Whole School Approaches to Sustainability – Critical Case Studies from Europe

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In Europe, at the moment many children are fearing a future marked by environmental catastrophes, such as mass extinction and runaway climate change, social ills, such as rising inequality and the risk of war. Some of these worries were expressed during the 2018 school strikes for the climate in Sweden, which spread shortly thereafter to other countries mobilising thousands of students. In the spring of 2019, according to the organisers, more than 1.4 million students worldwide took part in the demonstrations (Carrington, 2019). At the same time many parents also worry that their children's lives won't be as good as their own or, in communities already struggling, even worse than theirs.

In light of the present urgent global challenges, many schools in Europe are struggling to find an educational response. How can they become more relevant, responsive and responsible in times of systemic global dysfunction and provide more hopeful futures, and the competencies and qualities young people need, not just to survive but to thrive within planetary boundaries? Whilst this is a complex question without simple answers, this article outlines three approaches found in schools, which can be put on a continuum from light green to deep green responses. It then provides some critical case studies from different European-based schools that have committed to the deep-green side of the continuum. The article, based in part on an international critical case study report on Whole School Approaches to sustainability (Mathie and Wals, 2022), concludes with a synthesis and some reflections on the way forward.

ADD-ON, BUILD-IN OR WHOLE SYSTEM RE-DESIGN?

There are three main approaches to engaging with sustainability education: "add-on", "build-in", and "whole system redesign". Sterling (2004), who distinguished these three responses initially, also identified a fourth response, "denial", which

referred to schools that ignored the call for engaging with issues around sustainability for different reasons (e.g., not important, there are many other important issues, we are over-committed already, it's not part of the national curriculum, etc.). While the "denial" response was undoubtedly present, and perhaps even dominant, during the time Sterling wrote his important book, virtually all schools now realise that they must engage with sustainability issues in one way or another. We will briefly describe the first two responses and then zoom in on the third one, moving from the light green "add-on" to the deep green "whole system redesign". All these responses can be found in European schools now, where the first two seem to be dominant, the third response is still more at the margins.

Approach No. 1: Add to existing curricula

Educators and school districts worldwide are considering ways to incorporate the 17 sustainable development goals proposed by the United Nations (UN) in its 2030 Agenda for Sustainable Development. The UN Agenda includes social goals (no poverty; gender equality; zero hunger; good health and well-being; reduced inequality; and peace, justice and strong institutions); ecological goals (clean water and sanitation; climate action; life below water; and life on land); economic goals (decent work and economic growth; industry, innovation and infrastructure; and responsible consumption and production); goals requiring social, ecological and economic reforms (affordable and clean energy; and sustainable cities and communities); and mechanisms to achieve all these goals (quality education and partnerships for the goals).

Teaching students about the UN goals span multiple disciplines and requires social and emotional learning that encourages reflection on ethics and values. But previous studies on education innovations have demonstrated that we cannot keep adding to existing curricula. Schools cannot become the dumping grounds for solving all societal ills. Were we to add every topic covered by the UN goals, which are all equally important, the curriculum would overload teachers who are challenged enough covering conventional basic subjects. In the worst case the add-on approach can do more harm than good as interest groups compete for their pieces of the curriculum pie. As a result, topics may not be addressed in sufficient depth, and teaching materials developed by interest groups may lack educational quality. Many schools working in the "add-on" vein choose to do more ad-hoc projects on specific sustainability-related topics like climate change or health and well-being, as long as it does not distract too much from the regular curriculum, which is mainly seen as separate.

Examples include organising extra-curricular activities, forming school clubs with interested students, focusing on greening the school grounds or building, or doing a combination thereof.

Approach No. 2: Build-in

In this approach, educators, curriculum developers and textbook publishers are exploring ways to incorporate sustainability concepts into existing topics, thereby using sustainability-related topics as a rich context for teaching what they traditionally have been teaching. For example, chemistry students can learn the composition and toxicity of plastics and how they react with salt water, whereupon they become a plastic soup. Biology courses can teach how aquatic life and food chains are affected by toxic pollutants. Mathematics can be used to understand the exponential growth of plastic soup in the ocean, the exponential decay of biodiversity, or the way statistics are used in the latest Intergovernmental Panel on Climate Change (IPCC) report on climate change. Schools working in this mode look for opportunities to link sustainability issues with the curriculum and typically pay attention to the sustainability-related practices of the school itself, "walking the talk". In a way, they do what schools in Approach 1 do, but they do not see it as a distraction from what formally needs to be taught but rather as an opportunity to make education more relevant and responsive.

Approach No. 3: Whole system re-design

In this approach, there is a shared vision in the school community that today's world calls for a different way of teaching and learning altogether. The approach links with a Whole School Approach (WSA), which implies that a school's DNA needs to reflect and invite sustainability, good health and well-being, and democratic citizenship. The assumption is that this can only be realised in a meaningful way when all essential aspects of a school are in play (Figure 1):

- *School ethos, culture, leadership and governance* (including student voice and participation)
- *Curriculum* that is more localised and includes cross-cutting themes and interdisciplinary work
- *Pedagogy*, opening up new forms of learning (e.g., place-based learning, experiential learning, challenge-based learning, transformative learning)
- *Building and operations,* where the school becomes a living practice of sustainability, good health and well-being and democratic citizenship (e.g., where the

whole school community contemplates and implements sustainable forms of energy use, responsible and healthy food, green and playful school grounds, a repair café, etc, always seeking connections with the curriculum)

- *Professional development of staff*, not just the teachers and the management, but also others working in and around the school (e.g., the concierge, cleaners, maintenance workers, etc.)
- *Relationships with the wider community,* where the whole community becomes a living laboratory for meaningful learning and community engagement

Figure 1: Interrelated components of a Whole School Approach to sustainability.

