

## RESEARCH ARTICLE

# What Content in Early Childhood Education for Sustainable Development is Present in Swedish Preschools?

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**Abstract:** This article shares what Swedish preschool teachers are working with in the field of early childhood education for sustainable development (ESD) as emerged in talks with their children, aged two to five years. The tasks carried out as the basis for the present analyses were informal child talks about a topic related to sustainability that the teachers and children had worked with in practice. The teachers themselves chose what content to talk about. The 200 teachers participated in the Swedish research and development program *Sustainable Preschool*. The aim of the present study was to make visible the content of teacher-child talks about sustainable development in early childhood education. The research question is as follows: What content areas do teachers communicate about with children 2–5 years of age related to ESD? The teacher-child talks were initiated by the teachers, but through the use of interpretative content analysis the children’s voices were also made visible. The main result is narratives about the content, the most common topics being recycling, growing plants and animals, areas which have long been common topics in Swedish preschools. For many preschools, however, the talks show an integration of transformative and transactional perspectives in how the content was handled together with the children. ESD in early education in Sweden is no longer dominated by the environmental dimension, as earlier content studies have shown; a new common content relates to the UN Sustainable Development Goal 4.7 regarding sustainable lifestyles and human rights, and sustainability is a long process, founded in empowerment, action competence, and changed policy.

**Keywords:** early childhood education, sustainable development, systematic child talks, content analysis

## 1. Introduction

Since the emergence of the field of research on education for sustainable development (ESD) in early childhood education (ECE), questions have been raised about how ECE handles issues and content concerning sustainability, regarding aspects such as social, economic, and environmental sustainability. As Davis and Elliott [1] stress, there is a need to know what is going on with children’s learning about and for sustainable development.

The aim of this study was to make visible the content of teacher-child talks about sustainable development in ECE. The research question is: What content areas do teachers communicate about with children 2–5 years of age, related to ESD? The context is a large professional research and development program. One year into the program, the teachers got the task to initiate child talks about something they had worked with together with the children in the area of ESD (see further under Study context).

When it comes to content in ECE globally, two models are used. The ECE is either organized around the same subjects as in school (Math, Language, Science, Art, etc.) or focuses on thematically organized content (topics like the City, Water, the Woods, the

Shop, etc.), with aspects of subjects integrated and used in a meaningful situation. These two approaches are primarily related to English-speaking countries in the first case and the Nordic way of dealing with curricula and pedagogy in the second [2]. In the Nordic countries, content has not been the main issue in ECE, as children’s learning and development more generally have paved the way to pedagogy in the early years. This led to a pedagogy, where how to behave with and relate to children became more important than any prescribed content or curriculum. The way daily activities were organized was in themes and projects. The themes had numerous focuses, including making excursions, reading books, singing songs, arranging play environments, practicing creative arts, drama, etc., all depending on the theme’s topic. Bridging over to school pedagogy, one could claim that this approach to an integrated curriculum and pedagogy is an important aspect of what Mathie and Wals [3] label a “whole school approach” [4].

In 1998, Sweden, where preschool covers the ages one to five years, got its first National Curriculum<sup>1</sup> for the Preschool. The curriculum has since been revised to smaller or greater extent, making the content more visible. In the latest revision (2019)<sup>2</sup>, it is spelled out that the approach

<sup>1</sup>National Agency for Education. “Curriculum for the preschool: Lpfö 98.” 1998. <https://www.skolverket.se/download/18.6bfaca41169863e6a6549bc/>

<sup>2</sup>National Agency for Education. “Curriculum for the preschool: Lpfö 18.” 2019. <https://www.skolverket.se/getFile?file=4049>

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should be thematic. This is the kind of thematic content areas the teachers and children talk about in this study.

One of the main changes in the revision of the curriculum is the added fundamental task of working for a sustainable development: “Education should be characterized by positive beliefs in the future. Education should give children the opportunity to acquire an ecological and caring approach to their surrounding environment and to nature and society”, together with equality, equity, and the opportunity to express empathy and consideration for others. There are also specific guiding goals included for sustainable development, for instance:

- 1) a growing responsibility for the interest in sustainable development and active participation in society,
- 2) an understanding of how different choices people make in everyday life can contribute to sustainable development,
- 3) an understanding of relationships in nature and different cycles in nature, and how people, nature, and society affect each other.

Other goals – for instance concerning children’s right to participation and agency and concerning fantasy and creativity – further relate to sustainability.

## 2. Research on Sustainable Development Content in Practice

A review of the most established ECE journals about the content areas ESD and ECE showed the following relevant articles. The most common types of content worked with in ESD in ECE were nature experiences, recycling, and the reuse of resources, while economic and social aspects of sustainable development were not common. Sundberg et al. [5] claim<sup>3</sup> that science education may contribute to ESD, but teachers’ active participation is crucial for realizing multidimensional science teaching in a way that contributes to such education. An example of this can be seen in an article by Årlemalm-Hagsér and Samuelsson [6], in which a preschool teacher with special knowledge in environmental issues worked with children in a preschool with the content of the global goals from Agenda 2030<sup>3</sup>. This study showed that content knowledge is a key aspect of reaching sustainability goals, derived from other adults at the preschool, children, parents, or library books.

