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# High Quality Educated Teachers and High-Quality Textbooks—The Two Pillars of Quality Education

Maria Hofman-Bergholm

## 1. Introduction

In 2015, 193 countries committed to achieving the UN’s 17 Sustainable Development Goals (SDGs), a shared vision of humanity that provides the missing piece of the globalisation puzzle. The extent to which that vision becomes a reality will depend on today’s classrooms; and it is educators who hold the key to ensuring that the SDGs become a real social contract with citizens. (OECD 2018, p. 2)

In the 2030 Agenda for Sustainable Development (UN 2015), the United Nations (UN) launched a set of 17 Sustainable Development Goals (SDG) to be achieved during a 15-year period. All these goals relate to education in different ways, and once again, education is set in a key position to solve all kind of problems that society faces today. The OECD even take it a step further, claiming that it is the educators in the classrooms who hold the key (OECD 2018). The SDGs build on the former millennium development goals to end poverty, inequality and climate change with one big difference—the Agenda 2030 and the SDGs are universal, not only focusing on poor countries (Owens 2017).

The SDG 4, which is the focus of this publication, states that we need an education that “ensure inclusive and quality education for all and promote lifelong learning” (UN 2015). In a recent report, UNESCO states that it appears unlikely that the targets within SDG 4 will be met, and that there is a risk that it will not be meaningful for everyone, as it is a universal agenda, and it is unclear how different countries perceive its relevance (UNESCO 2019). This is a major weakness of the 2030 Agenda for Sustainable Development. What is of great importance and what we need to bear in mind is to recognize the different conditions that different countries have for fulfilling such universal agendas when arguing about ways of implementing the SDG 4 and its targets. We must remember and recognize the difference between north and south; east and west; rich and poor, even though the lines are not as apparent now as they were 20 years ago (Rosling et al. 2018). Unfortunately, there is an imminent risk

that climate change affecting the world right now will increase poverty again and increase the gap between poor and rich (IPCC 2018).

Some of the targets within SDG 4 relate more to poor countries, while other targets within the goal relate to rich countries. Some of the targets relate both to poor and rich countries, for instance, human rights and appreciation of cultural diversity are targets within SDG4 that almost every country in the world, rich or poor, have problems to fulfill in different ways. In the rich countries, cultural diversity is not always appreciated, and there are issues about how governments treat aboriginal people and their rights, while in poor countries there are different angles of the problem in fulfilling human rights. The concept of lifelong learning also has a different emphasis depending on the education and income levels of the nations, and if the nation is a democracy or a dictatorship. For instance, the apartheid in South Africa has resulted in now adult people who have had little or no education. Here, lifelong learning and literacy from an adult perspective is important (McKay 2018), while this is hardly a problem in the Nordic countries.

In the Nordic countries, SDG 4 and, for instance, target 4.7 (the target is: “By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development” (UNESCO 2019, p. 3) tend to be a bit problematic to fulfill within 2030, regarding education for sustainable development and sustainable lifestyles, as there is still no consensus among academics about the concept of sustainable development and which competences it involves (Hofman-Bergholm 2018a; Sinakou et al. 2018; Brandt et al. 2019). The result of this is that sustainability seems to be ignored by a large part of teacher education institutions, at least in Nordic countries (Wolff et al. 2017; Palmberg et al. 2017; Hofman-Bergholm 2018b; Hofman 2012; Borg Carola et al. 2014), which might have serious consequences throughout the whole education system, from early childhood education to teacher training programs. This is problematic, as sustainability and the development of sustainable lifestyles are targets within the SDG 4 “quality education for all” and OECD (2018) point out that educators hold the key to sustainability.

This book chapter is outlined as a theoretical discussion around the issues for implementing sustainability in education, from early childhood education to higher education, starting from a lifelong learning perspective.