Source: Mathie and Wals, 2022, pp. 6

A Whole School Approach is presently gaining attention, for instance, in the 2021 strategic document on Education for Sustainable Development (ESD) of the United Nations Economic Commission for Europe (UNECE, 2021), in UNESCO's

Berlin declaration ESD 2030 (UNESCO, 2021), and in the European Commission (EC) Council recommendation on learning for environmental sustainability (European Commission, 2022; Tilbury and Galvin, 2022). A WSA has become a key concept in international policy discourse around education and Sustainable Development (SD), and in some European countries is also gaining traction in national and regional educational policy frameworks (e.g., in Norway, The Netherlands and Germany). Many European schools seeking to take on a WSA are part of Foundation for Environmental Education's Eco-Schools programme (estimated about 35,000), but within the schools participating, there can be found different "shades of green" as well.

EUROPEAN SCHOOLS ENGAGING IN SUSTAINABILITY USING A WHOLE SCHOOL APPROACH

Here we will feature some of the critical case studies that are from European schools – a mix of primary, secondary and vocational schools – who are enacting a WSA in an attempt to develop an integrated approach to sustainability. The case studies are abbreviated from the more detailed case studies found in Mathie and Wals (2022). Through an international call for such examples – via international networks like Eco-Schools, United Nations Educational, Scientific and Cultural Organisation (UNESCO) and United Nations Economic Commission for Europe (UNECE), as well as social media (LinkedIn, Twitter and blogs) – potential cases were received which were then screened for suitability. The selection criteria focus was to identify a broad selection (both geographically and school types) of primary, secondary, or upper secondary schools (including vocational ones) that provided practical examples of how a WSA is being utilised in practice. Any type of primary or secondary school was considered if they provided current and practical examples of holistic and integrated approaches to sustainability-oriented education and were willing to be critically reflective.

Some of the schools are Eco-Schools and have benefitted from the guidance provided by the Foundation for Environmental Education (FEE) and the seven step model used by Eco-Schools (Figure 2), but some are not, which is to acknowledge that a school can also work towards becoming more sustainable and contributing to a more sustainable world without having to be an Eco-School.

Figure 2: Eco-Schools' Seven Step Model.

Source: https://eco-schools.nl/en/about-eco-schools/how-it-works

Figure 3: Graphic illustration of a Whole School Approach to Health, Sustainability and Global Citizenship.

Illustration by Nicolette Tauecchio (Nicniq)
Source: Mathie and Wals, 2022

It should be acknowledged that the cases presented here were made possible thanks to the help of a significant number of teachers, school leaders and sustainability coordinators.[1] The cases are "critical" in the sense that they are not just "feel good" celebratory case studies but explicitly include reflections on the challenges and barriers these schools encounter when trying to develop a more inclusive and integrated approach to sustainability. Here we will present snap-shots from Europe (for the full case studies, including those from other continents, see: www.wur.nl/wholeschoolapproach).

The cases featured here come from Cyprus, Norway, The Netherlands, Northern Ireland, Finland and England.

THE NETHERLANDS – GREEN VOCATIONAL SCHOOLS COMMITTED TO A WSA

(Overview is taken from a case study originally written with Sandra Menkhorst and Vivian Siebering, pp. 18-21.)

In the Netherlands, the development of ESD in primary and secondary education was initially informed by Environmental Education (EE). In the Dutch language, this is referred to as *Natuur-en-Milieueducatie*, or Nature and Environmental Education. Whereas EE was well understood in educational practices, ESD was not. EE organisations played a significant role in developing lesson plans, curricula, modules, projects, etc., covering SD-related topics to be added on or infused into the regular curriculum. During the early years of ESD development, more schools started paying attention to reducing their ecological footprint. In recent years, for reasons varying from increased societal concern around climate change, health and well-being to the desire to make education more relevant and responsive in light of the rapidly changing and confusing world, some schools have started to see SD and the SDGs as a trigger to rethink schooling, teaching and learning altogether.

Zone College, Doetinchem, located in a semi-rural area, is a public green vocational secondary school consisting of just over 1,000 students between the ages of 12 and 17 years. Students are mostly native Dutch with a non-immigrant background and tend to have an agricultural or rural background. In 2017, Zone College started the work to become an Eco-School through the Eco-Schools programme. The school developed its own "Green Profile" curriculum. During the first

1. The names of these contributors can all be found in the full WSA case study report (Mathie and Wals, 2022), which is available via: (www.wur.nl/wholeschoolapproach).

two years, students participate in "Green World Orientation", a practice-oriented course focusing on cross-cutting green vocational themes: animals, nutrition, landscaping and creative vocations. In the final two years, the students can combine one of these themes of their own choosing with a sphere or world in which they want to explore the theme in more depth. These worlds are the living world, the active world, the healthy world, the creative world, and the green technology world.

Working with these four domains and five different worlds throughout the entire four-year programme assures students are actively engaged in hands-on sustainability-related issues every school week. Still, the curriculum greening could go deeper when playing by the rules of the Natural Step (https://thenaturalstep.org/), which inspire the staff at Zone College. One area of improvement is the purchasing of the materials students use for their creative design and construction work. Often these materials are bought at a local discount store without paying much attention to the ecological and social footprints of the materials.

