DOI: 10.2478/jtes-2021-0014

sciendo

Journal of Teacher Education for Sustainability,
vol. 23, no. 2, pp. 18–29, 2021

Promoting Sustainability Through Multimodal Storytelling

Ann-Christin Furu
Åbo Akademi University, Vasa, Finland

Hannah Kaihovirta and Suzanne Ekholm
University of Helsinki, Helsinki, Finland

Abstract

In recent years, sustainability has been increasingly recognized within the early childhood education and care (ECEC) context. Early childhood educators' capacities to design meaningful learning opportunities for young children have been underlined. The article reports on a study of student teachers' learning during a project about multimodal storytelling and sustainability in ECEC teacher education. The study explores how multimodal storytelling might contribute to the capacity to conduct education for sustainability in the context of ECEC. The participants were first-year student teachers at a Finnish university. The results show that multimodal storytelling can contribute to addressing challenging issues linked to sustainability through holistic learning processes. Hereby, multimodal storytelling opens for the exploration of existential issues and complex aspects of sustainability education. It contributes to the reflection and discussion of values, knowledge and skills that are vital for the capacity to conduct sustainability education in the early childhood.

Key words: sustainability, early childhood education and care (ECEC), teacher education, arts-based, multimodal storytelling

Introduction

During the past few years, the unfolding crises of sustainability have gained increasing societal interest. A series of international agreements have been made to limit and mitigate climate change, loss of biodiversity as well as pollution of air and water, just to mention a few examples. Paths toward sustainability have been outlined in policy documents such as the United Nations *Agenda 2030* with its 17 defined goals of sustainable development. Education at all levels is now seen as crucial in creating a more sustainable world. Many countries have included education for sustainability in educational legislation and policy.

With this background it is evident that teachers are important agents of change (Bamber, 2020). Their attitudes, knowledge and skills are the very foundation for

approaching sustainability matters in education. Consequently, teacher education is a significant arena for building professionalism related to sustainability education (Pegalajar-Palomino et al., 2021). However, according to Biesta (2013), student teachers are not becoming professional by being formed and disciplined, but as subjects of action and responsibility. Thus, education is always at the core of risk and weakness. From our position, this is to be at the heart of sustainability education, i.e., to explore how to gain professional resilience in the challenging practice of education.

In this article, we direct our attention toward the education of teachers for our youngest, i.e., children aged 0 to 6 years. Children are the group of humans that have the most to lose from status quo or to gain from change (Elliott et al., 2020). Sustainability has recently been increasingly recognized within the early childhood education and care (ECEC) context. A series of initiatives have been directed at strengthening children's capacity to live sustainably and to participate in change. Courses on sustainability related matters are part of the teacher education programs at universities all over the world, but research has indicated that sustainability is still neither addressed in depth nor in width. Hence, teacher education needs to be reformed to meet the challenges (Hofman-Bergholm, 2018).

The aim of the article is to report on a study of student teachers' learning experiences during a project of multimodal storytelling and sustainability in Finnish ECEC teacher education. The study asks how multimodal storytelling might contribute to the development of the capacity to conduct sustainability education in the context of ECEC. We seek to understand student teachers' experiences of learning through the following two research questions: 1) What do students learn when multimodal storytelling and sustainability education are combined in ECEC? and 2) How do they describe their learning processes during a subject integrated course entity? The research thus has an explorative character.

Theoretical Framework

In the study, we use the concept *sustainability education* as an overarching term for an entity of formal and informal learning opportunities that support processes of change towards sustainability. Hence, sustainability education can be conducted through daily routines, pedagogical approaches, and specific learning projects in ECEC. Sustainability education fosters values and attitudes and develops knowledge and skills that make sustainable ways of living possible. It may cover a wide range of topics from environmental education to building active citizenship skills and democracy, from developing emotional and social skills to protecting physical and mental health, or learning to cope with day-to-day life etc. Consequently, sustainability education shares a common ground with concepts such as *Education for Sustainability*, and *Early Childhood Education for Sustainability*.

