**:* early childhood education and care, continuous professional development, organization culture, sustainability

During the past few decades, matters of sustainability have gained increasing attention in both policy and research within the ECEC context. Loss of biodiversity, climate change, pollution of air and water, and population growth are but a few examples of the multiple crises that are rapidly unfolding in the front of our eyes and threatening the future of our children. We are, in fact, living in times of "planetary emergency" as Alden Meyer, the director of strategy and policy at the Union of Concerned Scientists, stated in December 2018 at the Climate Summit in Katowice, Poland (Sutton, 2018). It is evident that rapid changes are needed in order to secure a sustainable future for both people and planet.

Since the 1970s, there has been general agreement that there is an ongoing sustainability crisis and that humanity has to embark on a new path in order not to destroy the prerequisites for a good life for all, within the capacity of the Planet. It has also been stated that education has an important part to play in the enhancement of sustainability at all levels in our societies and communities. This also applies to ECEC as the first part of the life-long learning path. However, by and large, policy has not yet resulted in practice and little progress have been made in terms of transforming our societies towards sustainability in the long term (United Nations, 2019).

In recent years, focus has increasingly been put on how the challenges we are facing might adversely affect the lives of children across our globe (Clark et al., 2020; WHO, 2017). It is widely acknowledged that children are likely to suffer most from the challenges ahead (Siraj-Blatchford, Mogharreban & Park, 2016; United Nations 2019). Thus, children must get the chance to develop necessary awareness, values, knowledge and capacity in order to be capable to live a sustainable life (e.g. UNESCO, 2014). International agreements, such as the Agenda 2030 (United Nations, 2015), emphasize that children and young people are important agents in the pursuit of sustainability. Hence, they must be included as active participants and change makers in societal transformation both within education and in the wider society. In line with work by James and Prout (1997), young children´s civic participation has been acknowledged during the past few decades and Hart (1997) underlined children´s right to participation in environmental matters. Children´s participation has also been identified as a vital part of resilience (Sanson, Van Hoorn & Burke, 2019) i.e. the shared capacity to constructively meet challenges and adversities in life (Masten & Barnes, 2018). Consequently, ECEC has an important part to play in developing sustainability and supporting resilience among children and communities (Elliott, Ärlemalm-Hagsér & Davis, 2020; Huggins & Evans, 2018).

Against this background, this article looks into how the above related matters can be promoted, by reporting a study situated in the Finnish ECEC context. Sustainability was introduced in the 2015 *Act on early childhood education and care*. It is also mentioned in the *National Core Curriculum for Early Childhood Education and Care 2016* (Finnish National Agency for Education, 2018) as well as the *National Core Curriculum for Pre-primary Education 2014* (Finnish National Agency for Education, 2016). Both legislation and current national core curricula state that all children have the right to develop the prerequisites of a sustainable lifestyle. However, research on how policy is implemented in practice is scarce. Existing studies indicate that it is currently integrated into educational practices with great variability (Furu, Wolff & Suomela, 2018; Wolff & Furu, 2018; Furu, forthcoming). According to the national core curricula, sustainability should also be an inherent aspect of the organizational culture of ECEC, but there is still limited research on whether this is realized. In a recent study, Furu and Heilala (accepted) state that there is great variability in how sustainability work is understood and conducted by ECEC teams and that organizational cultures must be developed in order to support sustainability education.

Hence, the aim of this study was to explore how sustainability is currently done in ECEC settings in Finland. Further, we wanted to look into how sustainability might be facilitated the recently developed *Assessment Tool for Promotion of Sustainability in ECEC* (PROSUS) by Furu and Valkonen (2020) in the participating teams. The study was guided by two research questions:

1. What practices and pedagogies are made visible by staff in ECEC?

2. Does the PROSUS tool promote collegial professional development? If so, how?

In the following, we first provide an overview of some core concepts of the study, relevant previous research and theoretical underpinnings regarding sustainability education in ECEC. Thereafter, we present the methodological framework of the study. In the following section we discuss the core concepts of the study. We also present some of the previous research related to sustainability work within the ECEC context. Lastly, we outline the theoretical underpinnings of sustainability education in Finnish ECEC.

