



Article

Differing interpretations of a whole-school approach to education for sustainable development: a horizontal comparison of three Norwegian school cases

Karen Parish

University of Inland Norway

Email: karen.parish@inn.no

Sacha I. de Raaf Kalseth

University of Inland Norway

Email: sacha.deraaf@inn.no

Robert J. Didham

University of Inland Norway

Email: robert.didham@inn.no

Abstract

Within the context of the Norwegian curriculum, the recent curriculum reform - *The Knowledge Promotion Reform 2020*, incorporates the “interdisciplinary themes” – public health and life skills, democracy and citizenship, and sustainable development. This article seeks *firstly*, to gain insights into how three exemplary case studies promote Education Sustainable Development (ESD) adopting a Whole School Approach (WSA) and *secondly*, what the perceptions of school stakeholders are on both enabling factors and challenges to this WSA. These aims are explored using a qualitative approach, and through the purposeful selection of three case-study schools that offer different approaches towards implementing ESD. Findings suggest that school leaders consider ESD to be important, however understandings of ESD still largely lean towards the environmental and social dimensions. Within each school, there is some clarity



©2026 Karen Parish, Sacha I. de Raaf Kalseth, Robert J. Didham. This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.

over the purpose, value, and implementation of ESD, but this is not necessarily shared by all, and each school has a different entry point to a WSA to ESD. The institutional structures and norms of the school still appear to be a challenge in the work towards a WSA. The authors recommend further professional development for in-service teachers/leaders.

Keywords: Education for sustainable development, Whole School Approach, Interdisciplinarity, Case study schools

Introduction

During the United Nations (UN) Decade of Education for Sustainable Development (ESD) – 2005-14, an understanding of ESD as a whole-school approach (WSA) to ESD was linked to the overall quality of education and developing the capacity for life-long learning (UNESCO, 2014). This whole-school perspective draws on diverse forms of knowledge content and pedagogical approaches while framing them through the lens of sustainable development. – In the context of Norway, *The Knowledge Promotion Reform 2020* (LK20) identifies many elements and aspects that are present in a WSA (Ministry of Education and Research, 2017). For example, the core values of education – highlighting human dignity; identity and cultural diversity; critical thinking and ethical awareness; the joy of creating, engagement and the urge to explore; respect for nature and environmental awareness; democracy and participation (Ministry of Education and Research, 2017) – complement the value-basis of ESD and the specific attributes described in SDG target 4.7 (UN General Assembly, 2015). In addition, the pedagogical aspects defined in the curriculum identify many features that are found in a whole-school ESD approach, including active and collaborative learning, as well as the role of social learning and education that engages learners as social actors. LK20 incorporated three “interdisciplinary themes” – public health and life skills, democracy and citizenship, and sustainable development which are integrated across subjects and grade levels, and each theme is designed to contribute to the overarching purpose of education to prepare students for participation in a democratic society, promote well-being, and foster responsible global citizenship (Smeplass, 2025).

Sustainable development as an interdisciplinary theme positions it as a topic that must be addressed from different subjects with a view to “problem-solving across disciplines” (Biseth et al., 2022, p. 2). It is considered that this interdisciplinary approach can respond to societal challenges and is a necessary skill for learners to obtain (Buseth et al., 2025; NOU 2015: 8).

Biseth et al. (2022) argue that meaningfully including interdisciplinarity in teacher education has so far been challenging. Although teacher educators acknowledge the significance of these interdisciplinary themes, they continue with traditional teaching activities and mono-disciplinarity methods remain most prevalent (Biseth et al., 2022). Buseth et al. (2025) argue that there remains a lack of clarity and common

3 A whole school approach to education for sustainable development

understanding about the overall purpose, value and implementation of interdisciplinarity. They argue that teachers are willing and motivated but hindered by a lack of routines and structures to support this work (Buseth et al., 2025). Research also suggests that Norwegian teachers primarily hold an environmental focus to ESD connected to climate change, resource management, etc. rather than on a holistic focus that integrates environmental, social, and economic perspectives (Mellingen, 2024).