The concept *multimodal storytelling* refers to an approach that combines storytelling with multimodality in ways that can make a multiplicity of perspectives voices heard (Binder, 2017). Hereby, it is inherently a driver of diverse and sustainable practices in education. It implies the broad use of stories in various modalities such as oral or written words, pictures, photos, drama, dance, visual arts, or crafts. It entails the complex interaction between different modes of impression and expression. Therefore, multimodal storytelling is closely tied to arts-based education and aesthetical learning processes in

ECEC (Karlsson Häikiö, 2020; Karlsson Häikiö et al., 2020). Further, multimodal storytelling is related to the concept *multimodality*, which is increasingly characterizing our world as all of us constantly "read" and "write" using various kinds of cultural resources (Kress & Selander, 2012). Another closely related concept is *multiliteracy* or the capacity to understand and use signs and symbols of various kinds in a complex way, a form of extended reading and writing which includes visual, material, digital, and bodily aspects (Cortés Loyola et al., 2020). Multiliteracy is considered a core competence in Finnish education, and during the past decade it has gained increased interest as a focal point in teacher education.

Sustainability Within the Field of ECEC

Although the field of ECEC has a long tradition of working with matters related to social, ecological, political, and economic sustainability, the concept as such is rather new in the context (Ärlemalm-Hagsér & Elliott, 2020; Huggins & Evans; 2018). Recently, ECEC has been increasingly viewed as a prerequisite for addressing sustainability issues. In the ECEC context, the pedagogical approaches to learning are often holistic and strive to transcend the theory-practice gap. Influences from Montessori and Reggio Emilia underline various forms of experiential learning where all the senses and a variety of artistic expressions are viewed as important for children learning. Special emphasis is put on ensuring children's rights to be active participants in the work towards a more sustainable world. The field has seen a challenge of the discourses of childhood as children's competencies and interests are viewed as center points of sustainability education. Further, in recent years, postcolonial and indigenous perspectives, and place-based education have increasingly influenced the field. Moreover, our worldviews and more specifically our relations with the more-than-human world have been scrutinized.

Research has shown the potential of arts-based learning in addressing controversial aspects of local and global sustainability issues (O'Gorman, 2014; 2015). Ward (2013) argues that children benefit from aesthetic experiences filled with joy and from being offered opportunities to express beauty through the arts. These experiences support their health, but also enrich their lives. Furu (2019) shows that education through arts and crafts has the potential to build children's creativity and agency as well as practical knowledge, which are all important aspects of the capacity to meet sustainability related challenges.

Sustainability in ECEC Teacher Education

Teacher education must provide a framework where ECEC teachers might develop the attitudes, knowledge, and skills to contribute to children's possibilities to promote sustainability. Of special interest is the more personal dimensions expressed as attitudes, i.e., personal values, and the ability and willingness to collaborate (Fox et al., 2019) in the promotion of sustainable practices.

ECEC teacher education has traditionally been built upon the theories of Fröbel and Pestalozzi. It has advocated learning both *in* and *with* nature. Since the 1970s, environmental education has been part of the ECEC teacher education across the globe. Recently, many universities have agreed to promote sustainability on an institutional level. Although there is consensus around the importance of integrating sustainability into teacher educa-

tion, it is far from clear how this could best happen. As a rule, sustainability is not an integral part of ECEC teacher education and the efforts are at risk of being fragmented or ad hoc, dependent on individual researchers or teacher educators (Ferreira et al., 2015).

Wals (2020) points to the fact that to be truly transformative, education must be critical, emancipatory, and relational. Following the work of Mezirow (2009), transformative education must include disorienting dilemmas which challenge previous understandings and provoke the creation of new ways of relation to oneself and the world. Expanding this line of research, the author suggests designing learning opportunities that allow rhizomatic learning processes that include arts-based *impressions* and *expressions* that generate personal *imprints* which in turn genuinely transform one's way of viewing oneself, the world and one's possibilities to relate and act in it. Taylor (2017) notes that worldviews are an important part of sustainability education within ECEC and argues that more relational worldviews are beneficial in order to meet the sustainability challenges. The post humanistic strand states that both children and teachers establish multiple and complex relations with materiality and nature, for example, in the form of artefacts (Sameshima et al., 2019) and animals (Tammi et al., 2020).

Finnish legislation and national core curricula state that the principles of ecological, social, cultural, and economic sustainability should guide both practices and pedagogy. However, research by Koskela and Kärkkäinen (2021) shows that student teachers and staff in ECEC in general have a narrow understanding of sustainability matters and express uncertainty regarding sustainability education (Furu & Valkonen, 2021; Furu & Heilala, 2021). Further, sustainability education is addressed only briefly in Finnish early years' teacher education.