## 2. Sustainability Issues in Quality Education and Lifelong Learning

Traditionally, the term 'lifelong learning' is often attributed to adult education, but lifelong learning begins at birth, and should therefore also include early childhood education (Pramling Samuelsson and Park 2017). As Pramling Samuelsson and Park (2017) state, a lot of researchers seem to agree on the fact that a sustainable future depends on how the next generation is educated. They argue about the importance of high-quality early education and the enduring benefits from learning experience during early childhood education. It is not children's age that determine where they stand in their individual development; it is the culture they live in and prior experiences (Pramling Samuelsson 2011). Pramling Samuelsson (2011) summarize research from different kind of studies and conclude that children's attitudes and interests are developed during quite early age. That is why it is highly important to start educating children about sustainability at an early age (Pramling Samuelsson and Park 2017). Seen from this perspective, lifelong learning is the base for quality education, and it highlights the importance of an early beginning with Education for Sustainable Development (ESD).

To implement sustainability in education, it is not only policies and steering documents that are important, the executive level is equally important. Educating teachers who are teaching in early childhood education about sustainability issues should be as important as the development of curriculum plans that include sustainability (Pramling Samuelsson and Park 2017). The fact is that, for instance, in Finland, there is a gap between vision and the implementation of sustainability in early childhood teacher education (Furu et al. 2018).

Wolff and Furu (2018) have investigated how Finnish student teachers in early childhood education understand the concept of sustainable development. The research (ibid) show that the student teachers in early childhood education in Finland possesses a limited understanding of the sustainability concept, and likewise graduated teachers (Wolff et al. 2017), and even teacher educators in Finland (Hofman 2012). In another article, Furu et al. (2018) take it as far as to state that sustainability has such an inconspicuous position in the Finnish early childhood teacher education that it can be called insufficient. The same problem also seems to be common in other levels of education in Finland and other Nordic countries, all the way from the base to the top in the educational system, even though the education in the Nordic countries is considered to be high quality education.

Research shows that sustainability is integrated into Finnish schools' practices in different ways, and more or less frequently (Wolff et al. 2017). An external evaluation (Pathan et al. 2012) carried out on behalf of the Finnish Ministry of Education and

Ministry of the Environment in 2012 revealed that only 35% of the 917 primary and secondary schools participating in the questionnaire had programs for sustainable development. This is despite the political request for sustainable development programs in every school. In a recent article (Wolff et al. 2017), teacher training in the Nordic countries is discussed, especially teacher training in Finland. The article identifies five issues as to why an exceptionally good education, as the Finnish teacher education is according to the PISA results, does not successfully integrate sustainability into the education. These issues will be discussed in the next paragraph.

One reason why Finnish teacher education is seen as a high-performance education, producing high educated and well-trained teachers that help students perform well in the Programme for International Student Assessment of OECD (PISA tests), can be found in what the PISA tests measure. Until now, the PISA tests have focused on quite easy measurable competences, such as mathematics and reading, which has been focus in the Finnish educational system for a long time, but this changed in the last PISA test 2018, where more focus was on global competences, according to OECD:

Goal 4, which commits to quality education for all, is intentionally not limited to foundation knowledge and skills such as literacy, mathematics and science, but places strong emphasis on learning to live together sustainably. But such goals are only meaningful if they become visible. This has inspired the OECD Programme for International Student Assessment (PISA), the global yardstick for educational success, to include global competence in its metrics for quality, equity and effectiveness in education. PISA will assess global competence for the first time ever in 2018. (OECD 2018, p. 2)

Results of this PISA round 2018 will be released on 3 December 2019, so it is still uncertain as to how the Finnish students scored this time. It is an important step forward that the OECD seems to have realized that the PISA measures regulate what schools put focus on and through bringing in focus on the SDGs in PISA tests as well as other measurable competences forces the educational systems to adapt to the SDGs. This is, first and foremost, probably a very important step towards the implementation of ESD in every school.