From Canada, Nxumalo [7] presents inquiry-based practice narratives with children around their encounters with dead and dying bumblebees in their lives. Examples showed the ways in which children’s and educators’ practices shifted away from encountering bees predominantly as objects of scientific knowledge towards more relational, embodied, and affective immersion in their lives and death. Weldemariam [8] also focuses on dying bees in a play developed to raise children’s awareness of relationships between humans and the world around them. In their article, Jørgensen and Martiny-Bruun [9] argue for an approach to waste education which encourages pupils to explore the socio-material aspects and trajectories of waste practices and waste materials. In Spain, Buil et al. [10] describe a project in which children, parents, teachers, managers, and associations worked together with a common goal of identifying aluminium packaging for recycling. Waste is a common topic in ESD [11], likely because many societies are occupied with recycling.

The social dimension of sustainable development was scrutinized in children’s expressions of belonging in peer communities in preschool. Johansson and Rosell [12] claim that belonging to a

community is an existential need and that belonging itself is a relational phenomenon. This is why belonging is a notion that must be considered when talking about sustainability in the early years. However, belonging can also hinder one’s freedom to try out what is outside the culture of belonging.

Economy was the focused content in Borg’s study [13], in which preschool children were communicated with about worldwide economic issues. Most of them seemed to have knowledge about the lives and economic situation of other children in the world, many could justify their views with one or more relevant ideas or thoughts, and a few of them were also able to logically connect their arguments. Additionally, Årlemalm-Hagsér et al. [14] explore projects with preschool teachers concerning sustainable development. The findings demonstrated that at the beginning of the project, the preschool teachers did not view economic sustainability as part of the preschool’s objectives and activities, or the children’s learning. Nevertheless, in the dialogues between the teachers and researchers, it became clear that the teachers worked with these issues daily in their routines and in the children’s activities and play but had simply not labeled it economy or related it to sustainability.

In an empirical study in Sweden, Schmidt [15] shows how implementing various literacy activities in multilingual and community-based contexts in education introduced the concept of place into children’s thinking about sustainable development. She claimed:

Bringing literacy and place together in education can address what is perhaps one of the most crucial questions of sustainability, namely how people within a community can live together while having different values, beliefs, and dreams.

Kahriman-Pamuk and Olgan [16] find that 838 preschool teachers in four urban areas of Türkiye often addressed subjects like social justice, equality, cultural diversity, recycling, endangered species, and various rights in their curricula. They also touched upon themes like poverty, energy sources, and natural disasters, albeit less frequently. Meanwhile, topics such as gender equality, biodiversity, climate change, alternative energy, public transport, water consumption, and local goods were rarely addressed. According to this study, teachers in eco-preschools exhibited a more significant commitment to sustainable development than those in regular preschools.

Content was also highlighted by Ritchie [17] focusing on providing opportunities for children to become engaged in growing, cooking, and sharing food. The activities enabled the children “to operationalize compassion towards themselves, others and the environment, reconnecting with the source of their food and demonstrating generosity and care to others (both human and more-than-human) in their communities”. Ritchie claimed that Indigenous perspectives honor traditional, localized wisdom regarding sustainable practices. Ritchie [18] also showed how pedagogies that reflect the eco-cultural literacies of Indigenous people have the potential to foster young children’s empathy for our planet and for other humans, as well as for the non-human, for instance mountains, rivers, forests, plants, insects, and animals in general.

People’s well-being and environmental education were the topics in an article by Edwards et al. [19]. They analyzed children’s knowledge of popular culture-inspired food products and related this knowledge to well-being aspects and sustainability. The children created stronger connections between food, weight, obesity prevention, and sustainability when these content areas were focused on in their everyday choices and practices.

As shown above, research on ESD focuses on many different content areas. Furthermore, many of these studies were carried out

<sup>3</sup>UNDP. “What are the Sustainable Development Goals?” 2015. <https://www.undp.org/sustainable-development-goals>

with small groups of teachers and/or children. This article, reporting a larger study of 460 teacher-reported talks with children around sustainability, aims to provide this field with more knowledge about content in early childhood ESD within a theoretical perspective at the interface of curriculum and policy in education [20].

### 3. Global Policy on ESD

UNESCO, the United Nations' organization for implementing ESD, actively disseminates helpful approaches for implementing the UN Sustainable Development Goals (SDG), especially SDG 4.2 concerning quality pre-primary education for all children, and SDG 4.7 concerning sustainability, global citizenship, and related content areas [21]. UNESCO addresses the goals and issues of Agenda 2030 in the UNESCO ESD Roadmap [22], providing relevant education for the future and a call for transformative and transactional change.