In the context of this study, multimodal storytelling can be understood as both a goal and a means for sustainability education. The approach allows for multiple perspectives on sustainability to be made visible and thus supports diversity and democracy. It is also evocative as it combines personal knowledge with emotional and bodily knowledge. Further, it incorporates and strengthens creativity and problem-solving skills which are important in sustainability education.

Methodology

The study was conducted within a qualitative research paradigm formed by relational ontology and life-world hermeneutic epistemology. It was guided by an explorative question: What learning experiences contribute to the development of values, knowledge and skills related to sustainability education in the early years? A narrative approach was adopted (Clandinin et al., 2016). The study was based on a bricolage (Denzin & Lincoln, 2018) of mind maps, process diaries, questionnaire, and focus group interview. The study followed the ethical principles of research issued by the Finnish National Board on Research Integrity (TENK, 2019). All participants provided their written consent, and all research materials were anonymized.

The participants were ECEC student teachers (n = 24) at a Finnish university. The students were attending a subject integrated compulsory course in literature and drama (5 ECTs) and visual arts (5 ECTs) during their second semester. Three main instructors as well as guest instructors in specific fields such as visual arts, drama, verbal art, and music were involved. Students attended lectures and group sessions as well as made

visits to libraries, art exhibitions, theatres, and publishers. There was also a tight collaboration with a library/culture point that hosted an art exhibition based on a Finnish picture book. Students planned and conducted multimodal workshops for children aged 5 to 6 years concerning the text and pictures from the book. The workshops were based on a playful learning approach integrating arts-based learning and child-oriented methodologies. The collaboration resulted in a pedagogical guide for ECEC teachers on how to work with picture books in arts-based ways, promoting multimodal storytelling and multiliteracy in children.

The research materials were produced with a focus on the subject integrated education regarding multimodal storytelling. The study was conducted in two phases. The first phase was conducted in spring 2019 as the primary research materials were collected. These consisted of mind maps (n = 21) and process diaries (n = 24) from the students. The second phase was conducted as a follow-up study in spring 2021. The same group of students was invited by mail to participate in the follow-up study and we were able to collect research material consisting of mind maps (n = 9), questionnaires (n = 3), and focus group interview (n = 2).

All research materials were first read for a general understanding of the research phenomenon. Each type of research material was then analyzed in depth. The mind maps on the concept "sustainability" were analyzed with respect to the number of items, visual and verbal content expressing the participants' conceptual understanding at the start of the subject integrated course and after 2 years in the post-course. The process diaries (i.e., the personal narratives of the participants) were narratively analyzed. Expressions related to both content and form were first identified and then merged into broader themes that provided the foundation for the stories which contained the results. The analysis and interpretation were conducted in a hermeneutical process, pending back and forth between the parts and the whole. The questionnaires and the focus group interview were considered a pendant research material which could provide an understanding of how the learning process was viewed after 2 years in the post-course by the participants. The research material was also analyzed for counter-narratives, i.e., understanding that differs from or even conflicts with the most prevailing descriptions of the research phenomenon.

Results

The results of the study are presented and based on the two research questions. First, we show *what* student teachers learn as multimodal storytelling and sustainability are combined during the subject integrated course in literature, drama, and visual arts. Secondly, we show *how* they learn during this framework.

The "What" of Student Teachers Learning Through Multimodal Storytelling

The results show that participants learn to think, talk, and act in new ways regarding sustainability education in ECEC. They also learn how to use arts-based approaches such as literature, drama, and visual arts in their work with children in general, not only with respect to sustainability issues. Further, they learn to problematize and critically scrutinize the roles and perspectives of children in sustainability education.

Story 1: Broader conceptual understanding regarding sustainability

Old thinking patterns are challenged by new information and old practices are questioned. This is a foundation for developing new understanding of sustainability education.