As Finnish students performed very well in the PISA test 2000, researchers turned their eyes towards Finland to try to understand what they had done to achieve this. Finland is known to have had a very good education system since the 1968 education reform act took place and a systemwide reform of the Finnish

educational system was carried through to be a fully comprehensive system during the 1970s. This is probably the base for the good results achieved in the 1990s. During this period, Finland also had a system with central approval of textbooks used in the school system. Finland is also one of the countries where a very high rate of teachers report that they use textbooks as a base for instructions. What might illuminate the Finnish high PISA scores in 2000 is the fact that Finnish teachers have a deep-seated tradition of using textbooks in their teaching, and that the textbooks were reviewed and approved central during a critical period of development of the Finnish educational system (Oates 2014).

According to UNESCO (2016), textbooks are recognised as core for the new SDG on education, and the amount a country spends on learning resources is a good measure of its willingness to provide all students with quality education. Access to appropriate learning materials is listed as a key strategy for achieving the first means of SDG 4. Textbooks are especially important in countries with low incomes, large classes, many unauthorized teachers and insufficient teaching time. "Next to an engaged and prepared teacher, well-designed textbooks in sufficient quantities are the most effective way to improve instruction and learning." (UNESCO 2016, p. 1).

Steiner (2017) summarizes what research says about teaching materials. He highlights that teaching materials are a decisive factor for students to successfully complete school, and that teaching materials with context and deep content are used in all high-performing school systems. Steiner's (2017) conclusion is that teaching material is very important. The English school curriculum expert Tim Oats also highlights the role of high-quality textbooks, especially during the improvement of school systems, but also the supportive role that high quality textbooks have on high quality teaching and learning (Oates 2014).

In the 1990s, the central approval of textbooks in the Finnish school system ended, but teachers still use textbooks to a great extent (Oates 2014). Textbooks are produced by teacher educators and researchers, but the question is if the now not central approved textbooks still are of such high quality and supports the national curriculum and policy documents, as in the 1990s. The results from the latest PISA investigation will be very interesting regarding global competences and SDG 4. How did the Finnish pupils perform in this area? Moreover, an important question that needs to be the object of further research is: If textbooks are this important, do the textbooks used by teachers in Finland cover the sustainability issues and targets within the SDGs?

### 3. So, Why Is Sustainability Not Implemented in Education?

So, why is sustainability not successfully implemented in teacher education? Is it only because nations chose to focus on things that the PISA tests measure, to perform in the global competition with other countries? This might be one reason, but there are also other issues identified.

One of the key issues/problems for implementing sustainability in education in the Nordic countries seems to be the teacher's lack of knowledge and the leaders' lack of interest in the issue. This is probably due, in part, to the complexity of the concept of sustainable development (Hofman 2015; Wolff et al. 2017). This complexity is the reason why sustainability education is characterized by a holistic approach (Boeve-de Pauw et al. 2015). According to research (Boeve-de Pauw et al. 2015; Uitto and Saloranta 2017; Borg Carola et al. 2014), school teachers, both in Sweden and Finland, are not able to adapt this important holistic view of education for sustainability, due to their own lack of a holistic understanding of sustainable development as a concept (Hofman 2012; Borg Carola et al. 2014). Borg Carola et al. (2014), Hofman (2012) and Wolff et al. (2017) state that there is a problem within teacher education, when it is not able to develop the holistic thinking needed for understanding the sustainability concept. Here is a main obstacle for implementing sustainability in the educational system; student teachers learn how and what to teach through teacher education, but as Goodwin, Smith, Souto-Manning, Cheruvu, Ying Tan, Reed and Taveras (Goodwin et al. 2014, p. 284) point out, "teacher educators cannot teach what they do not know". It all goes back to teacher education and the teacher educators—if newly qualified teachers do not know how to teach about sustainability, then there is an issue within teacher education.

Wolff et al. (2017) found these reasons for ignoring the sustainability in the Finnish teacher education: sustainability is in conflict with overall trends in society and politics; teacher education takes place at universities and is based on separate academic disciplines. Sustainability is also intricate because it is strongly connected to ecological literacy, and it is value dependent. Universities need to overcome these obstacles and become forerunners in the sustainability process (ibid.). Ignoring sustainability in teacher education will not lead to the achievement of the 17 SDGs.