Another example comes from the animal domain, where students learn about the well-being of domesticated rabbits and their natural behaviour. However, how the rabbits are housed at the school does not necessarily reflect what is taught. Often teachers want to do better but need time to investigate and resources to act accordingly. Both are often lacking. Another area of struggle or contention is how to navigate the tension between what society is increasingly demanding from farmers in terms of sustainability and animal well-being and how the parents of the students – many students grow up on a farm – manage the farm, which does not always correspond. Teachers are confronted with these tensions and emotions that intense discussions might evoke, and dealing with them in the classroom is challenging. On the other hand, the school does also try to walk the talk, for instance, in the energy domain, by creating a climate-neutral building with the support of Eco-Schools.

Key WSA Principles in action at ***Doetinchem secondary school***

Vision, Ethos, Leadership & Coordination

The vision of our school is clear, visible in school and known by teachers. Sustainability is part of it

Zone college has 8 locations in a large area. Since a year, there is a sustainability coordinator who is developing now a vision and strategic goals for sustainability for the whole organisation of Zone college

Curriculum

We believe that sustainability is in the heart of our curriculum, but we want to improve it and develop circularity in our school through our curriculum. For example, by using the coffee grounds to grow oyster mushrooms, using the harvest of our kitchen gardens in the cooking lessons, selling the things we make, in other words: giving things another life by closing cycles

Pedagogy & Learning

Tailor-made hours (Maatwerkuren) and moments of interest (Interessemomenten) - give our students the opportunity to choose what they are interested in

Our MECA week is a good example, but we want to develop more of this kind

Head, heart & hands philosophy

Institutional Practices

We try to connect all technical installations to the curriculum and involve teachers to work with them

The design of the building invites sustainability

Capacity building

There is no separate programme, but the staff learns a lot by doing: by speaking with the companies that install the technical installations for example, by speaking with the sustainability coordinator, there are stimulated reading books and learn a lot by preparing projects like the *Make Earth Cool Again* week

Community Connections

Business collaborations with small- and medium enterprises traditionally already exist in green agricultural schools

Strengths/Prospects

The ECO-School scheme and the support provided through SME-Advies provide concrete steps and support for developing a WSA

The role of the educational advisor to develop new projects and connect the ideas of the different working groups of teachers. Teachers alone don't have the time to work out things like the MECA project week

The focus on circularity, closing cycles, and creating a local 'micro economy' that generates funding for future sustainability efforts

Vocational and place-based aspect of the college means a fits well with a WSA due the pre-existing values and environmental focus of the college

The organisation of special curriculum activities – like the sustainability project week – that include all teachers and all students

Challenges

Sometime sustainable solutions cost more and time to explore what is the best choice is needed. Time and money remain a challenge

To engage every teacher in the school and ensuring that sustainability is implemented in other lessons

Pedagogically it can be challenging to navigate tensions around different forms of agriculture when having students who are closely connected to the agricultural sector in the same classroom as students who do not have an agricultural background

Sustainability has to become in everyone's DNA before it is in every lesson!

Hard to keep track of all the progress and have a clear action plan when there is so much going on throughout multiple aspects of the college. This needs to link better to monitoring, evaluation and assessment

CYPRUS – A CROSS CURRICULAR HOLISTIC APPROACH INVOLVING SCHOOL, FAMILY AND WIDER COMMUNITY

(Overview is taken from a case study originally written by Diamando Georgiou, Vasilis Papastavrou and Aravella Zachariou, pp. 33-37.)

Cyprus, uniquely, has a Sustainable Environmental Education Policy (SEEP) in pre-primary and primary education that aims to integrate the Whole School Approach in every school. Geroskipou A' Primary School is an example of a SEEP in action. The school is located in the Geroskipou municipality and has a population of about 8,000 people and even though it is considered a rural school, it is near Paphos city. Most of the students are local; however, there is a considerable number of students who are emigrants. This primary school continues to develop its own SEEP, which has been implemented in the curriculum since 2013, when ESD was officially introduced in Cyprus schools.

SEEP is a school-led long-term policy that is usually planned for two or three years. Through SEEP, Geroskipou A' Primary School currently investigates the biodiversity in Cyprus in relation to the country's culture. This is done in a coordinated way by both the school and members of the local community with the aim of creating a school and community culture for protecting the biodiversity of Cyprus.

All the stakeholders in the school (students, teachers, parents, other school personnel, community members, and representatives of NGOs) come together to plan the school SEEP. At first, teachers guide students to identify environmental and sustainable issues that impact the well-being, quality of life and sustainability of their school and community. The issues are identified and discussed, and the participants in SEEP jointly agree on the issue that will be investigated. In the SEEP, justification as to the selection of the specific issue to be studied is provided, with reference to the reasons why it was chosen, its importance and the learning outcomes for the students regarding knowledge, awareness, skills, attitudes and competencies. The SEEP is implemented by everyone in the school. Each class (teachers with their students) organises its own plan, which includes the way that the class is going to work to contribute to the achievement of the school's SEEP (activities, subjects that will be used, etc.). The plan of the class is monitored by both the teachers and students. At the end of the school year, a self-reflection – self-assessment – takes place for each class and for the school SEEP as a whole. This assessment is based on qualitative criteria on organisational, pedagogical, technical, and social levels, and operates as a tool for helping the school and the community identify what has been

achieved, what difficulties and obstacles emerged, as well as what measures can be taken for a better implementation of the SEEP.

The cross-curricular approach reflects the school's attempt to apply a holistic approach. The interdisciplinary approach to the issue, in addition to collaboration with parents, children, grandparents and community members, facilitates the school's attempt to operate as an open community of learning to improve the quality of life in the school and in the community. At the same time, the school aspires to operate as an example of a school that applies ESD in everyday school life. To this end the school regularly invite students and teachers from a neighbouring school to share their experiences working with SEEP.