The implementation of these interdisciplinary themes remains an ongoing process, as is the coinciding research into this. The authors seek to contribute to this emerging knowledge through examining three purposely selected case studies which incorporate a multi-method approach using in-depth interviews, document analysis and observation. This article seeks *firstly*, to gain insights into how three exemplary case studies promote ESD adopting a WSA and *secondly*, what the perceptions of school stakeholders are on both enabling factors and challenges to this WSA. This research was conducted as part of a larger European project (i.e., Sustain All) that provided a common framework¹ for the selection of case studies (schools) conducted in four different countries. The results of the Norwegian case studies have been re-analysed for the purposes of this article and in relation to the specifics of the Norwegian curriculum.

Whole School Approach to Education for Sustainable Development

A WSA to ESD should be integrated throughout the curriculum rather than only taught in discrete subject areas such as Science (Hargreaves, 2008). Henderson and Tilbury (2004) conducted an early international review of WSAs and models. Notably, most examples placed their primary focus on the environmental dimension of sustainability in the form of eco-schools, enviro-schools and green schools. They also propose five considerations to support the effective operation and management of a WSA; that it is *relevant* to the school, community, stakeholders and national curriculum; *resourced* in relation to ESD; there is an element of critical *reflection* on the part of the school; the school is *responsive* to the changing needs within the community and adapts in line with theory and best practice; and in connection with this, it is able to *reform* in response to these needs and innovations (Henderson & Tilbury, 2004).

More recently, there have been several systematic reviews of WSAs to ESD that highlight different key dimensions and principles for consideration. Mathie and Wals (2022) propose a multi-dimensional “flower

¹[Sustain All]: <https://sustainall.eu/en/>

Common framework for selection of cases: 1) provide primary or secondary education; 2) adopt an all-day schooling approach; 3) embrace a whole-school approach; 4) belong to an eco-school network; 5) develop initiatives with the support and collaboration of school members; 6) have up to one year experience in developing ESD initiatives; and 7) promote the visibility and dissemination of their ESD initiatives. Note: Due to the specifics of the Norwegian school system, whereby all-day schools do not really exist, only Case 2 fulfils criteria 2 (see description of Case 2, page 6).

model” for policies to enable a WSA. oriented around the school’s vision, ethos, leadership and coordination. It includes five key dimensions: *institutional practices* – to create a learning environment for sustainability in practice; *capacity building* – to support professional development of all school staff; *community-connections* – to build strong connections between the school and the wider community; *curriculum* – linked to the design, content and assessment; and *pedagogy and learning* – to facilitate progressive and transformative learning processes. Furthermore, this model integrates five principles of practice: “build upon existing capacities”, “invest in capacity building of all staff in schools”, “de-emphasise testing, control and accountability”, “localised curricula”, and “emphasise socio-emotional learning” (Mathie & Wals, 2022, p. 102).

Gericke and Torbjörnsson (2022) utilised the theoretical framework of four capitals (by Shulman & Shulman, 2009) to examine a selection of case studies from a diverse range of schools working to develop ESD through a WSA. This study examines *moral capital* (i.e., shared vision), *curricular capital* (i.e., strategies for teaching), *technical capacity* (i.e., theory in practice), and *venture capital* (i.e., motivation and commitment). It demonstrates the value in making an inventory of these capitals and examining contextual factors influencing them before initiating a WSA project (Gericke & Torbjörnsson, 2022). While Verhelst et al. (2024) consider the school organisation and how it can utilise an effectiveness approach to support the development of a WSA. They identify sustainable leadership and resources as the foundation of this approach, indicating six additional characteristics that can be used as tools in schools’ development activities. These include *pluralistic communication*, *supportive relations*, *democratic decision-making*, *shared vision*, *adaptability*, and *collective efficacy* (Verhelst et al., 2024, p. 74-5).

Based on a systematic review, Holst et al. (2024) identified five core principles and six action areas. The principles include *coherence*, *continuous learning*, *participation*, *responsibility*, and *long-term commitment*. The action areas include: *participatory and proactive governance*, *ESD in curriculum and learning*, *embedded in community and networks*, *sustainable operations and campus management*, *sustainable capacity building*, and *active communication on sustainability* (Holst et al., 2024).

Examination of WSAs often focus on developing models and frameworks for how they support school development and improvement (Gericke, 2022; Mogren et al., 2019), there are other articles that examine how a WSA impacts on students’ experience and performance. For example, Schröder et al. (2020) examine the impact of student participation; Rončević and Rieckmann (2024) consider the importance of inclusion; Barth et al. (2012) reflects on how a WSA helps in overcoming the knowledge-action gap. Holst et al. (2024, p. 15) highlight, “that the degree to which sustainability is experienced on an everyday basis is of substantial relevance for effective sustainability learning” and underline the importance of, “not just adding

sustainability as another learning content to be conveyed, but to instead practice it on an everyday basis across the different domains of the educational institution”.