Theoretical foundation

In this article, the concepts *sustainability* and *sustainable development* both occur. The concept *sustainable development* stems from the Brundtland Report *Our Common Future* (WCED, 1987) which stated that a sustainable development must guarantee a good life also for future generations. The concept was also used in the *The Agenda 2030* (United Nations, 2015), which is currently the main international agreement aiming concerning global sustainable development. During the past few years, this agreement has increasingly been addressed in sustainability education as well as ECEC policy (eg. Elliott, Ärlemalm-Hagsér & Davis, 2020). Although the concept sustainable development is still widely used in both policy and research, it has increasingly been criticized for its linkage to a neoliberalistic paradigm based on economic growth (Wolff, Sjöblom, Hofman-Bergholm & Palmberg,

2017; Ideland, 2019). We therefore prefer to use the concept sustainability, as it lacks these linkages. Instead, sustainability refers to a condition where human life that does not hurt any life (human or non-human) on Earth today or in the future (Wolff & Furu, 2018). Sustainability thereby includes the protection of ecological diversity as well as a fair distribution of resources among people. Further, in this article we use the overarching expression *sustainability work* to refer to both daily practices and goal oriented pedagogies that are conducted by staff in ECEC in order to promote sustainability in the form of values, knowledge, and skills in the learning community consisting of both children and adults.

The term *continuous professional development (CPD)* is central to our article. We use it to denote the collegial learning processes that are based on reflection and discussion among staff. In their literature review, Bove et al. (2018) underlined that CPD is an issue not only about the enhancement of individual knowledge or skills, but rather it encompasses a community of practice where critical reflection as well as political understanding of how issues of social injustice can be addressed through ECEC. Therefore, in our article CPD refers to processes involving not only individual teachers or leaders, but to the entire staff which is viewed as a learning community. This idea fits well in the enhancement-led evaluation which forms the frame of reference of national and local quality evaluation in Finnish ECEC (Vlasov et al., 2019).

Previous research on sustainability education in the ECEC context

During the last decade there has been a rapid increase in research concerning sustainability in the ECEC context (Elliot, Ärlemalm-Hagsér & Davis, 2020). In the past few years, research has increasingly included post-humanist and post-colonial perspectives as well as Deleuzian rhizomatic methodologies. A review by Wolff, Skarstein and Skarstein (2020) stated that four ideas seem to drive sustainability education in the early years *outdoor play and learning*, *competent child and agency*, *practice architecture*, and *posthumanistic approaches*.

Pramling Samuelsson & Park (2017) suggested that sustainability education in ECEC is a value related issue, including educators´ views of both children and learning whilst Bautista et al. (2018) underlined the need for dialogic approaches where staff create opportunities for children to have theory voices heard on topics related to sustainability issues and where staff position themselves as co-constructors of knowledge. Knowledge has to be grounded in bodies and feelings (Emilson & Johansson, 2017). Children, as well as staff and students, need opportunities to make meaning of their own experiences (Furu & Kaihovirta, 2020; Furu, 2019). When children can create their own meaning, knowledge becomes integrated with their emotions and children own that knowledge (Pramling Samuelsson & Park, 2017). Taylor (2017) and Wals (2017) underlined that a shift is needed in terms of supporting an understanding of humans as part of nature, capable of caring and supporting the web of life. In this sense, nature contact is at the core. These perspectives require professionalism and a willingness to embrace new pedagogical practices from staff.