> *This course has been an eye-opening experience for me regarding norm-critical pedagogy. Through all the discussions I've become aware of all the stereotypic books that have been selected for reading at the daycares I've worked at. We have not consciously thought of varying the representations of family constellations or characters in the books. Now that the seed is planted, I will choose a more norm-critical approach when selecting books in the future.* (P14, Process diary; PD)

Participants include new vocabulary as well as develop specific theories or perspectives in the domain. Hence, they acquire a professional language which serves as a foundation in collaboration with colleagues. Participants show a broadened understanding of what the concept sustainability entails. This is visible especially concerning social sustainability.

> *Originally, I would have said that ecological sustainability is the most central aspect, however how we are together with others and how we create a sustainable community may be the main aspect of ECEC or at least the base for everything. And since you work as a team in ECEC, social sustainability also becomes important, as well as how you face challenges and how you work together to create a sustainable community. Especially since new children will continuously be added but the same adults remain.* (P19, interview)

Participants express a meta-understanding of the concept by linking it to a wider context and by giving specific examples of phenomena that they view as sustainability related. Participants make frequent use of subject related terminology to describe their learning experiences. This broadened understanding is also visible in the mind maps, where the number of items linked to the concept "sustainability" grew from 10 items (spanning from 2 to 26 items) to 18 items (spanning from 12 to 24 items) on average. In the follow-up course, half of the participants structured their items into ecological, social, and economic sustainability, implying a conceptual shift in their understanding of the expression.

Story 2: Tools for sustainability education through multimodal storytelling

Participants develop a foundation for teaching through multimodal storytelling. Combining drama, music and arts, dance and literature in versatile ways can promote children's development and learning. They view holistic integration of subjects as an approach to sustainability education as well as underline that it is the responsibility of the adults to offer children a variety of experiences and ways of expressing themselves. Further, they stress that creativity and imagination are important parts of these activities.

> *Learning should be a joyful experience for children. It's the responsibility of the adults to give children versatile experiences and possibilities to express themselves, so that they get the opportunity to choose and access different materials in the creative processes to promote imagination and creativity.*

> *There are a lot of materials that can be used in arts and crafts, e.g., playdough, building blocks, natural and recycled material. We can use new technology, like digital cameras and touch screens, to enable children that don't like drawing still be creative and generate by creating pictures, videos and telling their own stories. All in all, this gives us the opportunity to use natural and recycled material to support sustainable thinking, which is a key topic in today's climate.* (P18, PD)

Story 3: Enhanced child centered approach

Based upon their own experiences of multimodal storytelling, participants reflect upon how children might experience various activities. They ask themselves whether specific activities are suitable and meaningful for children of a certain age. Further, they mention that children's feelings and interests should be at the fore.

Participants mention that the content of sustainability education shall include the children, in both content and agency. They further stress the risk that sustainability education can be plainly used to socialize children into new practices, not leaving enough room for children's own thoughts and feelings. During the focus group interview, participants discuss whether the sustainability agenda does include the children's perspectives and needs.

> *"The solutions to sustainability issues are seldom categorical. There is not one answer alone that can solve all the issues – it's about taking different perspectives and seeing the need for different individuals and groups. Today I had a situation where a child took more food and then could not finish it. They have a compost monster that is called Kompostina and it's known that she does not like to get too much food. Therefore, the child was told Kompostina would feel bad if you threw away that much food". I asked myself how the child would feel if she forced herself to finish the food for Kompostina not to feel bad. Is it better that the child is the one that feels bad instead?* (P19)

> *As said before one can learn from our mistakes; "tomorrow I might not take as much food, only a little".* (P14)

> *But if this learning opportunity happens through shame, you probably will not learn from it but instead you suppress it or become defensive.* (P19)

The above citation shows the ability to critically reflect on and discuss ethical issues linked to sustainability education.

Story 4: Strengthened personal and professional self-esteem

Participants express learning more about themselves professionally and personally. They mention an increased belief in themselves working with sustainability education and multimodal storytelling. They express a feeling of pride after managing perceived obstacles in their own learning process, resulting in a stronger belief in themselves and their abilities, despite uncomfortable feelings during the process.

> *Not only have I learned more about the subject, but also a lot more about myself. That is something I value in education.* (P18, PD)

As a result, their motivation to work with this method in the future seems to have increased. Participants also mention reaching a realization that creative work with children needs not necessarily be complicated or difficult, but instead even simple tasks can provide opportunities for experiences of success.