Method

Research design

Adopting a qualitative approach, the study uses a multiple ‘horizontal’ case study approach (Bartlett & Vavrus, 2016) to compare and contrast how three different cases (schools) promote ESD adopting a WSA. Case selection was based on an exploratory approach that targeted exemplary cases known by the authors to have a strong focus on ESD (See Footnote 2, page 3 for selection criteria). The intention was to illuminate different WSAs considering the different conditions of three diverse schools. Each selected school was treated as a single, organisational case as the authors sought *firstly*, to gain insights into the WSA to ESD and *secondly*, the perceptions of school stakeholders on both enabling factors and challenges to this WSA. Data collection included document analysis, observation and interviews. Authors 1 and 2 visited each school for a minimum of one day and data collection methods were largely applied in an opportunistic, rather than systematic manner to encourage a natural exchange between researchers and case participants, and to allow the participants to present their own narratives of their experiences and case details.

Ethical considerations

The study was approved by the Norwegian Social Science Data Services (SIKT). We gained informed consent from the participants. Data was made anonymous by using pseudonyms instead of names for identification in the transcripts. A SIKT and university approved app with encrypted online storage of the data was used.

Participants

The authors contacted the school leader of each case school, who acted as the gatekeeper for both interview participants, observations, and some of the documents supplied for the analysis.

Case 1 – A state funded lower secondary school with students between the ages of 13-16. This case identifies sustainable development as a priority area and has adopted a WSA through in-school collaboration and collaboration with external actors.

- S1P1 is the principle
- S1P2 is a teacher of Social Sciences, German language, Physical Education and Physical activity and health
- S1P3 is a teacher of Food and health, Natural science, Mathematics, and Practical Cooking

Case 2 – A state funded primary school with students between the ages of 6-13. The school is part of a separate research project with an All-day approach that is offered to students in grades 1-4. The WSA is visible through the Positive Behaviour, supportive Learning Environment and Interaction (PALS) model², which the school adopted in 2015.

- S2P1 is the principle
- S2P2 is a teacher of Grades 1-4
- S2P3 is a special educator who works with the students in the after-school program
- S2P4 is a classroom assistant in Grades 1-4
- S2P5 is an assistant who works solely on providing different activities and support to some of the weakest pupils and offers courses to parents

Case 3 - A private Steiner school with primary and lower secondary level with students between the ages 6-16. The WSA is visible through the Steiner pedagogy. The school has financial support with 85% of all costs supplemented by the Norwegian government.

- S3P1 is the principle
- S3P2 is a teacher of Grade 1/2
- S3P3 has both an administration position, a teacher of mathematics, and is chairman of the school board
- S3P4 is a civil engineer who owns the local rectory/guest farm, yoga and retreat centre. She collaborates with the school

Methods - procedure

Data was collected during the spring and autumn of 2023 by authors 1 and 2.

Document analysis was based on publicly retrievable documents such as the schools' website, and additional documents shared by respondents.³ Thematic coding was used during the document analysis (Kuckartz, 2014). Prior to the school visits, a first round of document analysis of publicly retrievable documents was completed to gain an overview of each case school. Following the school visits, a second round of document analysis took place based on additional documents and materials shared by the participants to better explore the WSA to ESD presented in the documents.

² PALS is a Norwegian adaptation of the school-wide models for SW_PBIS (School-Wide Positive Behavioural Intervention and Support) developed by the University of Oregon, among others. NUBU has further developed and adapted the model for Norwegian conditions. Text from: <https://www.nubu.no/informasjon-om-pals-modellen/>

³ Documents analysed: Case 1 - many of the projects that are explicitly stated in the Case 1 three-yearly interdisciplinary plan, School development plan 2022-2023, and the school mission statement. Case 2 – School action plan 9A – 2022-2023, School mission/model statement, and the PALS school-wide intervention model. Case 3 - School development plan 2022-2023, and the school mission statement.