Corcoran, Weakland and Wals (2017) argued that, in order to meet the challenges of our day, education – in every phase of our life – has to be truly transformative or even transgressive. Elliot, Ärlemalm-Hagsér & Davis (2020) underlined the need for ECEC to challenge prevailing understandings of sustainability within the field of ECEC. These efforts are tightly related to work with policy and research as well as to the practices and pedagogies of each team. Rather than being a matter of developing individual interest or knowledge, sustainability is therefore a matter of learning communities, organizational cultures, and relational leadership. As such, it is dependent on processes of collegial learning and continuous professional development in the team or in the entire ECEC setting. However, as Huggins and Evans (2018) pointed out, many educators are not yet engaging in transformation of their practice. As the transition towards critical reflection and discussion is perceived uncertain, there is a risk that sustainability work is not perceived as a common educational responsibility, but rather as the individual pursuit of an expert, enthusiast, or eco-warrior. Hence, in order to enhance sustainability work in the ECEC context, focus needs to be directed towards professional development at the team level.

Ärlemalm-Hagsér and Elliot (2017) underlined that further research is needed to explore how sustainability is understood and enacted in the daily activities in ECEC. OMEP conducted an international research and development collaboration during 2010-2013 (Siraj-Blatchford, Mogharreban & Park, 2016). This collaboration resulted in a tool

for assessment of sustainability practices in early childhood care and education, the *OMEP Environmental Rating Scale for Sustainable Development in Early Childhood* (ESD Rating Scale). ESD Rating Scale has now been translated into some ten languages and a second edition was published in 2019. The ESD Rating Scale was developed as a tool for enhancing ECEC quality with special focus on sustainability issues. As a result of the projects, the researchers underline the importance of raising the focus towards holistic solutions to the world´s problems (Siraj-Blatchford, Mogharreban & Park, 2016).

In this study, the view of sustainability work is built on a relational ontology, which views humans as relational beings whose growth is dependent on mutual, respectful, and caring relations (Buber, 1958). Further, humans are considered as inseparable from the entire web of life (e.g. Taylor, 2017; Wals, 2017). Development and learning are thus understood as inherently relational processes (Bingham & Sidorkin, 2010; Papatheodorou & Moyles, 2009). As Weldemeriam and Wals (2020) pointed out, each child is relationally entangled with the world and the pedagogical focus within ECEC should therefore recognize diverse ways of knowing; intellectual, emotional, bodily, and social. Further, they argue that a pedagogical reorientation is necessary and suggest a move towards a relational pedagogy (or pedagogy of entanglement) where sustainability in ECEC recognizes the vibrancy nature of learning processes where sustainability emerges in encounters in the web of connections between humans and non-humans. As a consequence, we state that there is no “single child” or “single adult” in ECEC, but only humans who are deeply interrelated and intertwined with their fellow humans (children and adults) and their natural and socio-cultural environments. Human and non-human life is entangled in a web of life which provides rich opportunities for learning and development within the learning community.

Moreover, processes of transformation and transgression (development and learning) happen in rhizomatic, often unpredictable ways. Affordances which provide disorienting dilemmas (Mezirow, 2009) and have the capacity to promote new understandings or practices are therefore desirable. Hence, sustainability work relies on the shared understandings and practices of the team, as well as their capacities to collaboratively develop pedagogical practices that make the processes mentioned above possible.

Sustainability work in Finnish ECEC

Against the background of the multiple sustainability crises we are facing, sustainability work is receiving increasing attention in Finnish ECEC. According to the 2015 *Act on early childhood education and care* as well as the national core curricula for ECEC (0-5 yrs) and pre-primary education (6 yrs), all children have the right to develop the prerequisites for a sustainable life during their time in early years education (Finnish National Agency for Education, 2016; 2018). Sustainability in four dimensions (ecological, social, cultural, and economic) is part of the educational framework.