Key WSA Principles in action at ***Geroskipou A' primary school***

Vision, Ethos, Leadership & Coordination

School vision includes input from the wider community, promoting intergenerational communication and learning outside the class

All the school plan developed jointly with the school, the community, and the professionals

The Sustainable Environmental Education Policy (SEEP) in pre-primary and primary education, aims to integrate Whole School Approach in every school

A WSA to ESD vision supported nationally by the government

Curriculum

The national curriculum has an ESD focus including 12 thematic unit

This is also connected to the SEEP initiative (above)

Pedagogy & Learning

Project based learning - the community and its environment as a place of learning. In cooperation with municipal authorities, students, teachers, and parents worked together

Institutional Practices

Utilisation of rainwater for watering pots and plants in the corridors. Every time it rained, we collected rainwater from the roof tabs in buckets and during the break, children watered the pots that were in a covered area

The biodiversity park has sparked many behavioural changes in the school beyond the garden

Capacity building

Peer to peer teacher training scheme

Top-down support for example from - the Unit of Education for the Environment and Sustainable Development

Parents teachers and professionals from the local community have been engaged with running workshops to support the primary biodiversity park the school manage

Community Connections

meaningful relationships and cooperation among the school community and local society because of SEEP and the biodiversity park project

The school with the community explored the issue "protecting the biodiversity of our land through the culture and civilization" – the outcome being - To create a green park for biodiversity next to the school which for its maintenance responsible is the school and the community together

Strengths/Prospects

All the subjects are used as tools for ESD in this example and this in turn strengthens teacher cooperation

Top-down commitment from the national curriculum to support a WSA to ESD through the enactment of a Sustainable Environmental Education Policy (SEEP) in pre-primary and primary education, which aims to integrate Whole School Approach in every school

Community connections – examples from this primary school show how the whole community can be involved

Challenges

More work needs to be done – an assessment and accreditation structure for following up the ESD national curriculum and SEEP is missing

Finding staff who want to take on the coordination role – this is a specific skill

Organising the schedule so teachers can have the time to plan together

Preparation of new materials despite a lot already being made available

ENGLAND, UK – RUSKIN MILL - A WHOLE SCHOOL, FOR THE WHOLE CHILD, IN A WHOLE COMMUNITY

(Overview taken from a case study originally written by Matt Briggs, Aonghus Gordon and Keith Griffiths, pp. 38-42.)

Ruskin Mill is a trust that runs nine primary, secondary and upper-secondary schools in the UK and provides a comprehensive example of relational place-based education for children with special needs in practice. In essence, these schools are an example of a "WSA in action" within the context of Specialist Independent Education for children and adults with complex needs, including learning difficulties and autistic spectrum conditions. However, its key philosophy, principles and practices are relevant for all type of schools, especially its utilisation of creativity, the arts and learning rooted in the local community. The co-developed curriculum, not hindered by national curriculum requirements, supports each student in finding their own route to self-generated conscious action through experiencing meaningful relationships with the universe, Earth and people. Therefore, each curriculum is co-designed with the students to suit their needs.

The vision, values and methods at Ruskin Mill involve a strong emphasis on the self, the community, environmental development and renewal. The method developed, called *Practical Skills Therapeutic Education,* helps learners overcome barriers to learning, become skilled and contribute to the community. Ruskin Mill aims to help individuals to re-imagine their potential by working with hand, head, heart and place, through practical activities, performing arts, therapies, culture and social enterprise.

Uniquely, staff and students work in a biodynamic school garden using the research-based method Practical Skills Therapeutic Education (PSTE) comprised of seven steps: 1. Genius loci (spirit of place), 2. Practical skills, 3. Biodynamic ecology, 4. Therapeutic education, 5. Holistic support and care, 6. Holistic medicine and 7. Transformative leadership. In terms of place-based learning and community connections, the first field of practice (connected to Genius loci) is an example of how a school can become further embedded in its local community and surroundings.

Each student is provided with an individualised and tailored curriculum such that the practical skills they will engage with are specifically chosen to meet their own developmental needs. By providing students with the tools to transform materials, they transform themselves. The students transform materials and food into purposeful, sustainable, and community-oriented items and meals that offer

meaningful encounters that promote self-generated ecological and sustainable thinking and innovation.

The school has a strong connection to the garden and the land, providing outdoor spaces for pupils to learn and grow in. The school grounds are managed following sustainable and ecological biodynamic principles, which aim to create holistic symbiotic cycles, to enhance not only the land, soil, food and materials, but also improve the surrounding biosphere and environments by harmonising and increasing the capacity for life and nature. By placing students within these environments, they witness the role modelling of sustainable practices and holistic cycles that benefit themselves, the ecology and the community through the production of sustainable and natural growing and animal rearing practices (organic, non-intensive, non-toxic). Through this process, meaningful relationships and values are fostered between humans, ecologies and communities, which allow the students to experience real-life sustainability first-hand. Researching and sourcing sustainable locally available sources (where possible) for materials used within crafts and subjects allows students to make informed moral decisions and choices around the scarcity and sustainability of local and planetary resources and the direct consequences to the world of such choices.

One of Ruskin Mills' core purposes is to aid integration into the community and contribute to society. The focus towards the community is paramount in the PSTE methodology as it creates a pull (as opposed to push) for the students to gently self-generate their own desire to engage with the community, society and world. Multiple opportunities for students to engage and develop both the local communities and wider society are experienced: farms/land (contributing produce to local communities via veggie boxes and shops), cafes (using the grown produce from the land/farms), shops (selling and showcasing school-grown and locally made, sustainably sourced produce) and exhibition spaces (where established artists, crafts people and students can exhibit and showcase their work alongside and for the local communities).