During school visits, *naturalistic, unstructured semi-participant observation* (Angrosino, 2007), took place on site in classrooms, in outdoor areas and in after school venues with a key focus on observing adult-learner interactions and learner experiences. Authors 1 and 2 took detailed notes during and directly after observation. For example, observations included spending the day at the whole school annual harvest festival (Case 3), observing a Grade 10 social science class (Case 1), and observing a morning with a Grade 4 class (Case 2).

Semi-structured interviews occurred both in individual and group formats, as well as in person and online. Interviews lasted between 30-60 minutes and were recorded using the *Nettskjema* app, a university approved application with encrypted online storage. Interview questions were formatted with a lead question and follow up questions. For example, *What does ESD mean to you?; What is the importance of the ESD dimensions (environmental, social, economic)?; How do you define student competence for ESD?*

The documents, observation notes, and interview transcripts were analysed by Author 1 using *thematic qualitative text analysis* and NVivo 10 (Kuckartz, 2014). For example, in Case 1 the participants identified challenges to the WSA and these comments were coded under the main code *Challenges*. Following this the comments were further sub-coded, for example, *structures, students, teachers*. Following the coding of the documents, observation notes and the interview transcripts authors 2 and 3 read through the coded data and codes were adjusted based on the shared interpretation (Kuckartz, 2014).

Alignment of cases - The resulting data sets for each case study were further considered to draw out the most relevant and meaningful aspects of each case for presentation in the following section.

Results

The following thematic areas emerged from the data analysis - *ESD mission, Pedagogical approaches, professional development, local actors/community, and challenges*. These are presented respectively and for each case in turn.

Enabling factors to a WSA to ESD

ESD vision – This section presents ways in which a WSA to ESD is enabled through the school mission statement.

Case 1: When asked about *ESD*, the school leader and teachers made particular reference to the UN Sustainable Development Goals and their understanding of these, for example;

ESD ... it is about much more than what we include in sustainable development as an interdisciplinary topic of thinking ... So in a way it will be both public health and coping with life and democracy and citizenship. It's all

about ESD because it's about sustainable lives for the individual student...it's about looking locally, nationally, globally and seeing how the world is actually connected and you can help influence in the most sustainable direction. (S1P1)

This is also reflected in the *Case 1 school mission statement*, where there are references to “*developing knowledge and understanding of the world and Norway's place in it, make ethical and sustainable choices, understand and respect different religious communities and cultures contribute to an inclusive and multicultural society*” (Case 1 mission statement). The conceptualisation of ESD in the vision reflects both the environmental and social dimensions of ESD in particular and elements of the interdisciplinary themes sustainable development and citizenship.

Case 2: The mission statement highlights the focus on creating an inclusive learning environment through a WSA:

Attitudes and values; respect, responsibility and care. Diversity has value, is a strength and a resource. Participation in the school's work and initiatives. Close cooperation between teachers and educational staff. Environmental team with other subject groups in the school. School environment, condition checks, conversations with students and parents, Prioritizing prevention vs. firefighting, Girl and boy groups, School library - a meeting place, School breakfast available for all the school's students. (Case 2 mission statement)

The school leader elaborated on the school mission by explaining it is inspired by Bronfenbrenner's ecological systems theory.

Yes, we talked a lot about the teams around the kids in recent years....It is about school-home cooperation...it is about the relationship in and to the immediate environment, local team activities and participation in other arenas and how the relationships between these different arenas affect children's development. (S2P1)

If you are going to learner level, it is exactly the same. The class must be an inclusive community that includes everyone.... Here, diversity is our resource because we learn from each other and with each other... We value that we are different. (S2P1)

In addition, the school adopt the PALS model which is explained in the *PALS school-wide intervention model*.

PALS is a school-wide intervention model. It consists of systematic and effective prevention measures that focus positive attention on all students. All employees emphasize positive involvement and encouragement, and we must provide predictable reactions to negative behaviour. (PALS school-wide intervention model)

Both the PALS model and the mission statement are aimed at promoting a positive learning environment for all, that focuses on *self-reflection and interpersonal competencies* that are in line with the ESD social dimension.