The entire organizational culture is supposed to build upon the principles of sustainability, but few specific instructions are given concerning how these principles and objectives are to be realized in daily work. Staff is in a key position to make change come about, but there are only a few studies on how staff in Finnish ECEC understand and/or address sustainability issues (Reunamo & Suomela, 2013; Salonen & Tast, 2013; Salonen & Hakari, 2018). These studies show that staff are finding sustainability an urgent matter, yet at the same time they do not implement it holistically in their work. As these studies were empirically conducted in 2012 they might not reflect the current situation. Current reports show that staff in ECEC perceive uncertainty concerning how sustainability can be addressed in relation to young children (Repo et al., 2018). Further, in some settings sustainability is even viewed as a form of alternative pedagogy (Repo et al., 2019). This might be due to the fact that sustainability can be considered an overlooked issue in ECEC teacher education until recently (Wolff & Furu, 2018; Furu, Wolff & Suomela, 2018). Although ECEC in Finland has a long tradition of addressing a variety of matters related to various dimensions of sustainability, such as supporting nature contact, protecting the environment, enhancing social equality and diversity, sustainability education is conceptually a relatively new entity. Current national development work does not deal with sustainability as a quality indicator and hence it is not a focus for evaluation per se (Vlasov et al., 2019). Therefore, it has been suggested that incorporating the principles of sustainability into ECEC requires assessment and, if found necessary, change of the organizational culture (Furu & Heilala, accepted).

Finnish ECEC builds on collaboration in multi-professional teams. According to the Act, it is recommended that each team is built from either two teachers and one child carer or one teacher, one social pedagogue, and one child carer. The teacher has the overall pedagogical responsibility, but all members contribute with their knowledge and skills. Collegial collaboration is considered a natural prerequisite for quality education (Finnish National Agency for Education, 2016; 2018, Repo et al., 2018; 2019). When it comes to development of practices and pedagogy, and continuous professional development at the team level, collegial learning becomes a key issue.

In order to enhance collegial development, research by Vandenbroeck et al. (2016) has proven CPD through research-based enquiry or action research to effectively promote staff´s reflection on their ongoing practice and therefore promote the development of it. Contextualizing CPD is a key to meeting local needs and thereby enhancing the development of new and sustainable practices (Bove et al., 2018). Sustainability and flexibility can be enhanced in a multi-level CPD, where both the social, the local, and the wider societal contextual factors are considered. In line with this, Peleman et al. (2018) put forth that initiatives with active engagement from staff, for example through peer exchange based on a shared scientific framework, is productive form of CPD.

Previous research shows that in order to enhance professional learning, creating opportunities to view and reflect upon taken for granted aspects of one´s professional life is valuable (Nolan & Molla, 2019). In this respect, making visible aspects of the daily practice and pedagogy in a trusting collegial environment, such as the team, is of importance. Bove et al. (2018) state that regular team-based reflection is a cornerstone in innovative CPD and they highlight the role of leaders collaborating with practitioners. In the same vein, Georgeson (2018) underlines the importance of involving all team members and leaders in sustainability work. Thus, a combination of bottom-up and top-down approaches enhance innovative developmental work through CPD.

Methodological framework

The study was conducted within a framework of qualitative research with a focus on the experiences of staff in ECEC. Hence, the epistemological point of departure was guided by phenomenological hermeneutics (van Manen, 1990).

Research context and participants

The study was conducted during September 2019 to March 2020 in teams (n=15) in ECEC settings (n=7) in various parts of Finland. It was our explicit intention to include a variety of settings in the pilot study. Thus, ECEC settings in urban and rural areas, geographically covering municipalities in Southern, Western, Central, and Northern Finland. Participating settings were invited through the networks of the University of Helsinki. Prospective participants were informed about the development of the questionnaire and the possibility to contribute to the piloting processes by giving response on the functionality of the questionnaire. Altogether, 15 ECEC teams participated in the study. Of these, seven were teams in municipal ECEC settings, six were teams in private ECEC settings, and two teams were from day care clubs arranged by the Evangelical-Lutheran church of Finland. Both Swedish-speaking settings (n=7) and Finnish-speaking settings (n=8) participated.