As mentioned earlier, Finland is well known internationally for its high-performance education according to the PISA tests. One contributing cause of Finland's high PISA results in 2000 is probably the very competent and highly educated teachers who teach in Finnish schools. This is a result of the high-quality teacher education in Finland, where teacher education has been provided as university education since the 1970s (Wolff et al. 2017). Teacher education in Finland is a very

popular first-hand choice for new students, and the teacher education institutions can choose top students to their education. The teacher education for both primary and secondary school teachers leads to a higher academic degree, indicating that the Finnish teachers are very well educated. However, according to Wolff et al. (2017), this does not mean that Finnish teachers are prepared to teach about sustainability issues, as sustainability seems to play a minor role in Finnish teacher education. This is possible because Finnish universities are autonomous, and can decide the content in their educational programs.

The fact that Wolff et al. (2017) state that graduated teachers do not know how to teach about sustainability makes it quite remarkable that according to the decree on national goals of education and the Basic Education Act, sustainable development is included in basic education in Finland. It feels provocative that Finnish teachers are not taught how to teach about sustainability, even though it is actually written in Finnish law, and highlighted already in the Finnish core curriculum 1994. The Finnish core curriculum from 1994 (Finnish National Board of Education 1994) states that biodiversity, equality, democracy, human rights and cultural diversity build the main values which touch the targets in SDG 4 to a great extent, and in the core curriculum from 2004 (Finnish National Board of Education 2004), and in the current version from 2014 (Finnish National Board of Education 2014), the importance of sustainability is even more outlined. However, at the same time, it is obvious that educators have more policy documents than the core curriculum to follow (Wolff et al. 2017), and a lack of time and knowledge is often stated as a cause that the teachers do not teach about sustainability (Borg Carola et al. 2014; Hermans 2016).

#### **4. We Need to Change the Way We Think and Act—But How?**

To achieve a high-quality education that includes sustainability, research indicates that change is needed in both early childhood teacher education and teacher education. In 2017, UNESCO pointed out the need for a new way of thinking:

Sustainable development cannot be achieved by technological solutions, political regulation or financial instruments alone. We need to change the way we think and act. This requires quality education and learning for sustainable development at all levels and in all social contexts. (UNESCO 2017)

One of the five identified obstacles for implementing sustainability in teacher education was that sustainability is intricate, because it is strongly connected to ecological literacy (Wolff et al. 2017). Research indicates that an ecological illiteracy



has developed during the past few decades (Palmberg et al. 2017). Our planet suffers from air pollution, biodiversity loss, deforestation and other problems (Wolff et al. 2017), due to our continued unsustainable way of living and a major environmental threat, which has now been given more attention by Greta Thunberg's climate actions in 2019, is climate change (ibid.), which is interconnected with consumption (Ivanova et al. 2016), and thus a part of the unsustainable system. However, how can the mindset of humans be changed?

Market forces that now control the system in most of the world glorify consumerism as a requirement to achieving happiness, and society members are convinced by market forces that development and happiness are dependent on economic growth (Salonen and Konkka 2015). However, there are indications that our consumerism instead of making us happy is driving us toward illness and alienation from the social relations that increase our wellbeing (ibid.). Studies across countries show that increases in income per capita and levels of happiness do not correlate to any great extent (Salonen and Konkka 2015; Andersson and Eriksson 2010), and it now appears that values other than economic, for example living with (social relations) and for other people (doing things for others), are more important to human wellbeing than economic growth (Helliwell 2014). This is an indication that our unsustainable lifestyles and consumption do not even give us the benefits we think they do, and calls for a new way of thinking (Hofman-Bergholm 2018a).

Today, consumerism is the main focus of almost all societies over the world and world politics focuses on economic growth (Assadourian 2013; Bauman 2007; Salonen and Konkka 2015) except one, Bhutan, where Bhutan's Fourth King Jigme Singye Wangchuck already in the early 70s indicated: "Gross National Happiness is more important than Gross National Product (GNP)" (Freeman 2005, p. 1).