Case 3: The mission is grounded in Steiner pedagogy, as illustrated by the school mission statement;

Steiner pedagogy aims to awaken and develop the potential of each individual child in a versatile way through a teaching where theoretical, artistic and practical subjects can complement each other. The goal is for the students to develop a creative and pleasurable relationship to their own learning, where they get to play,

9 A whole school approach to education for sustainable development

wonder, enjoy themselves, work thoroughly and have time to immerse themselves and get to make their own mark on what they learn. (Case 3 mission statement)

This is further explained by the teachers;

We are all part of a larger system and must exercise respect towards each other and other animals. Students learn this by examples around them. How does the teacher meet the children, their parents and each other? The care that we show also rubs off on the children. If we see rubbish outside, we pick it up and are good role models for the children. (S3P2)

Largely the focus is on the environment dimension, *“Everything is bought second-hand ... We have also used natural paint and linseed oil paint on the walls. We have chosen to buy organic food, even if this costs more.”* (S3P1)

At the same time, there is also a focus on the social dimension, as expressed by one of the teachers;

We focus on being close to nature and seeing these processes, but we also have a strong focus on safety. The teachers are care workers and no learning or sustainability can take place if the pupils do not feel safe. The classroom environment and the social environment are also important to facilitate good learning. Bullying is dealt with immediately. (S3P3)

Pedagogical approaches – This section presents ways in which a WSA to ESD is enabled through pedagogical approaches.

Case 1: Different pedagogical approaches enable a WSA to ESD, particularly focussing on the environmental dimension. Firstly, the school enables ESD learning through the implemented curriculum and in particular project-based learning. The school has multiple ESD related projects across all grades, as explicitly stated in the *Case 1 three-yearly interdisciplinary plan* and mentioned both in the *School development plan 2022-2023* and discussed in the group interview. These are incorporated into the curriculum as one-off ESD projects, for example, the *‘30-day challenge’*.

We started the 30-day challenge project and found it such a success that we have continued the project several times. The students choose a challenge that they must follow over 30 days. The aim is to develop students that are agents for change towards a more sustainable world. For example, eat vegetarian or only buy used clothes. (S1P1)

The teachers also mention projects related to ESD such as “developing the future of their local city” in which students must consider the needs of people 50 years in the future and think about water, energy and waste disposal and addressing conflicting interests in the town. In another project, the students represent interest groups such as farmers, vegans, local company employees, and they discuss problems in a panel debate with the intention of learning to see problems and solutions from different perspectives. In these examples the focus covers the different dimensions of ESD and are taught in an interdisciplinary way.

Secondly, another example is a WSA to student democracy largely through the work of the student council which has class representatives from each class. Through participation, students play a role in transforming the whole school environment. One student initiative was to hang up posters to promote mental well-being, one aspect of the interdisciplinary theme *public health and life skills*. Another example are *social happenings* organised and open to all students with the aim to provide an inclusive arena for social interaction to promote well-being.

These examples illustrate ways in which the school try to facilitate transformation in the students' learning and to make space for student participation, with a focus on the social and environmental dimensions of ESD and in-line with the interdisciplinary themes. These ideas are often, although not always initiated by the students through the student council and are illustrative of the democratic processes that the school seeks to cultivate, as described the teachers.

If I look at the development of involvement in student councils and how important they themselves feel their voice is, a lot has happened there... They expect participation... they have also learned something about taking responsibility, contributing how they can be involved and change things. (S1P1)

So whilst the focus is largely on projects that enable ESD learning with a focus on the environmental dimension, the school also seeks to cultivate democratic approaches to a WSA to ESD through practical initiatives.

Case 2: Firstly, with a particular focus on the social dimension of ESD, the most unusual (in the context of Norway) aspect that contributes to a WSA is the All-day school approach. Case 2 is a part of an all-day school project seeking to level out the socio-economic disparities in one of Norway's larger cities. This is explained by the school leader; *"It is also about diversity and culture. It is also for the students to be at the school for larger parts of the day. This gives us the opportunity to work with inclusive communities over a longer period of time and have the students together. This is the idea behind the project we are involved in."* (S2P1). They go on to explain that the three interdisciplinary themes are a part of the planning of the all-day school activities;

(We ask) what kind of learning activities can we create to achieve some of these goals (interdisciplinary themes)? That was our starting point and then we started planning the 6th hour. It is linked to the teaching, which takes place for 1-4 hours, so that there is an overall connection to everyday school life. (S2P1)

The students are with their class teacher periods 1-4 and then have lunch, followed by an additional hour that can for example include sport, craft, baking or other activities. These are planned in conjunction with the teacher by a specialised assistant (S2P5) to enable a WSA to both the PALs approach and the interdisciplinary themes.