The PROSUS tool

The *Assessment Tool for Promoting Sustainability in ECEC* (PROSUS) by Furu and Valkonen, (2020) was adopted to explore how sustainability is enacted in the daily life of the ECEC setting. The tool is a revised and adapted version of the above mentioned *OMEP Environmental Rating Scale for Sustainable Development in Early Childhood* (ESD Rating Scale) which has been used in research reported by Siraj-Blatchford, Mogharreban and Park (2016). The ESD Rating Scale is based on the three dimensions put forward by the Brundtland Report (WCED, 1987) and follows the logic of the ECERS Early Childhood Environment Rating Scale (Harms, Clifford & Cryer, 1998) and ECERS-E (Sylva, Siraj-Blatchford & Taggart, 2006).

The PROSUS tool has the form of a questionnaire. It covers the dimensions of sustainability in line with the Brundtland definition, which is also the base for how sustainability is described in the Finnish curricula. Each

dimension contains five aspects of sustainability (see Table 1). These aspects are based on the Finnish curricula as well as on contemporary research on how sustainability could/should be integrated into ECEC.

Table 1
The three dimensions and respective five aspects (A-E)

1 Ecological sustainability 1A To understand oneself as part of the ecosystem 1B To have a respectful relationship with nature 1C To enjoy, play and learn in nature 1D To take responsibility for the environment 1E To prevent and mitigate environmental problems
2 Social and cultural sustainability 2A To develop social and emotional skills and prevent bullying 2B To promote equality and address individual needs 2C To respect multiculturality 2D To promote gender equality and to conduct gender sensitive education 2E To address the diversity of families
3 Economic sustainability 3A To learn modesty and economy 3B To make responsible acquisitions and use materials and resources in a sustainable manner 3C To use energy and water in a sustainable way 3D To develop a conscious approach to food 3E To develop a healthy life style and physical and mental health

In accordance with each aspect the relevant Sustainable Development Goals from Agenda 2030 are mentioned. Activities related to each aspect are described by teams in their own words as open answers to questions following the same form: “In what ways do you currently address (…) in your daily practice?” and in the pilot version of PROSUS each team rated their work based on a 7-point rating scale for each aspect with descriptive indicators based on general principles as follows:

1 (inadequate) indicates that the issue is not addressed or only sporadically or seldom

3 (minimal) indicates that the issue is addressed to some extent, but mainly from a teacher perspective

5 (good) indicates that the issue is explored and discussed on a regular basis in versatile ways where children are active participants engaging in playful and arts-based learning and critical reflection

> 7 (excellent) indicates that the issue is addressed systematically in a goal-oriented manner that involves external actors from the local community and pays regard to global perspectives

Each aspect could be rated from 1 (insufficient) to 7 (excellent) in line with provided indicators. In the final digital version, the rating is replaced by a multiple choice between the four options, and no numerical data is collected. Thus, all in all, 15 aspects were been brought to the fore. For every dimension, there is an open question, following the model: "What ideas do you have for developing (…) sustainability in your daily practice?" where teams can put forth any suggestions and ideas. The tool also contains an overview over the numerical results.

Teams were invited to complete the PROSUS through reflection and discussion of each aspect of the three dimensions together within their team. First, all team members were asked to go through the questionnaire individually. Second, team leaders were asked to facilitate collegial discussion and fill out the tool, which was then sent back to the researchers either digitally or on paper. The teams were asked to first reflect on and describe the sustainability practices aligned to each indicator on the rating scale and thereafter rate themselves on the scoring system. In addition, the respondents in our study filled out a questionnaire concerning the functionality of the tool (see Appendix 1). The time recommended for participating in the study was about one month, but additional time was allowed to some teams due to organizational challenges.