Key WSA Principles in action at ***Ruskin Mill primary & secondary schools***

Pedagogy & Learning

The Practical Skills Therapeutic Education offers innovative WSA learning and assessment methods

Co-developed individualised curriculum for each student

Curriculum

Craft based curriculum offers examples of how social, economic, and environmental pillars of ESD can be taught in theory as well as experienced in practice

A Whole Child, Whole School, Whole Community based Curriculum

Curriculum connected to social enterprise

Vision, Ethos, Leadership & Coordination

The vision, values and methods involve a strong emphasis on self, community and environmental developmental and renewal

Seven Fields of Practice first step is a Genius loci audit. This ensures each school identifies a holistic place-based practical curriculum

Institutional Practices

School grounds are managed following sustainable and ecological Biodynamic principals

School farms and gardens produce food for the students' meals, sold in local community, and is used in some of the schools' outward facing cafes

Sustainability policies in place, for example, for sourcing materials and products

Community Connections

Ruskin Mill Trust's core purposes is to aid integration into community and contribute to society

Students are encouraged to lead community and charity orientated projects such as restoration of community/heritage spaces

Capacity building

Training and development opportunities for all staff and wider community is provided by the trust, from induction to a newly accredited master's degree

The trust running the schools also support continual research and professional development opportunities for their staff through the 'Field Centre'

Challenges

Any land-based initiative requires forward thinking and a sense of entrepreneurship as it is based on a non-standard approach

There is a training requirement which requires practitioners to increase their self-reflexive process. The development of action research can be a guiding principal

Practitioners need to approach the content with a collaborative attitude and teachers need to risk entering a domain of unfamiliarity to enter the practitioner mind set, however the rewards for teaching and practitioner-based learning are immense

Requires external funding and grants (and large fund-raising team) which are mostly attained through its charity status

Collaborating with the local community and various stake holders can be challenging, expensive and time consuming. This element takes a lot of considered coordination, but vital in both its implementation and impact

Strengths/prospects

Harnessing and harmonising with the local ecology, cultures and history (via a Genius loci audit) can help reveal and acknowledge both negative and positive practices and approaches to help create a more sustainable and community orientated curriculum that meets the needs of both the people and earth

A holistic practical focused curriculum involving land, craft work and nutrition, using sustainably sourced and local materials where possible, encourages situated and embodied learning for the whole human being and community

Creating sustainable 'seed to table' systems for food and material production that involves learners (using Biodynamic/whole system principals) encourages sustainable, ecological and environmental practices and thinking

The will and support for a holistic integrated approach as it is essential to the schools and not-for-profit charity vision

FINLAND - TERÄLAHTI A NATURE-SCHOOL HOLISTIC INTEGRATED APPROACH

(Overview taken from a case study originally written by Jenni Skaffari and Katri Korpi, pp. 61-64.)

The concept of a "sustainable future" is mentioned 48 times in the Finnish curriculum. The so-called eco-social education is central to the value base of primary and secondary school curricula as well as in early childhood education. *"The guiding principle of ecosocial civilisation is to create a way of life and a culture that cherishes the inviolability of human dignity, the diversity and resilience of ecosystems, and at the same time builds a knowledge base for a resource-based circular economy"*[2]. The Finnish curriculum therefore requires that a sustainable future is considered in teaching. It also encourages the Whole School Approach as a learning process for everybody in the school building (or surroundings). An eco-social approach is to be included in all school subjects according to the curriculum.

Educational professionals, e.g., the recruitment of teachers, have a big impact on the functioning of sustainable education in schools. It is up to the teacher to put these values into practice. For example, school meals provide a great opportunity to discuss with students the importance of their own choices and food waste. It is also possible to get vegetarian food at the school. The autonomy provided by the curriculum allows for teaching using different teaching methods and for teachers to act on their own preferences and on those put forward by the students.

Terälahti Primary School

Terälahti School is a primary school in Tampere, located about 40 km from the city centre, surrounded by a lovely rural landscape with forests, fields and waterways. The school has about 75 students, aged 6-12. The same building also houses a kindergarten, a library and the Nature School of Tampere, named Korento. There are about 14 adults working in the school building. The Terälahti school has been involved in the Green Flag programme (the Finnish version of an Eco-Schools programme)[3] since 2002. Many things have taken root over the years in the daily life of the school, so there is little need to pay attention to them. These include sorting

2. Finnish curriculum, ePerusteet. Retrieved from: (https://eperusteet. opintopolku.fi/#/fi/perusopetus/419550/tekstikappale/426523).

3. Green Flag (Eco-Schools) Foundation for Environmental Education, Finland. (https://feesuomi.fi/).

and recycling rubbish, saving energy and water, using recycled materials in fine arts and crafts, and using nearby nature as a learning environment. The aim is to make purchases as sustainable as possible.

However, there are some challenges (see also Mykrä, 2021). The biggest challenge of everyday life is time. It is difficult for a teacher to be away from their own class to hold, for example, an Eco-School committee meeting, but students would not be very excited if the meetings were always at their break times. This is a problem that almost all schools are struggling with. Some have made bold decisions, such as the Rovastinkangas school in Orivesi, where joining the school's environmental council is one of the electives that students can choose from. Each school class, each autumn, votes for two class representatives to be on the Eco-School committee. The task of the student representatives is to bring the ideas and thoughts of other students to the attention of the adults in the school. Together the committee tries to grasp feasible ideas and solutions to the issues.