Besides developing policy, UNESCO also conducts surveys on what is happening in different countries in relation to ESD. In 2019, UNESCO presented a survey on curricula and official texts for education in ten case countries. The focus was on four types of learning, cognitive, social, emotional, and behavioral, in ESD and global citizenship, from pre-primary to secondary education. The results showed a declining emphasis on the social and emotional dimensions of ESD in relation to global citizenship. While there was great variation between countries, no country focused to similar degrees on all four areas of education. It turned out that most preschools focused on social aspects, while curricula for older children focused more on cognition. Social and emotional aspects were more frequently related to global citizenship than cognition, and Sweden was the only country that used both social aspects and cognition in the curriculum for preschool children [23].

Policy today is focusing on *A Whole School Approach* (WSA) [3, 21, 22] for re-orienting and redesigning education considering emerging global sustainability challenges. WSA promotes a holistic, systemic, co-creative, and reflexive effort by all stakeholders involved in education to meaningfully engage children in sustainability challenges.

### 4. Study Context

The present study is part of a larger research and development program in Sweden called *Sustainable Preschool*<sup>4</sup>. The 3.5-year program began in 2021 with the intention of adopting sustainability at all levels in the organization of ECE and care: children, classes, preschool teachers, principals, and administration. It sets out to capture how teachers transform their curriculum and pedagogy towards sustainability, how the leaders (principals and managers of preschool education) change their policy and conditions towards a more sustainable preschool, and what is happening with children's learning about and for sustainable development [1]. Altogether there are 300 participants, comprised of 200 preschool teachers and 100 leaders and principals, from nine municipal and private providers.

The researchers' role is to inspire, give lectures, provide information about research in the area, and distribute tasks for the teachers, principals, and leaders to carry out during the program. The participants perform certain tasks in their everyday practices, which partly also generates data for research. These tasks form a

continuum, influencing the next step in the process towards sustainable preschools. The *Sustainable Preschool* program aligns with Swedish ethical principles and requirements<sup>5</sup>, and the research has been approved by the Swedish Ethical Review Authority (D No 2021-06472.01). No violation of ethics was found.

In the very first task in the program, the teachers were asked open-ended questions about changes to their environment, education, and teaching after the newly revised *National Curriculum for the Preschool*<sup>2</sup>, in which ESD is strongly emphasized. The results of the survey showed a tendency to describe ESD as "business as usual" rather than treating it as a new field, and the teachers had addressed ESD before it became a compulsory task in 2019. Most of the recent changes in the preschool environment, for instance removing toxic plastic and recycling food waste, seemed to be the result of priorities set at higher levels in the organizations. Only a few of the teachers initially described an educational program that included transformative change [24]. There were few connections made to the SDGs<sup>3</sup> or the ongoing pandemic. A common trend when describing the content and activities was to divide the content into three areas, following the three dimensions of sustainability.

The preschool teachers described a wide range of motives regarding why it is important to teach about sustainable development in preschool: to counteract unsustainable lifestyles, to follow the governing documents, to take responsibility for a sustainable present and future, and to equip children for the future. The study also showed that ESD included developing knowledge, creativity, problem-solving skills, critical thinking, action skills, and innovative thinking and change. It presented children's participation in working for a sustainable present and future as decisive for this change.

Later in 2021, the teachers used the OMEP<sup>6</sup> ESD Rating Scale<sup>7,8</sup> to assess the status of ESD in their preschools. This scale broadens participants' understanding of the concept of sustainable development and provides a common professional language while at the same time serving as a tool for discussions about the quality of their education [25]. After using the scale, the teachers claimed that their views on ESD had expanded from mostly nature and environment-related questions to other dimensions of ESD, economic, and social/cultural [24].

The present article is based on a task carried out between April and June 2022, in which all preschool teachers were asked to carry out and transcribe informal child talks around a theme or project linked to sustainable development they had recently worked with. Focus of interest is the multiplicity of content that relates to ESD during the talks.

### 5. Study Method

This study uses a theoretical perspective positioned between curriculum and policy theory in education, that is at the interface between the curriculum and wider education policy [20]. ESD is articulated in several policy texts, in this study, e.g., the SDGs<sup>3</sup>, the UNESCO ESD Roadmap [22], and the National Curriculum<sup>2</sup> for the preschool. ESD is also manifested in local practices, where teachers interpret policy and the task of the preschool, plan, and

<sup>5</sup>The Ministry of Education and Cultural Affairs. "The act concerning the ethical review of research involving humans (2003:460)." 2003. [https://www.onep.se/media/2348/the\\_ethical\\_review\\_act.pdf](https://www.onep.se/media/2348/the_ethical_review_act.pdf)

<sup>6</sup>OMEP stands for World Organization for Early Childhood Education, an NGO, [www.omepworld.org](http://www.omepworld.org)

<sup>7</sup>OMEP. "The OMEP ESD rating scale." 2019. [https://omepworld.org/wp-content/uploads/2021/02/2019-OMEP-ESD-rating-scale2ed.ENG\\_.pdf](https://omepworld.org/wp-content/uploads/2021/02/2019-OMEP-ESD-rating-scale2ed.ENG_.pdf)

<sup>8</sup>OMEP. "OMEP:s skala för hållbarhet i förskolan [The Swedish OMEP ESD rating scale]." 2020. <https://files.builder.missisite.com/dd/02/dd02603e-2b17-4c18-84d0-873dfc2989b0.pdf>

<sup>4</sup>Ifous. "Plan för forsknings- och utvecklingsprogrammet: Hållbar förskola [Plan for the research and development programme: Sustainable preschool]". 2021. <https://ifous.se/hallbar-forskola/>

implement ESD in their teaching practices. This perspective enables us to analyze multiple and dynamic influences on ESD and on curriculum development within the wider policy ecosystem.