In this article, we first report findings based on the responses to the PROSUS questionnaire regarding the sustainability practices and pedagogies they adopt in their daily work. Second, we look into how the teams describe how they perceived the use of the tool. Since the number of participating teams in this cohort is small, we are reporting only qualitative data. The research materials were analyzed through thematic content analysis (Denzin & Lincoln, 2018) and narrative analysis (Clandinin et al., 2016) guided by the two research questions of the study.

Ethics

The study follows the ethical principles of research issued by the Finnish National Board on Research Integrity (TENK, 2019). All teams were informed of the aim and methods of the study by phone and/or e-mail. Informed consent was obtained by all participants via e-mail and from municipal authorities if needed.

Results

The aim of this study was to explore how sustainability is currently done in ECEC settings in Finland. Further, we wanted to look into how sustainability might be facilitated the recently developed *Assessment Tool for Promotion of Sustainability in ECEC* (PROSUS) by Furu and Valkonen (2020). In this section we report the findings following the structure of the two research questions that guided the study. Descriptions of patterns in the responses are exemplified by quotes and discussed in the light of the Finnish national core curricula and contemporary research.

Sustainability in practice and pedagogy

The responses to the PROSUS questionnaire made visible that sustainability education was conducted with great variability in the participating teams. Some teams responded with only single words to the open-ended questions about each aspect in each dimension of the PROSUS, while others provided long and rich descriptions regarding each aspect.

Ecological dimension. The *ecological dimension* of sustainability was predominantly addressed in a nature-oriented way. Paying visits to the forest or to urban parks was part of the weekly routine in all teams. However, only one team provided an explicit view of the pedagogical thinking associated with these visits:

> *"We make visits to the forest, where we address children´s interests and questions as well as direct their attention to species and phenomena." (T6)*

Using nature materials and recycled materials in arts and crafts was another common approach to the ecological dimension. The pedagogical motive for the work conducted in everyday routines was seldom mentioned, but some teams stated that they strive to promote an attitude of being both careful and mindful with resources, as well as learning to respect plants and animals. These responses suggested that traditional environmental education from an anthropocentric perspective was the prevailing guiding framework for approaching the ecological dimension of sustainability education.

According to the responses, addressing environmental problems with young children seemed to evoke some resistance. Several teams emphasized that children should not be worried by global issues in this way:

> *"Young children aged 3 to 4 should not be burdened with global environmental problems. They have the right to be children! To feel safe!" (T3)*

While the above response can be understood as a claim not to address environmental issues at all in ECEC, another team provided an alternative approach to the phenomenon:

> *"We do not discuss environmental problems. We try to be environmentally positive and friendly, to plant an attitude." (T1)*

To sum up, the dominating approach was one where staff act as role models, instruct and teach children by example and routines. Playful, explorative or dialogically framed learning experiences were mentioned only sparsely. Only a few descriptions indicated that the pedagogy was based on children´s experiences and/or active participation.

Social and cultural dimension. The *social-cultural dimension* of sustainability was given most attention by the teams. The descriptions were thicker and the language was more elaborated. We understand this as a sign that this dimension of sustainability were most familiar to staff. There were frequent examples of daily practices that support social and emotional skills such as working with emotions, learning problems solving skills, or adopting specific programs to prevent bullying.

However, some aspects of cultural sustainability were perceived as distant or challenging by some teams. Multicultural education was not viewed as a prioritized area by some teams:

> *"…the group of children is culturally very homogenous, but we accept multiculturality" (T2)*

Although basic values related to cultural sustainability seemed to be embraced by the teams in some way, one team suggested gender sensitive education is not even an issue relevant for young children:

> *"We would not include this question (aspect 2D) in the tool at all." (T9)*

In general, teams underlined practices that provide versatile ways for all children to be active participants in the day to day life, in accordance with their age, maturity or capacities. Some of the teams mentioned that they critically examine and challenge norms regarding boys/girls, family background, or ethnicity through discussions with the children.