Bhutan's development policy, Gross National Happiness (GNH), represents an alternative policy for economic growth instead of focusing on gross national product (GNP). The GNH development policy includes the conservation of environment and equitable socio-economic development. Bhutan focus on sustainable development in their education, through values in the education and the pedagogical practices. A study (Ahonen et al. 2018) of Bhutan's secondary school students' views about their countries GNH policy concludes that the GNH development policy and the quite recently initiated GNH value education has succeeded. Bhutan has also developed a GNH teacher training, which is successful in the implementation of GNH in their school system. This needs to be shared globally to promote sustainable development education (ibid.).

Mankind needs alternative plans for the future, for the safe existence of the planet and for an economic growth and it should all be based on systems thinking (Bunge 2000; Sterling 2009; Ahonen et al. 2018). UNESCO calls for a change in how we think and act, but how do we manage this change? UNESCO places education in a key position to enable this change, but so far, the desired results have not been achieved, even though ESD has been on the agenda for more than a decade (Hofman-Bergholm 2018a). Perhaps ESD is not enough; there is probably something still lacking that is crucial for an overall change to begin. Hofman-Bergholm (2018a) found common denominators in the nature of ESD and systems education through a literature review, and argue that there are indications that ESD and systems education could benefit from each other. Systems education and ESD could obviously constitute an interlinked common ground for sustainability education throughout the world, instead of being bounded from each other. This new learning approach with systems thinking linked to ESD could emphasize the development of different levels of systems' understanding, such as learning how to work in transdisciplinary teams, teaching basic ecological key concepts which is necessary for a holistic understanding of the sustainability concept and promoting value discussions, deliberation and action competence (Hofman-Bergholm 2018a).

Palmberg et al. (2017) and Hofman-Bergholm (2018a) argue that systems thinking can be a part of this new kind of thinking UNESCO is asking for. There is an increasing recognition that there are strong links existing between systems approaches and the sustainability goals (Cavana and Forgie 2018). Systems education helps people understand that their individual actions and choices contribute to an interconnected system, determining both the well-being of humans and the planet (ibid.). Therefore, systems thinking and systems education need to be incorporated in the education of teachers, because there is a necessity to develop an educational programme that provides individuals with knowledge about how different actions and choices affect the whole society (Palmberg et al. 2017; Hofman 2015; Hofman-Bergholm 2018a). Systems education can help transition towards a sustainable planet (Cavana and Forgie 2018).

Pramling Samuelsson (2011) highlights the '7Rs' as one way of thinking about a pedagogy for ESD in early childhood education; these Rs stand for: respect, reflect, reduce, reuse, repair, recycle and responsibility. These Rs both could and should serve as a base for all kind of education throughout the educational systems. These Rs should be the leading words for all activity and tasks in a lifelong education, from birth to death.

To overcome the obstacles found in teacher education for implementing sustainability, writing new agendas, policy documents and new curriculums is not enough. (Hofman 2012; Hofman 2015; Wolff et al. 2017; Hofman-Bergholm 2018a; Hofman-Bergholm 2018b). It appears as the development of systematic and holistic competences are dependent on repetition during the entire education of future teachers—occasional courses are not enough (Brandt et al. 2019). A reorganization of teacher education to address sustainability and systems thinking is probably necessary to educate student teachers in these issues (Hofman-Bergholm 2018a, 2018b). It would be of great importance that all teacher students develop a system thinking perspective, so the newly qualified teachers and early childhood education teachers learn how to teach systems thinking skills to children for a sustainable future. Teacher education programmes should therefore include such a form of systems thinking that is based on critical thinking, deliberation and action competence and use the '7Rs' to promote the understanding of the sustainability concept in the study programs for teachers and early childhood education teachers. Sustainability cannot be taught without involving systems thinking (Palmberg et al. 2017).

However, to reorganize and change the whole system of teacher education is time-consuming, and adding some compulsory courses on the concepts of sustainability, ecological principles and systems thinking for all teacher students could serve as a stopgap (Hofman-Bergholm 2018a), but in the long run, a reorganization of teacher education institutions toward a systems and action approach to solve complex sustainability problems will be necessary (Hofman-Bergholm 2018a, 2018b; Brandt et al. 2019). In a recent article, Hofman-Bergholm (2018a) put forward some suggestions and recommendations around what and how to reorganize teacher education institutions.