Before carrying out the child talks, the 200 preschool teachers were given a lecture about doing systematic with children during a two-day seminar, focusing on organizing for dialogues during informal child talks. Types of questions, ethical considerations, and a listening approach were highlighted. There were multiple reasons for giving this task during the second year of the *Sustainable Preschool* program:

- 1) The Swedish national curriculum requires goal-directed teaching concerning all content, for instance sustainable development.
- 2) The curriculum also prescribes child participation where the children's experiences and ideas should form the starting point for the teaching.
- 3) All modern theories of children's learning place communication at the center.
- 4) Communicating (dialoguing) with children requires intersubjectivity, i.e., finding a balance between child participation and teachers' goal-directedness.
- 5) Taking part in communicative dialogues is one aspect of teacher competence.

The teachers' task was to carry out three individual child talks, on a project or theme related to sustainable development they had recently worked with. In this way, it would be possible to analyze what content the teachers and children communicated about. One could say that the topic was introduced by the teacher and the elaboration around the content area depended on the level of intersubjectivity and what the child brought up during the talks. The different ways of conducting this kind of informal child talks were also analyzed by Engdahl et al. [26]. The teachers transcribed the talks and uploaded them to a secure site where only the researchers could access them.

All participants in the *Sustainable Preschool* program have given written consent to participate in the research within the program. Participation in the research and development program forms part of the preschool teachers' employment, which provides good opportunities for transparency and influence of both research and development parts within the program. These prerequisites follow the ethical recommendations from the University of Uppsala and the Swedish Research Council regarding confidentiality and dissemination of the results. Prior to the start of the study, an application for authorization was submitted to National Ethical Authority (dnr 2021-06472-01), and the study was started upon the response that no specific ethical trial was required. All participants were informed that they could withdraw their participation whenever they wanted to.

The three open-ended child talks per teacher (some only made two) provided the data for this study, with a total of 460 transcribed child talks, digitally uploaded to our research platform. While most teachers conducted individual talks, some made group talks with smaller groups of children. These were also accepted as data, as the number of children makes no difference in regard to the content of the talks.

## 6. Analysis

The transcribed texts, served as the data for the study, varied in length from 1 to 19 pages. Interpretative content analysis [27] was used, as we were looking for the content or themes the teachers and children talked about. Interpretative analysis means that we as researchers try to understand what aspects of sustainability the

teachers had chosen and considered as appropriate for the talks with young children. In other words, we approached the teachers' subjective perspectives, which can be based on both their knowledge and beliefs. The three dimensions introduced by UNESCO [28], and used in the OMEP<sup>6</sup> ESD Rating Scale (Environmental, Social, and Economic), were used as analytical concepts in the first interpretative phase. The teachers had recently worked with the OMEP scale<sup>8</sup> and expressed their appreciation of the clarity of the three dimensions, which motivated the choice of analytical concepts. We organized the content in three groups, corresponding to the ESD dimensions.

In the next step of the analysis, we looked for emerging content within the different dimension groups. This analysis showed that most contents were found to relate to already well-known content, like recycling, growing plants, and animals. On the other hand, action-related dialogues and more advanced reasonings were identified in the child talks, and there were also new contents identified. The coding of the intersubjective world of teachers and children's communication resulted in thematic narrative descriptions [29].

The analysis was carried out individually by the researchers, followed by discussions in order to reach both inter-reliability and agreement in regard to the clustering, the descriptions of the thematic topics, and which quotes should illustrate the themes. The quotes are the researchers' interpretations of the different contents found. The quotes have been translated by the researchers.

## 7. Findings: What the Teacher-Child Talks Were About

The results drawn from the 460 transcribed child talks will be presented in two sections: (1) ESD as integrated in the curriculum and (2) Emerging content in ESD. The result is presented with thematically organized narratives on the various content areas. The small excerpts with communication between the teachers and children illustrate how the different contents became visible.

### 7.1. ESD as integrated in the curriculum

The results of the content analysis show three dominating topics: Recycling ( $n = 160$ ); Growing plants ( $n = 130$ ); and Animals ( $n = 115$ ). Here,  $n$  stands for the number of all child talks in which this content was brought up, by either teacher or child. These three content areas which dominated the communication with the children will be described below. At first glance, it might look like the first three topics are "business as usual", content areas which have long been common topics in Swedish preschools. But this is not fully true, for various reasons. Firstly, the number of preschools working with these three topics is higher than in the initial program questionnaire [24], and secondly, in many communications, the talks go deeper and show transformative and transactional perspectives integrated with the topics.