All in all, the social and cultural aspects of sustainability were addressed in all teams and the answers to the PROSUS indicated that these dimensions of sustainability were embraced by teams from the perspective of the basic values in the national core curricula for Finnish ECEC and pre-primary education. However, there was a stronger focus on the social aspects than the cultural aspects, which might reflect that multicultural issues have only recently been raised in the early years discourse in Finland.

Economic dimension. The *economic dimension* was strongly tied to daily habits such as saving energy or water, as well as being careful with resources like materials for arts and crafts or food. No team stated that they strived to discuss issues around money explicitly, but rather to foster an overall attitude of being mindful with money and

careful with resources. Toys and tools were repaired, there were instances of teams who took the group with them to the municipal library to borrow books, toys, or games. Food was a recurring theme in the answers and staff occasionally mentioned that they have vegetarian or locally resourced, ecological food. Most teams however stated that the decisions that affect the economic aspects of sustainability were taken in some other part of the organization and that they had little or no influence of them. In sum, this dimension of sustainability was perceived to be partly restricted by general rules and organizational factors that only leaders in the municipality can change.

A feature that must be made visible is the fact that side by side with the above presented results there were some "silences" in the data. These silences were materialized in absences, non-existing or very brief answers to open-ended questions. In general, very little was said about issues like biodiversity, nature connectedness, or global consequences of local actions. Further, few teams mentioned specific pedagogical approaches to sustainability education, nor were there linkages made between the three dimensions of sustainability. In general, the results were in line with those of another cohort in the piloting of the PROSUS tool (Furu & Heilala, accepted), where the respondents were teams in ECEC teaching practice settings.

The PROSUS as a promotor of professional development

A majority of the teams (n=13) responded positively and stated that working with the PROSUS tool had enhanced reflection and discussion around sustainability issues in their team. There were, however two exceptions to this pattern. One of the teams perceived that they already had a lively discussion going on because of their engagement in the Green Flag program:

> "*Not really. We already have so much discussion about it because of Green Flag." (T12).*

Another team had apparently departed from the instructions and worked with the tool in their own way due to lack of time. Thus, each team member separately had checked out the tool and suggested suitable scores for the aspects in each dimension (by marking that indicator with a cross) without any common discussion. The response from this team included verbal descriptions for only three of the fifteen aspects, and therefore included mainly numerical information. However, this team had provided answers to the open questions about suggestions for future work in each dimension. In their response, they stated that they had not discussed the various aspects in depth: "*We haven´t had time to discuss all dimensions/aspects yet." (T5).* The latter case made visible the importance of clear instructions, as well as the needed frames in terms of time to collectively work with the tool.

In order to better understand how the PROSUS stimulated collegial reflection and discussion, we looked into the responses more specifically. They revealed that the tool had facilitated shared collegial learning processes regarding sustainability work by contributing to development of both awareness, knowledge, as well as pedagogical and practical approaches in the teams. Overall, the teams perceived that the tool had helped to raise awareness and supported development in the group, which is visible in the following quotes:

> "*The tool increased awareness within the group and brought forward new ideas for development* or *ideas and developmental opportunities in our work started to emerge." (T9)*

The tool also seemed to have brought up new perspectives and angles to the issue of sustainability work in ECEC:

> "*Many times we thought we had done ok when we read the titles (of each aspect) but the criteria/indicators gave new perspectives that we had not thought of previously, so we got some new ideas to progress with." (T6)*

In one team the PROSUS stimulated work within the entire group of staff, including the sector leader:

> "*All staff (not just teachers) took part in the discussions, the leader for child sector, too. All had had time to read and reflect over all aspects. Some found it a good basis, others had anxiety because you do bad choices (in general in life)". (T7)*

This response highlighted the importance of involving all team members and leaders (Georgeson, 2018) and the holistic character of sustainability education, where both cognitive, emotional and social aspects are central (Furu, Wolff & Suomela, 2018).