## **5. Textbooks and Teacher Education—Something Worth Investing in for All Countries**

To achieve SDG 4, there is still a lot to do for every nation worldwide. Moreover, what we need to bear in mind is the different starting point that every nation needs to fulfil the goal and its targets. The difference between global south and north needs to be taken in to account, as developing and developed countries need different perspectives and strategies to reach SDG 4. Perhaps some of the targets within the goal need to be left unfulfilled in some countries, to put focus on the most basic parts to be fulfilled. In poor countries, the focus should be on developing quality education and quality early childhood education and adult education for everyone, both boys and girls, black and white. In richer countries which are already considered

to have developed a high-quality education, the focus needs to be on the educators, in teacher education, general education and early childhood education, to develop their understanding of how and what to teach for a sustainable future, as researchers seem to agree on the fact that a sustainable future depends on how the next generation is educated.

The most important goal should be to reach consensus on the concept of sustainability. Teacher educators need to be educated in sustainability to be able to educate student teachers, and teacher education institutions need to be re-organized to include sustainability in every part of education. In-service teachers need to be educated and to help in-service teachers in their work; there need to be high quality textbooks available with high quality content regarding sustainability (from systems thinking and how your choice affect society to climate change and how we affect nature and climate).

The importance of textbooks has also been lifted forward in this chapter. Research shows that textbooks and teaching materials count and affect teaching, and this is why it is highly important that it supports the curriculum content. This means that who writes the teaching materials and chooses the content of the textbooks is fairly important. One can even ask if teaching materials should be state approved to assure the support of the curriculum, as it seems to be a focal point of quality in teaching.

The availability of textbooks of high quality, and with a content that supports the teachers' work in implementing the curriculum content and objectives in their teaching, is a very important corner stone for the education, both in rich and poor countries.

So, how can we achieve an education that “ensure inclusive and quality education for all and promote lifelong learning” as the SDG 4 states (UN 2015)? Transformation and change, in a quite urgent manner, are needed at all levels of education, and in all societies. We now must open our eyes and look around to find the alternative plans for the future, and the general education in Bhutan could provide an example of an education that has successfully implemented ESD in its system.

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## References

Ahonen, Päivi Anneli, Eila Jeronen, and Riitta-Liisa Korkeamäki. 2018. How to Live Happy and Good Life? Secondary School Students' Views about Bhutan's Gross National Happiness Policy. *International Journal of Environmental & Science Education* 9: 703–18.