In almost all municipalities in Finland, Eco-Schools participation fees are paid from the common budget for basic education, not directly from the budgets of the schools. This is a good incentive to participate in the Eco-Schools programme. Teachers are, however, burdened by the fragmentation of work. Many see environmental issues and sustainable development as just one additional obligation, among other things. While these dilemmas exist, nature schools are great examples of how basic education and early childhood education are supported in Finland in ESD. The nature school is part of the Tampere basic education. There are two environmental educators working at the nature school. There are no full-time pupils/students at the nature school, but the nature school operates as an additional service for Tampere schools and kindergartens, especially in reinforcing the pedagogy of outdoor learning and ESD. Every day, the nature school has different groups visiting Terälahti from other Tampere schools and kindergartens/preschools.

The pedagogy of learning outdoors has a strong connection to environmental education. In both, the emphasis is on strengthening the ecological dimension. The methods also emphasise experientiality and functionality. Students work hands-on. In fact, by searching, researching, and finding themselves students will have a better imprint on the theme of the day. At the same time, the relationship with nature is being strengthened. Studies have also shown that learning in a green natural environment is more effective, whatever the subject is. Teachers also benefit from outdoor-teaching with students, e.g., because of the calming effect of nature and the effects on well-being (Mykrä, 2021).

Key WSA Principles in action at ***Terälahti primary school***

Vision, Ethos, Leadership & Coordination

As a nature-school a holistic integrated approach is central to the school's vision

The school head teacher is hands on and support the teachers to meaningfully integrate sustainability into everyday school practice

Curriculum

The national curriculum provides guidelines, but schools are independent in implementing the objectives of the curriculum through different teaching methods

School arranges elective course for Eco-School pupil members

Pupils have the opportunity to use their course time each week to work on individualised curriculums

The sustainable future and eco-social education are cross-cutting values in Finland's curricula. Therefore, it is easy to organize such courses

Pedagogy & Learning

The pedagogy of learning outdoors helps children to concretize challenges the world carries. In this way, students have better memories of learning and the connection between learning and their own lives

One of the teachers dog acts as a school dog with pedagogical roles in the classroom

Institutional Practices

Outdoor education is a central part of the school's everyday life

Learning from nature is central to the school

The Sustainability Education Development Project supports the change in the operating culture of education and training towards a more ecologically sustainable future

Sorting garbage and saving energy is the minimum that all children and adults should be involved in

Community Connections

A hut in Terälahti school field near to the river and an open shelter with fireplace can be found in the forest serve as meeting and relaxation places for nearby residents and pupils

Capacity building

Many external actors provide training for educators and teachers online on SDG

Strengths/prospects

The curriculum provides guidelines and encourages sustainability education. Teachers can decide the methods independently

Students' enthusiasm to study with diverse learning methods and in learning environment

The power of cooperation. For example, when teachers truly have time to plan together, there is a better chance on success of actions

The municipality allows for independent support. Sometimes financial support, e.g. Green Flag (Eco school) participation fee

Wonderful nature surroundings near the school

Challenges

Teachers are burdened by the fragmentation of work

Schools need the feedback on what they do for ESD. Otherwise, they can think of it as a burden and extra work. That is why sustainable development should also include administration as well as the field workers

Engaging everybody with ESD is a challenge

There is no time resourcing in schools. It is the biggest challenge to the work of ESD

There isn´t enough time to work with the subjects the teachers would rather work with

NORWAY – A UNIVERSITY-SCHOOL PARTNERSHIP ON ESD IN PRACTICE

(This is taken from a case study originally written with Snorre Nordal, Berit Ørjasæter, Ingrid Eikeland and Hans Erik Lefdal, pp. 79-83.)

Norway, a country with a strong tradition of environmental and nature-based education, offers up multiple examples of ESD in practice, yet many schools have not yet integrated ESD into their everyday practice (Andresen et al., 2015). It is arguable that Norway's challenge for some time has been and still is to figure out "[...] how education, schools and policymakers could go beyond successful pilot projects and create the necessary culture of legitimacy, the organisational framework, the competences and the financial mechanisms to ensure that pupils experienced effective ESD" (Sandås, 2018, p. 89). However, today's national curriculum renewal aims to create space for in-depth learning; promote interdisciplinary teaching; introduce students to prevailing societal challenges; foster critical thinking; and form stronger links between the subjects and the core curriculum.

In Viken, a county based in the southeast of Norway, there is a multi-stakeholder partnership which consists of four upper secondary schools (Hvam, Ski, Frogn and Ås – a mixture of academic and vocational courses), the public-school owner (Viken County) and the Norwegian University of Life Sciences (NMBU) Educational Science department. This partnership is a long-term commitment from all stakeholders to develop ways to meaningfully integrate a whole school approach to ESD. The partnership includes researchers and university staff, the school owner (municipality), school leaders and teachers. Furthermore, school students and teacher are involved in various specific projects. The philosophy of the university's Educational Science department is to simultaneously support research, development and competency building.

It is critical that the public funding of the University-School partnership also employs an overarching coordinator (50 per cent position) and one teacher coordinator from each school (20 per cent position). Because of this structure, the schools are supported both internally and externally to make connections and new partnerships (within the university, the municipality, the local community and schools). Although funding plays a key role in executing this multi-stakeholder collaboration, it has been done in a way that can be replicable. The WSA has been an important aspect in the partnership to avoid a compartmentalised approach to ESD that focuses just on curriculum content. To integrate ESD meaningfully in the schools, the

focus is to promote, develop and support integrating ESD into all aspects of the school, not just the classroom.

The four schools involved represent mainstream public schools in Norway that can best be described as approaching ESD somewhere in between the "add-on" and "build-in" stages of integrating sustainability education. For example, many sustainability-orientated education initiatives happening in all the schools, some of which have failed (and therefore a lot to be learned from!), could be described as "add-on" or "build-in" additions to the current curriculum. While ESD-related initiatives had been present in the schools from before the University-School partnership began, early on it became clear that these were mostly related to theoretically learning about ESD and little "ESD" was actually experienced outside of the classroom.