Altogether, the PROSUS was considered to be a tool that catalyzes development of sustainability work at the team level. The tool served as a common point of focus for collegial reflection and discussion. Depending on previous experiences and the knowledge basis of the team members, it afforded both positive recognition and inspiration for change. Teams could position their daily work in a broader sustainability education context and all team members could participate in both describing the current state and envisioning necessary development for future work.

Discussion

All in all, the findings from this study suggest that the PROSUS can contribute to collegial reflection and discussion. Whilst working with the tool, staff can both address values and feelings related to sustainability issues and enrich their knowledge basis and practical as well as pedagogical approaches to sustainability education. This is in line with previous research by Bove et al. (2018). However, a prerequisite for this collegial learning process to come about is that the team has sufficient resources and that the instructions for using the tool are followed.

The findings of the study are in line with other studies that make visible the variability in how teams address sustainability issues in the Finnish early years context (Furu, forthcoming; Furu & Heilala, accepted). Staff put forward conflicting views on whether environmental problems should be addressed in the early years context at all, which has also be shown to be the case in the U.S. (Ginsburg & Audley, 2020). This might be due to a lacking pedagogical framework for sustainability education in ECEC as well as to a gap concerning how policy and research can be translated into practice. Further, there seems to be a lack of professional language regarding sustainability work in ECEC. It also raises questions about how the national core curricula serve as a conceptual framework for implementing sustainability in the ECEC context. We argue that in-service and pre-service professional development concerning sustainability education is urgently needed. Further, we think that sustainability should be part of the national criteria for measuring quality in ECEC, since a sustainable way of living and its social, cultural, economic and ecological dimensions are stressed in the national core curricula. The responses also highlight that a discussion within the professional field is needed around *why* ECEC is valuable in contributing to transformation of current destructive discourses and *how* it can be part of making necessary changes come about. Some of the responses call attention to children´s role in change making as well as contemporary views of children as global citizens capable of active participation in matters of sustainability. This relates strongly to views of children as *beings* not *becomings* (James & Prout, 2015). Further, the findings make visible the need to develop practices and pedagogies suitable for toddlers, as the tool is perceived somewhat difficult to use in the context of those who work with aged 0-3 yrs.

Working with the PROSUS requires both structural and processual frames in terms of sufficient time and background knowledge as well as well-functioning interpersonal communication in the team. This highlights the role of the team leader and underlines relational and distributed forms of leadership where team members feel safe and supported to genuinely participate in the process. This is in line with research by Bove et al. (2018) and Georgeson (2018). Further, it is important that leaders explicitly allow time and space for collegial reflection and support developmental work at the organizational level.

Methodologically, the tool itself can provide rich information about sustainability work in ECEC, as long as instructions are followed and teams are engaged in promoting sustainability. The response questionnaire serves well in order to make the experiences of participating teams visible and provides a solid ground for digitalizing the tool and further development of the regimen around using it. The number of participating teams in this study is limited, and the results can thus not be generalized. However, the results are in line with the findings in another cohort of the pilot study (Furu & Heilala, accepted) in which 34 teams from teaching practice settings participated. Further studies, with larger samples and interviews, are planned in order to provide in-depth insight into the nature of the collegial learning processes catalyzed by the PROSUS tool.

This study shows that the PROSUS tool sheds light on both current practices and ideas for future sustainability work and hence can be of value for raising awareness, strengthening the knowledge basis, and developing pedagogy and practice in ECEC settings. It can also provide valuable information for policy makers, researcher, and teacher educators within the ECEC context. In order to meet the sustainability challenges in times of rapid and unpredictable change, ECEC needs to embark on innovative and sometimes bold educational projects. Staff in ECEC are key agents for change as they can provide children with rich pedagogies and practices to develop sustainable lifestyles. By encouraging their collaborative professional development gearing up is possible. There is no time to lose.

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