#### 7.1.1. Recycling

It appears that most of the involved preschools work with recycling. They use commercially produced or homemade boxes for sorting food, paper, plastic, paper and cardboard, glass, and metal. Some preschools have many bins and boxes, others only a few. The children are involved in this and have learned how to sort and categorize waste of various kinds. One municipal environmental department has developed what they call "garbage monsters", an idea that has spread to many municipalities across Sweden. The boxes have different symbols related to the names and materials, helping children learn to distinguish different types of waste. In some preschools, the boxes have names like Rustle

(paper), Metallica (metal), Compostina (for composting), Plastis (plastic), etc. One example from the data:

Teacher: "Do you know what Compostina likes?"

Child: "She likes fish, fruit peels, and things like that".

Here the child brings up many categories of left-over food. Many preschools also seem to have compost bins or heaps, where the children and teachers can follow and study the recycling process from garbage to decomposition, including the role of worms and insects, and finally to soil. There is also a great deal of discussion about what happens with the waste material, and the children express knowledge that it will transform into something new, even though they do not understand how this happens. In the dialogues, the children give examples of an awareness of the objects and the sorting process.

Many children express concern about waste and litter that become food for animals, which is bad for them and can make them ill. According to one child: "Sometimes when we go to the beach, I see that there's a lot of plastic in and under the water, and I saw turtles eating it. They thought it was food".

Recycling, as shown in the teacher-child talks, may begin from the youngest age, learning the waste symbols and where to put waste; but for the older children, at some preschools this topic has developed into themes that include economic aspects as well as changed lifestyles. There are many comments from the children about how they have pushed for recycling routines at home and about picking up garbage with their parents. Recycling touches on all three dimensions, economic use of resources, concern for living conditions in nature, and changed social habits linked to waste sorting.

### 7.1.2. Growing plants

Growing various plants has a long tradition in Swedish preschools but starting and following the process from producing the soil from the preschool's own compost (a process studied by the children), to planting something in one's own pot is important for children to implement. What is put into the soil may differ. It may be packaged seeds for vegetables or flowers, but it can also be a kernel or a seed from an avocado, orange, apple, etc. Each child has the task of watering her/his own plant. This leads to a great deal of comparisons regarding how the plants develop, their height and color, but also to discussions between child and teacher about what else the plants need – the sun – but not too much sun, because then the plants will dry out too quickly. "I forgot to water my sunflower, so it died". Since children are working concretely with growing their own plants, their knowledge seems to deepen beyond just planting and watering.

Some of the preschools have soil beds outdoors for planting. The different groups of children work collaboratively, taking care of the soil, making lines for planting the seeds, and weeding and watering continuously. These preschools planted vegetables of various kinds. When the vegetables were ready, they ate or cooked them for meals. The children often showed pride at having participated in growing these vegetables.

Additionally, in some preschools, this topic also led to the inclusion of economic or social aspects, for instance how people earn money by planting their own vegetables, but also social and cultural aspects like what kinds of food were prepared from vegetables in various families. In one of the municipalities, many preschools worked with Bokashi, an indoor composting method for making soil.

The child talks show that the children are interested, and active, in growing plants and following the process. An example illustrating this interest:

Child: "I want to plant at home ... something ... a watermelon".

Teacher: "How will you go about doing that?"

Child: "I eat a watermelon, take the seed out of my mouth ... and then I mix my compost with sand, put in the watermelon seed and water it. Then the leaves will come and then comes the watermelon ... like a big circle!"

### 7.1.3. Animals

Another type of content that has always been addressed in Swedish preschools is that of animals, which of course are important for children to learn about and care for. This may have an even stronger position today in education as we are increasingly looking at the rights of animals and nature as equal to those of humans. Children are taught to understand that we are dependent on the nature around us and that the diversity of plants and animals is important for future life on Earth.

Popular animals in the preschool themes and projects are birds, ants, bees, frogs, butterflies, worms, and dinosaurs. In recent years, great numbers of bees have disappeared, and it has become common to take measures to restore the conditions for bees and other insects. Many of the preschools have made "insect hotels" by setting up pieces of wood with many holes drilled in them, where the bees and other insects can thrive. They make the hotels themselves, or buy them, in many different models. In this way, the children can observe the life of bees in their own yard. One child came up with an idea: "But if the bees are dying, I have another tip, don't mow the lawn!" In one talk, a child tells the teacher a great deal about butterflies:

Teacher: "Tell me about butterflies".

Child: "First comes a butterfly and lays eggs. When the eggs crack, it will become a caterpillar, then it becomes a pupa and then a butterfly".

Teacher: "What more do you want to tell me?"

Child: "We had caterpillars living in a container with a cover and food. Later they lived in a bigger house, and they were given leaves and then the butterflies were born. We had four butterflies!"