The "How" of Student Teachers' Learning Through Multimodal Storytelling

The results show that learning is promoted by participation in a broad range based on multimodal storytelling. Various activities offer various meanings and significance for the participants. Depending on their own interests, previous experiences etc., their learning processes take somewhat differing forms and directions. Authenticity is an important aspect of the process.

Story 1: Through a broad range of theoretical and practical activities

Engaging in authentic learning settings supports a personal process. In these situations, participants actively interact in versatile ways, resulting in internal processes challenging changes of perspective. The results show that a mixture of theoretical and practical activities is beneficial for learning. Roughly, the theoretical activities engage the minds of the participants, and the practical activities engage the bodies. Different activities give different meanings for the participants. Multimodal storytelling was seen as a useful tool to process theoretical aspects. The practical elements engage participants in a holistic and interactive learning process with the environment, motivating participants and giving them a sense of agency. Theoretical elements, on the other hand, are important for directing and deepening the learning, and in the best case leading to a lasting change in both thought patterns and behavior.

Story 2: Through being holistically active and involving feelings

Learning is promoted by processes that engage both body and mind as well as feelings. Emotional aspects are especially present in the participants' accounts of meaningful experiences during the course. Feelings seem to evoke a deeper understanding of how the situation is experienced from a child's point of view. Expressing oneself through the arts seems to evoke feelings from past experiences. Further, feelings that arise while doing arts and crafts are seen as a learning opportunity to handle disappointment and success.

Participants express the existential reflection during a visit to an art exhibition. The strong feelings that were evoked in the interaction with the art, led to a change in perspective and encouraged to deeper existential reflections. The uncomfortable emotions also seem to encourage willpower to make a change.

> *Even though these were things I was aware of, it was still a strong and unnerving experience to get it presented in this way. The pictures made me feel hopelessness, like there's no meaning in recycling cans, when the reality looks like this. Simultaneously, I was moved by all the majestic animals, of how big and wise they were. They calmly and sensibly look at all the madness and crimes of humanity. This exhibition was a reminder of how fast things change and how urgently we need to act before it's too late. (…) Maybe I overanalyze, but especially in one art piece I could see the emotions in the children's gestures*

> *when they encountered the gigantic elephants; the mesmerized look the children have as they approach them in an explorative manner. Have their parents ever told them about these fantastic animals? In my point of view, sustainability is something that's inherited across generations, however in this case the experiences of previous generations were lost.* (P8, PD)

Participants mention situations where they have had to leave their comfort zone and engage in activities that initially raised resistance and awkward feelings but resulted in new insights and feelings of meaningfulness. Multimodal storytelling has the capacity to challenge both in positive and negative ways and it is important that students feel emotionally safe in the group. In the end some of these situations provided opportunities for overcoming past negative experiences of learning through the arts, leaving them more open-minded about engaging in similar experiences in the future. This was especially evident in learning activities based on drama.

> *Even though I chose these teachings that were met with resistance, it's due to the drama practices that I feel more secure and believe in myself more. I now have the courage to dive into situations and to not take myself too seriously. In my point of view, it's good that I as a teacher can participate in drama lessons since you learn how to communicate on a child's level and how to be a child again. It's something we need to do when encountering children. All in all, the drama practices were a successful educational tool that also offered some resistance.* (P10, PD)

However, it is evident that there must be a balance in the amount of challenge and enough support during the process. This makes visible the importance of trustful relationships between students and teachers and within the group, which we will present next.

Story 3: Through being embedded in relations

Participants bring forth relational aspects in their learning experiences. The social context and interaction seem to play a crucial part in what learning experiences are being promoted (or hindered). The atmosphere in the group is mentioned as important as to whether the learning situation is perceived as a meaningful or not by the participants. It also affects the learning outcomes. The teacher is also mentioned as an important part of the learning experience. An allowing atmosphere and the teacher's competence are crucial components for increasing interest and motivation. The participants find the teacher's interest in their thoughts, ideas, perspectives, and experiences as beneficial for their own learning processes.