Finding a balance between bottom-up and top-down engagement is also seen as an essential part of engaging with a WSA. Today the University-School partnership sees a commitment to working with sustainability-oriented education in a holistic integrated way present at many levels in all four schools: from the school leaders to engaged teachers, and other key committed staff (such as the school's social workers and school nurse), all of whom have the capacity to facilitate the interconnections needed between the curriculum and institutional practices that are necessary to fully embrace a WSA. The key here is that ownership of these institutional changes can be felt by all staff.

In the table below the key WSA principles in action identified in two of the schools that are a part of the University-School partnership in Viken County are listed. In the following table, the identified strengths and challenges come from all the participating schools.

Key WSA Principles in action at ***Ski and Hvam upper secondary***

Capacity building

ESD competencies at multiple levels (pupils, students, teachers, school leaders, school owners and other university employees) through research and development projects, seminars, meetings, field trips and professional development-courses

Ongoing CPD national remits such as DEKOMP, University Schools, and NMBU's pre-existing teacher training courses, for example their school garden courses are utilised by all schools in this partnership that support different aspects of a WSA

Researchers, teachers, and school leaders are together co-designing how the WSA can be utilised as a thinking tool to support both teaching and school development

Research at the schools is being disseminated both within the schools, and further afield, locally and nationally

Vision, Ethos, Leadership & Coordination

Schools are committed to utilising the WSA as a thinking tool and strategy for school development

Government funding supports ESD coordinators and provides money to support this partnership in various ways

Pedagogy & Learning

Developing interdisciplinary teaching practices is a focus of these four schools with many lessons learned of what hinders and promotes this approach. The outcome of this is key strategies are being developed as to how teachers can be better supported to work in this way

Curriculum

National curriculum renewal gives space for holistic ESD practices to be developed, however at this stage ESD is still very teacher led and it is not yet clear if the exams will fully reflect the curriculum renewal changes

Institutional Practices

Each school has the autonomy to choose their specific focus, for example by creating more sustainable Organic canteens/cafeteria supported by Matvalget and the RØRE project

Hvam Agricultural school provides practical examples of how the schools' on-site greenhouses, stables, barns, workshops and other outdoor areas can be used as sustainable education learning arenas

Energy efficient buildings (new builds and retrofitting)

National certifications such as Miljøfyrtårn, are ways the schools are utilising the campus as a learning arena and learning slowly how they can 'walk the talk'

National clothes swapping day arranged by students and staff

Learning about composting and soil health is established at multiple schools a starting point for sustainability education

Community Connections

Multiple examples of community connections exist throughout each school. For example, students work with and visit local recycling and renewable energy businesses, local assisted living homes, local NGO's and local parks and museums. However, this is the WSA strand that so far is least developed

Strengths/prospects

The collaboration is longitudinal, so that ideas and experiences have room to develop over time

Funding for coordinators is a vital part of this multi-stakeholder partnership

Top-down (regional and national) and bottom-up commitment to long-term developments

Solid connections to NMBU, including embedded researchers and students on teacher training

Collegial partnerships and support between the four NMBU university schools

Professional mentoring from external actors. For example, for Ski School has had support for the cafeteria project from specialists about sustainable food - Matvalget, and health - RØRE

National curriculum renewal (2020), and other national initiatives, like Eco Lighthouse certification and Climate Prize, make room for a WSA to be developed

Challenges

Takes time – while there is a commitment to a WSA, there is still a long way to go to embed a WSA in the whole organisation involving all staff and all student

Challenging to develop ownership among all departments at the school, including non-teaching staff members

Establishing authentic collaborations between the university and schools based on different needs and interests

Funding and human resources - easier to get funds for (and dedicated people to) starting ESD initiatives than for running them long-term

Exams and curriculum mismatch – alternative forms of assessment still holding back ESD being fully embedded

Inconsistencies are still present in terms of sustainable 'actions' and policies not always matching up with what is being taught

A bolt-on approach is still an issue in teaching and sustainability-based projects. For example, admin duties and one-off projects connected to external actor collaborations take time away from creating internal long-term initiatives and changes

Necessary to enhance the teachers' mentoring capacity, and challenging to find good and rational evaluation methods for interdisciplinary projects

NORTHERN IRELAND, UK - SCHOOL - COMMUNITY PARTNERSHIPS IN ACTION

(This is taken from a case study originally written with Sandra Patterson, pp. 93-98.)

Northern Ireland's curriculum (introduced in 2007) covers 12 years of compulsory education. As the Council for the Curriculum, Examinations and Assessment (CCEA) describes:

> *"It's a curriculum that focuses on the learning process and learners' needs, as well as their knowledge, understanding and skills. […] This guidance expands upon the Education (Curriculum Minimum Content) Order (2007 No. 46), by setting out the minimum requirements of the Northern Ireland Curriculum that should be taught at Key Stage 3, with examples, and supplements it by providing a detailed rationale to guide its interpretation. It represents the final approved outcomes of a series of proposals and consultations which informed revisions to the Northern Ireland Curriculum (2006)2. As a result of these each school now has additional flexibility to make decisions about how best to interpret and combine minimum requirements so as to provide a broad and balanced curriculum that will prepare each young person for a rapidly changing world*." (CEA, 2022)

Ulidia Integrated College is situated in Carrickfergus along the rural urban fringe of Belfast. It is an Integrated School, meaning that it educates together students from Protestant, Catholic, other religions and nonreligious backgrounds. The school has been engaged with sustainability-related education since 2007, when the school first engaged with the Eco-Schools programme. The Eco-Schools framework[4] provides a structure that supports the school's decision making and planning. The school has engaged in a range of projects to enhance environmental education and whole school sustainability. This range has been decided by the national focus areas of Eco-Schools and by student interest as time has evolved. Students decide the areas of focus in the school's committee meetings. The school has identified the following vision statement: "Highest standards of global education for all to create tomorrow's sustainable society". This vision has informed planning and decision making throughout the whole school. Environmental education is integrated into the whole school curriculum and is regularly audited to measure coverage. The school also works with other community organisations and other schools to increase engagement and interactions. The vision provides guidance and direction for the school's actions. This vision is reaffirmed every year within the eco-team and displayed prominently in the school.