Walking to a forest, a small grove of trees or a park gives children plenty of opportunities to see different kinds of small creatures. Ants are popular to study in preschools as this can be related to the society the children themselves live in. They are fascinated by how ants build their "house" (the anthill) and how strong they are when carrying sticks. Comparing the ant society with the society, the children live in is quite a common theme that can be developed in many directions.

The preschools also work with frogs, whose lifecycles are easy to study. They start with an excursion to catch tadpoles in a stream close to the preschool in the spring, followed by feeding them and following their progress in a jar outdoors. Here, the children can follow the whole process from tadpole to frog, which of course then must be delivered back to the stream where they caught the tadpole.

So, how can working with animals be related to sustainability? In the talks, we found many links: firstly, by connecting education about animals with biodiversity, for some children with links to the ongoing extinction, as well as mentioning how important all creatures are for us and the planet, secondly, by following natural processes in the life cycles of animals and exploring their living conditions, and some children brought up the changes in these living conditions due to urbanization and climate change, and thirdly, by relating the animals' world to the human world. What are the rights of animals? Of humans? Of nature? The three main topics described in Section 1 are all themes that we recognize from preschool education, but many of the talks with the children also showed deeper reasonings and proof of relating teaching and learning in the preschools to ESD.

## 7.2. Emerging content in ESD

The number of teacher-child talks described in the following second was 55. In these talks, there were topics linked to taking action, social/cultural aspects, environment-related questions, and economic aspects. The following four narratives can be viewed as new and unusual, but still obviously related to sustainability, with a content linked to democracy and children's agency. As the preschool teachers had used the OMEP ESD Rating Scale<sup>8</sup> previously, some of these topics may emanate from that educative process, but one can also see them as related to the call for transformative change in the education.

### 7.2.1. Within the action-oriented dimension

One topic that emerged from our analysis of the teacher-child talks is children's possibilities to *influence* their everyday life, which is linked to actions, empowerment, and transformative change. Child participation is heavily emphasized in the revised Swedish curriculum<sup>2</sup>. It is also related to sustainability and the issue of being a good citizen, willing to take a stand and trying to influence one's surroundings. An aspect of this topic is *including everyone*. The preschool is a mini-society with attitudes and ways of behaving that can be compared and transferred to the larger society. All children have the same right to develop and learn about the world around them. An example:

Teacher: "When we voted, what words did we learn about when we talked about voting?"

Child: "Democracy."

Examples from the data show preschool children involved in actions beyond the preschool premises, for instance cleaning a nearby forest area, putting up posters at the local library to inform the public about endangered species, and participating in a second-hand market, earning money, and sending the profits to charity, somewhere in the world.

#### Within the social/cultural dimension

The *Convention on the Rights of the Child* [30] is a topic that is practiced and communicated in many preschools, not the least since it became national law in Sweden in 2020 and was placed high on the agenda of all institutions for children in society.

Teacher: "Who is deciding things in preschool?"

Child: "Most of the time the teacher, but children can also decide, what they want to do".

*Feelings* of various kinds are also topics on the sustainability agenda. Children should *feel good* about themselves and *recognize others' feelings*, as each child's right can never be practiced to the detriment of other children's rights [30]. Many topics discussed in this dimension involved fostering individuals' good lifestyles for their well-being and how to behave towards others. All children also need to have friends, and several of the child talks circled around what it means to be *good friends* and how one becomes a good friend, a topic which the teachers related to sustainability. And from a long-term perspective, friendship may turn into a willingness to share and collaborate, notions heavily discussed today in UNESCO's document *Transforming education for the future* [21]. Related to *health and well-being*, there were also topics involving *movement* and discussions about different types of training programs. This may be explained partly by the fact that health and well-being was promoted in the revised National Curriculum<sup>2</sup>, placed under a joint heading with sustainable development.

*Collaboration and using jointly* were also topics in the talks. This can involve how the preschool groups collaborated when sharing the use of toys and other materials. The children also mentioned that

there was a cupboard, or a special place in the preschool, where families can leave outgrown clothes (or toys that their children no longer play with) for someone else to take. Sometimes these clothes and toys become so plentiful that the children and teachers take them to second-hand shops and get money, which then encourages actions within the economic dimension of sustainability. In some talks, this content area grows into *helping other people* by talking about NGOs like Save the Children or helping children in Ukraine. One child said: "We collected bottles and recycled them and pushed the button for aid to other countries".

In relation to society and culture, there was also another group of topics: *housing and families*. This can involve different *ways of living* or *different family constellations*. Ways of living can be focused on by studying society as such – different houses, different parts of the city, occupations – and how they contribute to society as a whole. Some talks bring up Gapminder's Dollar Street<sup>9</sup> program. Related content includes different *lifestyles*, what means of transportation people use, what kinds of food people buy, and other habits. These content areas directly relate to SDG 4.7 concerning sustainability aspects. Indirectly, rich and poor people can also be addressed [31].

Some talks relate to projects involving the<sup>9</sup> *globe* as such and all the *different countries*. One interesting example of this was when a teacher introduced a flying carpet, and the class pretended to fly to various countries, reading books about the country they landed in and discussing it and comparing it to their own country. What is specific to different countries? How do the people live there? What kinds of animals live there? The Earth and the space! Antarctica, and what is happening with the animals there and the melting ice?