- Andersson, Jan Otto, and Ralf Eriksson. 2010. *Elements of Ecological Economics*. New York: Routledge.
- Assadourian, Erik. 2013. Re-engineering cultures to create a sustainable civilization. In *State of the World 2013: Is Sustainability Still Possible?* World Watch Institute. Washington: Island Press, pp. 113–25.
- Bauman, Zygmunt. 2007. *Consuming Life*. Cambridge: Polity Press.
- Boeve-de Pauw, Jelle, Niklas Gericke, Daniel Olsson, and Teresa Berglund. 2015. The effectiveness of education for sustainable development. *Sustainability* 7: 15693–717. [CrossRef]
- Borg Carola, Niklas Gericke, Hans-Olof Höglund, and Eva Bergman. 2014. Subject- and experience-based differences in teachers' conceptual understanding of sustainable development. *Environmental Education Research* 20: 526–51. [CrossRef]
- Brandt, Jan-Ole, Lina Bürgener, Matthias Barth, and Aaron Redman. 2019. Becoming a competent teacher in education for sustainable development. *International Journal of Sustainability in Higher Education* 20: 630–53. [CrossRef]
- Bunge, Mario. 2000. Systemism: The alternative to individualism and holism. *Journal of Socio-Economics* 29: 147–57. [CrossRef]
- Cavana, Robert Y., and Vicky E. Forgie. 2018. Overview and Insights from 'Systems Education for a Sustainable Planet'. *Systems* 6: 5. [CrossRef]
- Finnish National Board of Education. 1994. *Grunderna för grundskolans läroplan [National Core Curriculum for Basic Education]*. Helsinki: National Board of Education. (In Swedish)
- Finnish National Board of Education. 2004. *National Core Curriculum for Basic Education*. Helsinki: National Board of Education.
- Finnish National Board of Education. 2014. *National Core Curriculum for Basic Education*. Helsinki: National Board of Education.
- Freeman, Myra A. 2005. Opening Address in Rethinking Development. Paper presented at Second International Conference on Gross National Happiness, Antigonish, NS, Canada, June 20–24; Centre for Bhutan Studies: Thimphu, Bhutan.
- Furu, Ann-Christin, Lili-Ann Wolff, and Suomela Liisa. 2018. Premisser för hållbarhet i den finländska utbildningen av lärare inom småbarnspedagogik. En kritisk granskning av visioner och verklighet. *Utbildning & Demokrati* 2: 59–80. (In Swedish).
- Goodwin, Lin A., Laura Smith, Mariana Souto-Manning, Ranita Cheruvu, Mei Ying Tan, Rebecca Reed, and Lauren Taveras. 2014. What should teacher educators know and be able to do? Perspectives from practicing teacher educators. *Journal of Teacher Education* 65: 284–302. [CrossRef]
- Helliwell, John F. 2014. Social norms, happiness, and the environment: Closing the circle. *Sustainability: Science, Practice and Policy* 10: 78–84. [CrossRef]
- Hermans, Mikaela. 2016. *Från förståelse till agerande. [From understanding to action]*. Turku: Diss. Åbo Akademi University. (In Swedish)

- Hofman, Maria. 2012. *Hållbar Utveckling i den Finländska Lärarutbildningen—Politisk Retorik Eller Verklighet? [Sustainable Development in the Finnish Teacher Education—Political Rhetoric or Reality?]*. Research Report 34. Vaasa: Faculty of Education, Åbo Akademi University. (In Swedish)
- Hofman, Maria. 2015. What is an education for sustainable development supposed to achieve—A question about what, how and why. *Journal of Education for Sustainable Development* 9: 213–28. [CrossRef]
- Hofman-Bergholm, Maria. 2018a. Could Education for Sustainable Development Benefit from a Systems Thinking Approach? *Systems* 6: 43. [CrossRef]
- Hofman-Bergholm, Maria. 2018b. 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 sustainable development* 20: 19–30. [CrossRef]
- IPCC. 2018. Global Warming of 1.5 °C, an IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty. Available online: <http://www.ipcc.ch/report/sr15/> (accessed on 5 November 2019).
- Ivanova, Diana, Konstantin Stadler, Kjartan Steen-Olsen, Richard Wood, Gibran Vita, Arnold Tukker, and Edgar G. Hertwich. 2016. Environmental Impact Assessment of Household Consumption. *Journal of Industrial Ecology* 20: 526–36. [CrossRef]
- McKay, Veronica. 2018. Literacy, lifelong learning and sustainable development. *Australian Journal of Adult Learning* 58: 390–425.
- Oates, Tim. 2014. *Why Textbooks Count*. Policy Paper. Cambridge: University of Cambridge, Available online: <https://www.cambridgeassessment.org.uk/Images/181744-why-textbooks-count-tim-oates.pdf> (accessed on 6 November 2019).
- OECD. 2018. Preparing our Youth for an Inclusive and Sustainable World the OECD PISA Global Competence Framework. Available online: <http://www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf> (accessed on 5 November 2019).
- Owens, Taya Louise. 2017. Higher education in the sustainable development goals framework. *European Journal of Education* 4: 414–20. [CrossRef]
- Palmberg, Irmeli, Maria Hofman-Bergholm, Eila Jeronen, and Eija Yli-Panula. 2017. Systems Thinking for Understanding Sustainability? Nordic Student Teachers' Views on the Relationship between Species Identification, Biodiversity and Sustainable Development. *Education Sciences* 7: 72. [CrossRef]