4. Eco-Schools Northern Ireland. (https://www.eco-schoolsni.org).

Environmental education is fully integrated into the whole school curriculum. However, this is spearheaded by the school, and not through the national curriculum requirements. The school does so through the mapping and mirroring of curriculum links against the Eco-Schools' areas of focus and then uses this to identify any areas of weakness that need to be addressed. This is done collaboratively as a whole school.

In terms of professional development, the school takes advantage of any training available. For example, staff have undertaken UN Climate Change teacher training to gain UN accreditation status, and Global Learning Programme training[5], and some members have taken advantage of carbon literacy training provided by Eco-Schools Northern Ireland. Staff work collaboratively both during the training times and during planning time.

Key WSA Principles in action at ***Ulidia Integrated College (upper-secondary school)***

Vision, Ethos, Leadership & Coordination

Whole school community are part of forming and signing the schools eco-code which is update on a regular basis

Curriculum

ESD mainstreamed in curricula of secondary education schools in Mongolia reaching out to over 500.000 students and 26.000 teachers

School text textbooks and examination formats adjusted and aligned to ESD principles

Pedagogy & Learning

Environmental education has been built into the whole curriculum (teacher lead not national curriculum)

Cross Curricular engagement with environmental education

Institutional Practices

Reducing waste and energy consumption has been a big focus of the school

Sustainable transport is also a key focus which it taught throughout the curriculum and links to community events

Whole school engagements with Eco Code

Community Connections

Costal surveys connected to the local landscape (Carrickfergus Castle) giving the students em-pathy for the local land, wildlife and coastline

Eco-Mentoring programme connects the school's sustainability efforts and students to multiple community organisations and other local schools

National teacher networks used to share ideas

International networks used to develop school pairing projects

Capacity building

Eco-Schools Northern Ireland are a major support

Training is available from multiple providers including Eco Schools NI

Grants are available from multiple providers including Keep NI Beautiful

Strengths/prospects

ESD at the school is supported by teachers and governors as well as teaching staff. This enabled a holistic approach to be taken

Eco Schools NI have been a tower of strength and provided excellent resources and advice over the years, giving many opportunities for developing and expanding ESD

Having local 'sister schools' makes inspiring collaboration opportunities

Not being afraid to lead with passion!

Challenges

A centralised government approach to ESD is lacking and not supportive of a WSA, so top down support from the curriculum is needed

There are always some students who doesn't want to be involved, this is a challenge but shouldn't be a discouragement

There will always be a shortage of time

Financial resources

5. Global Learning case study. (https://www.globallearningni.com/case-studies/ulidia-integrated-college).

SYNTHESIS[6]

The European exemplary cases presented here when reviewed alongside other cases in the report from around the world reveal some striking similarities as well as noticeable differences with regard to the way the schools enact a WSA. The similarities lie in the commitment of staff in providing education that is relevant to the students and today's challenges, but also in practising education that is responsible in its aim to contribute towards a more caring, healthier and sustainable world. Such education typically implies boundary crossing between disciplines, school and community, perspectives, timescales (past-present-future), and spatial scales (local-regional-global). All schools emphasise the importance of students' agency, their ability to make change, and their participation in decision-making. Many of the schools also mention benefiting from a supporting framework and/or network like Eco-Schools.

There are also differences. Some of these are a result of the context in which schools are nested, which varies; from more rural to heavily urbanised; from more privately funded to more publicly funded; from being nested in a healthy policy-environment conducive to a WSA to being deprived of any policy support; some are even hindered by educational policies. Instead, they are working on their own, with support from NGOs, networks and others, relying heavily on internal assistance and the support of the local community. Some schools work on a small scale from the ground up, while others work on a much bigger scale nested in a long school tradition that creates both top-down accountability and bottom-up commitment.

Perhaps a missing strand in the WSA flower is one that refers to the policy environment in which a school is nested. This policy environment can be a barrier or a lever in creating sustainable schools. Efforts can be seen throughout the world in curriculum reforms and school policy changes supporting a WSA. Terms like a Whole Government Approach to Sustainable Development are found beyond educational institutions, such as The European Commission's 2019-2024 policy for the 2030 SDG agenda (European Commission, no date). However, even in countries where the political and policy climate opens for WSA to be realised, many barriers still remain. For example, many schools highlight the constraining effects of a national curriculum, where the focus is on testing and measurement of mainly cognitively oriented learning goals, a culture of accountability, and a lack of time

6. The synthesis is based on Mathie and Wals (2022), which pertains to the non-European schools featured in their report as well. The full report with a more elaborate synthesis is accessible via: (www.wur.nl/wholeschoolapproach).

for experimenting and doing research, to name a few. Figure 4 identifies the type of healthy policies that are identified for enabling a WSA. The case study schools featured have either found ways to overcome such constraints, or they have the fortune of being in a policy environment that encourages multiple forms of learning, engagement in community, doing research as a part of professional development and creating a more localised curriculum.

Figure 4: Healthy policies for enabling a Whole School Approach.

Source: Mathie and Wals, 2022, pp. 102

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