One final topic related to the social dimension concerns cultural heritage and *earlier days*. How was life in earlier times? What do we know about past times? Some children have asked their grandparents to talk about their childhood. According to one child: "I know that my grandfather got his first long trousers when he was 12 years old!" The topic involved how people lived generations back and also about generations to come. Here we have a direct link to the Brundtland Commission [32] definition of sustainable development about not living in a way that we destroy for the next generation to live their lives. An example:

Teacher: "Do you mean that they went out hunting for food earlier?"

Child: "Yes, they did, and they made houses with sticks, a long, long time ago. A long time ago maybe someone had money and then he lost it and then someone got it and bought things. Once upon a time, there were only horses, but none are left . . . but that was a long time ago, but not as long as when there were dinosaurs. A long time ago, people didn't throw things away, no popsicle sticks and no paper and things like that. And they didn't have any then (paper), they did things themselves with those stones – the gold stones".

### 7.2.2. Within the environmental dimension

Additional topics linked to the environment, besides *Growing plants* and *Animals*, focus on *emissions and the atmosphere*, and the changes that depend on what human beings do. An example:

Child: "Cars aren't good for the planet?"

Teacher: "Why?"

Child: "Because cars use gasoline, like our car did. Now we've bought an electric car".

Topics about the environment can also concern different *lifecycles*. *Water* is a common topic that included a great variety of questions in the child talks. What do we need water for? Can we live without

<sup>9</sup>Gapminder. "Dollar Street." October 14, 2023. <https://www.gapminder.org>

water? How can water change? Who lives in the water? What is happening with all the plastics found in the sea?

### 7.2.3. Within the economic dimension

As shown in previous studies, economy is the hardest aspect to deal with in preschool [25]. Within the OMEP ESD Rating Scale, waste management as content belongs to the economic dimension. However, in the child talks there is a strong connection between waste, waste sorting, and the environment, as a common action is picking up garbage and keeping a nearby natural area clean. When economy is brought up in the child talks, it turns out to concern *being economical and not wasting things*. This can involve *paper*, with children being prompted to make drawings on both sides of a piece of paper, or to fill it with drawings. *Water* is another phenomenon that illustrates saving, always turning the water off, rubbing the soap into one's fingers, and then rinsing off with water. *Electricity* is a third area that illustrates not wasting, encouraging children to always turn off the light when leaving a room:

A child is talking about lamps in the preschool, and the teacher asks: "Do you think that we need more electricity for a big lamp?"

Child: "Yes, because then the cable has to be big, and the bigger the cable the more electricity to the lamp".

There is one interesting example of budgeting in the talks, in which a preschool is working with a large bowl of marbles illustrating how much money there is to use in their preschool. The marbles represent money, and in the discussions about buying different toys or material, the cost of each item is illustrated with different numbers of marbles. The children can see how money disappears for each thing they buy.

## 8. Discussion

In this article, we further develop understandings about what types of content Swedish preschools focus on when addressing ESD. Most studies in the field of ECE and ESD are based on small samples, while this study analyzes 460 child talks.

In the analysis of the teachers' open-ended child talks, we can see what kind of content the teachers relate to ESD in the preschools' everyday curriculum. One should bear in mind that preschool children in Sweden are between one and five years of age, although no child communicated with in this study is under the age of two years. The most common content in the talks involved different aspects of nature, animals and plants, and handling waste. In 2022, every preschool seems to be working with composting and teaching children to categorize waste into different containers. Composting has not become "business as usual" in all preschools, however, although many of them conduct the entire process from leftovers to soil, which then is reused for sowing seeds and planting plants. This may be understood as implementing the changes in both global and national policy documents.

In the end, however, it is *how* teachers talk about animals and plants, and their changing living conditions, that makes the difference between what has always been done and what is new. In the talks, we can see examples of themes on plants and animals also turning towards biodiversity. The talks sometimes included rather advanced reasonings related to climate change and actions for lowering gas emissions. These talks showed that some teachers and children are well informed about current topics, and touch upon transformative and transactive perspectives. Some of the teachers say that they have incorporated the policy about sustainable development in their professional competence, resulting in a changed curriculum [20].

We argue that the knowledge and competence of each teacher are critical aspects that frame the possible content of the talks, as well as how far and in-depth they develop [26]. It might be that teachers

consider nature and environment as the most relevant for young children, since that is what most child talks are about. The teachers had the previous semester used the OMEP ESD rating scale<sup>8</sup>. After that process, they acknowledged having extended their understanding of sustainable development also to encompass economic and social/cultural aspects [24]. However, in the child talks, we still found topics linked to the environmental dimension, to nature, to be the most frequent ones.