> *Another successful educational moment was all the arts and crafts lessons that we had with NN. Thanks to her I regained trust in myself and my ability to create. The way NN noticed everyone in the class, how she cheered us on and gave us positive feedback is something everyone should inspire from. I've never liked painting creating while in school, since I've always felt like I'm not good enough or that someone else is more talented than me. NN changed all my bad experiences into positive ones. During the lessons I often got positive feedback on what I had created, and she also showed interest in what I had made. I felt like I'd succeeded in something.* (P10, PD)

In conclusion, relating to other perspectives and providing opportunities for existential reflection are vital for transformative sustainability education. We suggest that experiential learning, which promotes agency and cooperation in authentic learning settings, is a crucial part in sustainability education.

Conclusions

Based upon the results of this study, multimodal storytelling can contribute to sustainability education within ECEC teacher education. It has a capacity to stimulate conceptual development and provides tools for adopting multimodal storytelling in sustainability education within ECEC. It enhances a child-centered approach and strengthens both personal and professional self-esteem among participants. The fact that participants perceive increased knowledge and skills as well as the development of their readiness to adopt a child-centered approach are all vital to sustainability education.

The learning experiences expressed by the participants can be understood as a rhizomatic process of multimodal storytelling when student teachers deal with impressions and expressions that gradually form multimodal traces. This can be interpreted as a nomadic process where varying impulses and resources fuel the meaning making (Kaihovirta, 2017). This process makes room for critically addressing values as well as developing knowledge and skills in a personalized way. It also allows for emotional and even existential reflection and discussion which supports genuine transformation.

The study shows the importance of providing broad affordances to learning, both in theory and practice. It is vital to holistically engage students, especially to address their bodies and feelings in the learning design. Further, taking the relational dimension into account facilitates transformation. The study shows that student teachers are deeply entangled with their human and non-human environment. It also underlines the existential dimensions of the learning process that multimodal storytelling can embrace. These results are in line with previous research which points to the fact that arts-based approaches are valuable in sustainability education (O'Gorman, 2014; 2015; Karlsson Häikiö et al., 2020). This is of importance in genuinely transformative sustainability education (Wals, 2020).

We conclude that it is important that teacher education affords learning opportunities where student teachers experience subject-integrated and holistic processes that they can adopt with children in their future sustainability education.

References

Ärlemalm-Hagsér, E., & Elliott, S. (2020). Analysis of historical and contemporary early childhood education theories in the Anthropocene. In S. Elliott, E. Ärlemalm-Hagsér, & J. Davis (Eds.), *Researching early childhood education for sustainability challenging assumptions and orthodoxies* (pp. 3–12). Routledge.

Bamber, P. (Ed.). (2020). *Teacher education for sustainable development and global citizenship*. Routledge.

Biesta, G. (2013). *Beautiful risk of education*. Routledge.

Binder, M. J. (2017). 'I wanna tell you a story' – Exploring the multimodal storytelling voices of children's lived experiences. In S. Garvis & N. Pramling (Eds.), *Narratives in early childhood education* (pp. 11–28). Routledge.

Clandinin, D. J., Huber, J., Menon, J., Murphy, M. S., & Swanson, C. (2016). Narrative inquiry: Conducting research in early childhood. In A. Farrell, S. L. Kagan, & E. K. M. Tidsall (Eds.), *The SAGE handbook of early childhood research* (pp. 240–254). SAGE.

Cortés Loyola, C., Adlerstein Grimberg, C., & Bravo Colomer, U. (2020). Early childhood teachers making multiliterate learning environments: The emergence of a spatial design thinking process. *Thinking Skills and Creativity*, *36*, 100655. https://doi.org/10.1016/j.tsc.2020.100655

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). *The SAGE handbook of qualitative research* (Fifth edition). SAGE.

Elliot, S., Ärlemalm-Hagsér, E., & Davis, J. (Eds.). (2020). *Researching early childhood education for sustainability. Challenging assumptions and orthodoxies*. Routledge.

Ferreira, J-A., Ryan, L. & Davis, J. (2015). Developing knowledge and leadership in pre-service teacher education systems. *Australian Journal of Environmental Education*, *31*(2), 194–207.