- Pathan, Alina, Marika Bröckl, Laura Oja, Sanna Ahvenharju, and Tuomas Raivio. 2012. Kansallisten kestäväää kehitystä edistävien kasvatuksen ja koulutuksen strategioiden toimeenpanon arviointi [Evaluation of the Implementation of the Strategies on Education for Sustainable Development]. Available online: <https://www.ym.fi/download/noname/%7B7A0AC771-670C-48B8-B7F8-8FB0B173236F%7D/78365> (accessed on 30 October 2019). (In Finnish).
- Pramling Samuelsson, Ingrid. 2011. Why We Should Begin Early with ESD: The Role of Early Childhood Education. *International Journal of Early Childhood* 43: 103–18. [CrossRef]
- Pramling Samuelsson, Ingrid, and Eunhye Park. 2017. How to Educate Children for Sustainable Learning and for a Sustainable World. *International Journal of Early Childhood* 49: 273–85. [CrossRef]
- Rosling, Hans, Rosling-Rönnlund Anna, and Ola Rosling. 2018. *Factfulness. Tio knep som hjälper dig förstå världen. (In Swedish), available in english [Factfulness. Ten reasons we're wrong about the world—and why things are better than you think]*. Stockholm: Natur och Kultur.
- Salonen, Arto O., and Jyrki Konkka. 2015. An Ecosocial Approach to Well-Being: A Solution to the Wicked Problems in the Era of Anthropocene. *Foro de Educación* 13: 19–34. [CrossRef]
- Sinakou, Eleni, Jelle Boeve-de Pauw, Maarten Goossens, and Peter Van Petegem. 2018. Academics in the field of Education for Sustainable Development: Their conceptions of sustainable development. *Journal of Cleaner Production* 184: 321–32. [CrossRef]
- Steiner, David. 2017. *Curriculum Research: What We Know and Where We Need to Go*. Research report. Johns Hopkins Institute for Education, StandardsWork. Available online: <https://standardswork.org/wp-content/uploads/2017/03/sw-curriculum-research-report-fnl.pdf> (accessed on 5 November 2019).
- Sterling, Steven. 2009. Sustainable Education. In *Science, Society and Sustainability: Education and Empowerment for an Uncertain World*. Edited by Donald Gray, Laura Colucci-Gray and Elena Camino. New York: Routledge, pp. 105–18.
- Uitto, Anna, and Seppo Saloranta. 2017. Subject teachers as educators for sustainability: A survey study. *Education Sciences* 7: 8. [CrossRef]
- UNESCO. 2016. Every Child Should Have a Textbook. Global education monitoring report. Policy paper 23. Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000243321> (accessed on 5 November 2019).
- UNESCO. 2017. Complimentary Additional Programme 37 C/5—CAP Education for Sustainable Development. Available online: <https://en.unesco.org/system/files/Education%20for%20Sustainable%20Development%20-%20Future%20Forward.pdf> (accessed on 5 November 2019).
- UNESCO. 2019. *Beyond Commitments—How Countries Implement SDG4*. Paris: UNESCO, Available online: <https://unesdoc.unesco.org/ark:/48223/pf0000369008> (accessed on 5 November 2019).

- UN (United Nations). 2015. Transforming Our World: The 2030 Agenda for Sustainable Development. Available online: <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication> (accessed on 5 November 2019).
- Wolff, Lili-Ann, Pia Sjöblom, Maria Hofman-Bergholm, and Irmeli Palmberg. 2017. High performance education fails in sustainability?—A Reflection on Finnish Primary Teacher Education. *Education Sciences* 7: 32. [CrossRef]
- Wolff, Lili-Ann, and Ann-Christin Furu. 2018. Hållbarhetspedagogik för finländska barnträdgårdsläro-studenter: Från begrepp till engagemang. *Pedagogisk forskning i Sverige* 3: 214–34. (In Swedish).

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