On the other hand, the less frequent themes tend to relate more to what is spelled out in SDG 4.7 in regard to sustainable lifestyles, human rights, gender equality, the promotion of a culture of peace and non-violence, global citizenship, and an appreciation of cultural diversity and of culture's contribution to sustainable development<sup>3</sup>. We interpret this as a new finding, maybe the result of previous ESD in the *Sustainable Preschool* program. ESD in early education in Sweden is no longer dominated by the environmental dimension, as previous content studies have shown [33]. The Ifous program<sup>4</sup> seems to promote a changed everyday curriculum for many participants, thus acknowledging the power of education to bring about profound change.

The growing presence of the social dimension in the topics in the child talks might be compared to UNESCO's survey on how global citizenship is dealt with in different national curricula [23]. There is a view that this learning content will lead to democracy and solidarity. However, this is our own implicit interpretation of the data from this study. The talks included social and democratic topics, but the links to ESD were not explicitly stated by the teachers. For the youngest children, it seems that "how to behave towards each other" and "how to include everyone" are central topics. The idea behind this seems to be that belonging and a collective group spirit promote solidarity and responsibility, which has also been described by Björk-Willén [34]. A next step in ESD may require a broader context, engaging in the local neighborhood and, for older children, beyond this to a global perspective [24]. The social aspect seems to be increasingly apparent in the work of UNESCO, such as the reports *Rethinking learning: A review of social and emotional learning for education systems* [35] and *Transforming education for the future* [21]. This would also be in line with the call from the International Commission on the Futures of Education [36] for a new social contract, "grounded in human rights and based on principles of non-discrimination, social justice, respect for life, human dignity and cultural diversity. It must encompass an ethic of care, reciprocity, and solidarity. It must strengthen education as a public endeavor and a common good".

Previous studies [24, 25] report that the economic dimension of ESD is weak and, according to teachers, the most difficult content to address with young children, except waste sorting. In our data from the teacher-child talks, we found some new themes emerging. The concept of *saving* is becoming more frequent in preschools in Sweden, with children being introduced to saving paper, water, and electricity, but also to minimizing, for instance, food waste.

Finally, several teacher-child talks addressed integrated themes from their projects. Instead of focusing on nature, the humans-and-nature relationship was made visible by discussing what people do with nature. The Anthropocene perspective, which focuses on how the actions of humans are responsible for the ongoing climate crisis, may be further introduced in preschool education when focusing on issues involving animals and nature [8]. The cultural aspect of becoming knowledgeable about other cultures and countries also turned the children's minds towards the global perspective. One can claim that traditions in ECE are becoming renewed when it comes to ESD (compare with) [20], a beginning turn towards what teachers believe is appropriate for young children today. Passing on

knowledge about nature and society is no longer the main purpose. ESD in early childhood is about getting children interested and engaged, providing them with a growing awareness about sustainable dimensions today and for the future.

Based on these analyses of the teacher-child talks, we claim that the content areas are quite broad and focus on various aspects of sustainable development as prescribed in the national curriculum<sup>2</sup> goals. However, this study did not set out to study children's learning and meaning-making during the themes and projects that preceded the child talks. What we do see is that the children are engaged and express ideas about sustainability content areas – which is a good beginning for becoming agents of change and taking care of their future. We also see that the preschool teachers are striving to deepen the children's understandings and meaning-making within plenty of topics connected to their everyday life in preschool and to the transition towards sustainable development. One important finding in this study was that teachers after 18 months in the programme still chose content primarily from the environmental dimension of sustainable development. In an initial rating of their teaching about sustainability [24] the teachers claimed that their understanding of the concept sustainable development had expanded. This indicates that it is a long process to reorient education towards a sustainable development, although policy at all levels is changed and in-service training is at hand. Still another aspect may be that there are not many studies about what children can make sense of related to ESD in these early ages, why the area needs to be developed for teachers to understand what can be relevant to focus on, not the least when it comes to areas beyond environment and composting. When teachers have realized that everyday life in preschool is full of situations and routines relevant for sustainable development, it will become easier to integrate ESD.

## 9. Conclusions

The research question behind this study was: What content areas do teachers consider as relevant for children 2–5 years of age to communicate about related to ESD? Primarily, content areas related to nature and environment were chosen, but also different aspects of waste sorting, when the teachers were asked to talk with children about ESD. Secondly, however, we found examples of new ways of bringing up deeper aspects of nature and environment. Thirdly, our analyses brought out new topics, such as climate change, fostering for democracy, and saving resources.

One more conclusion to be drawn from the large 3.5-year program is that it takes time to change teachers' practices and to transform practices. Talking and becoming aware of ESD is one step, however, implementing ESD in practice, adding new challenges to the familiar, is further challenge. This conclusion highlights the importance of professional development for all teachers. The study has contributed to make visible both the most common content areas within ESD in the early years, and also new emerging rather complex content areas which show a broader understanding of what ESD is about, related to children's agency.

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## Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

## Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

## Data Availability Statement

The data that support this work are available upon reasonable request to the corresponding author.

## Author Contribution Statement

**Ingrid Pramling Samuelsson:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision. **Ingrid Engdahl:** Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization. **Eva Årlemalm-Hagsér:** Project administration, Funding acquisition.

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