Fox, A. E. M., Iriste, S., & Bezeljak, P. (2019). Detecting a sustainable mindset through using content analysis of teacher-produced learning journals. *Journal of Teacher Education for Sustainability*, *21*(1), 35–47. https://doi.org/10.2478/jtes-2019-0003

Furu, A-C. (2019). Narratives on sustainability and sloyd in Finnish ECEC. *Nordic Studies in Education*, *39*(3), 198–213. https://www.idunn.no/np/2019/03/narratives_on_sustainability_and_sloyd_in_finnish_ecec

Furu, A-C., & Valkonen, S. (2021). Gearing up sustainability education in Finnish early childhood education and care (ECEC): Exploring practices and pedagogies by means of collegial reflection and discussion. *International Journal of Early Childhood Environmental Education*, *8*(2), 30–42.

Furu, A-C., & Heilala, C. (2021) Sustainability education in progress: Practices and pedagogies in Finnish early childhood education and care teaching practice settings. *International Journal of Early Childhood Environmental Education*, *8*(2), 16–29.

Hofman-Bergholm, M. (2018). Changes in thoughts and actions as requirements for a sustainable future: A review of recent research on the Finnish educational system and sustainable development. *Journal of Teacher Education for Sustainability*, *20*(2), 19–30. https://doi.org/10.2478/jtes-2018-0012

Huggins, V., & Evans, D. (Eds.). (2018). *Early childhood education and care for sustainability. International perspectives*. Routledge.

Karlsson Häikiö, T. (2020). Aesthetic learning processes in early childhood and early years education. Reflections on educating for sustainable development and use of visual tools and materials. *Techne series: Research in sloyd education and crafts science. A*, *27*(2), 15–30.

Karlsson Häikiö, T., Månsson, P., & Lohilahti, L. (2020). Aesthetic practice as part of work with sustainability, participation and learning environments – examples from a Finnish and Swedish preschool. *Nordic Studies in Education*, *40*(4), 343–361.

Koskela,T., & Kärkkäinen, S.(2021). Student teachers' change agency in education for sustainable development. *Journal of Teacher Education for Sustainability*, *23*(1), 84–98. https://doi.org/10.2478/jtes-2021-0007

Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.

Kress, G., & Selander, S. (2012). Multimodal design, learning and cultures of recognition. *The Internet and Higher Education, 15*(4), 265–268.

Mezirow, J. (2009). Transformative learning theory. In J. Mezirow, J. E. W. Taylor, & Associates (Eds.), Transformative learning in practice (p. 9). Jossey-Bass.

O'Gorman, L. (2014). The arts and education for sustainability. In J. Davies, & S. Elliott (Eds.), *Research in early childhood education for sustainability* (pp. 266–279). Routledge.

O'Gorman, L. (2015). Early learning for sustainability through the arts. In J. M. Davis (Ed.), *Young children and the environment. Early education for sustainability* (pp. 209–224). Cambridge University Press.

Pegalajar-Palomino, M., Burgos-García, A., & Martinez-Valdivia, E. (2021). What does education for sustainable development offer in initial teacher training? A systematic review. *Journal of Teacher Education for Sustainability*, *23*(1), 99–114. https://doi.org/10.2478/jtes-2021-0008

Sameshima, P., Wite, B., & Sinner, A. (Eds.). (2019). *MA – materiality in teaching and learning*. Peter Lang.

Tammi, T., Hohti, R., & Rautio, P. (2020). Editorial: Child-animal relations and care as critique. *Journal of Childhood Studies*, *42*(2), 1–6.

Taylor, A. (2017). Beyond stewardship: Common world pedagogies for the Anthropocene. *Environmental Education Research*, *23*, 1448–1461.

TENK. (2019). *The ethical principles of research with human participants and ethical review in the human sciences in Finland. Finnish National Board on Research Integrity TENK guidelines 2019*. Publications of the Finnish National Board on Research Integrity TENK 3/20.

Wals, A. E. (2020). Transgressing the hidden curriculum of unsustainability: Towards a relational pedagogy of hope. *Educational Philosophy and Theory*, *52*(8), 825–826. https://doi.org/10.1080/00131857.2019.1676490

Ward, K. S. (2013). Creative arts-based pedagogies in early childhood education for sustainability (EfS): Challenges and possibilities. *Australian Journal of Environmental Education*, *29*(2), 165–181.

Correspondence concerning this paper should be addressed to Ann-Christin Furu, EdD, project researcher, Faculty of Education and Welfare Studies, Åbo Akademi University, Vasa, Strandgatan 2, 65101, Finland. Email: christin.furu@abo.fi