11 A whole school approach to education for sustainable development

The participants discussed the ways in which they try to promote social transformation through reflection, whilst also acknowledging that they are still working on this

It is very difficult for the students to achieve transformative learning, but we find that the students adjust their own behaviour after they reflect on something that was not right. But otherwise, I would say that we are still in the learning phase here. (S2P2)

This focus on reflection is part of the PALs approach that is integral to the school and wider community. Participants also discuss the way in which the PALs approach to behaviour leadership has created a safe space for transformation.

... that when you have a safe classroom environment, more students will dare to speak their mind and give input into what others think, which will lead to more people taking more perspectives with them, which in turn can lead to transformative learning. The students have worked a lot with argumentative text where they have to dare to say "I mean this" while they know that someone else thinks otherwise. With such activities, there will always be some students who change their opinion, while others stick to their first opinion. (S2P3)

In addition, S2P2 described how after every lunch break the students reflect in plenum if they have observed any positive behaviour, that is specifically in-line with the school behaviour policy (PALs), from their fellow students. When a student identifies a positive behaviour, the class receives a marble. Following the collection of a full jar of marbles the class gets a class party as a reward, as explained by S2P2,

The class party is a double lesson where the students decide the content of the party. They get this when they have obtained a full jar of PALs marbles. This time the students must first think for themselves about what they want to do, then they must go together with their learning partner and talk to him or her, then they must choose two things they liked best, then they must go into groups and talk about the two choices and the group must make a final choice. This way we will end up with 5 choices and the students must then vote on a final choice. (S2P2)

These examples illustrate ways in which the school try to facilitate transformation in the students learning and to make space for student voice, with a particular focus on the social dimensions of ESD.

Secondly, the school enables ESD learning through the implemented curriculum and project-based learning as discussed in the interview Case 2 group interview. The WSA approach to project-based learning is one of flexibility as illustrated by S2P3,

There was a pupil in the class who came from a farm, and we were lucky enough that the whole class could visit the farm. Then the pupils picked up the potatoes from the field and they were introduced to the fact that there are many types of potatoes... Then I had the students in Food and Health The students made dishes from the potatoes they brought from the farm... They also made potato prints and used the potato in many different ways. (S2P3)

Last year we worked a lot with plastic in the sea and in the local environment on the beach. This year we have talked a lot about child labour and had a lot of focus on it. We are working on 19th century projects where we learn about [the local city] in the 19th century and compare [the local city] in the 19th century and now. (S2P2)

These are illustrations of the flexibility in the curriculum to localise initiatives. Another example of a more global project related to ESD is the UN day that they have every year,

It has been different from year to year. Everything from having cafés around the school, to opening school in the evening, to the parents contributing. It is up to each individual class what they want to do.... (S2P2)

Thirdly, in Case 2 the school has ongoing WSA to practical ESD initiatives that promote the environmental dimension of ESD, for example,

But sustainable development for me is also how we manage resources. ... we tend to sort in piles so that we can reuse things. (S2P2)

The student council is a great resource for students to get involved. The students have been concerned about the food that we get and there have been discussions about how we should throw away as little food as possible. The students have come up with concrete proposals... (S2P2)

Whilst the PALs approach creates a very rigid structure to the school's social learning, at the same time the school seeks to cultivate democratic processes through project-based learning and ESD initiatives, with a particular focus on the environmental dimension of ESD.

Case 3: Hands-on engagement with the natural environment is the WSA to ESD learning, "It is natural material that we work with, no learning boards/iPads, outside the areas around the school... We also use stories as a form of learning." (S3P2) This is also shown in the following example, *"In the autumn, the 4th graders will herd sheep, at least 1 sheep, and then they will shear the wool from the sheep, spin it on a reel and weave something out of the wool."* (S3P3). This intentional learning through nature can also be seen in the weekly outings, *"On the tour days, the students walk the same route throughout the year. This is a proven choice so that students can keep up with the changes that the different seasons bring."* (S3P2). In addition, the students spend a good proportion of the day in the school garden where they produce much of the food that they eat.

We have also followed the seeds ... planted and taken pictures from when the pumpkin seed was in the child's hand and was planted in soil, until it started to sprout and grow and they have it on the table to eat... (S3P2)

This is also integrated into the classroom,

...we follow the birds throughout the year and have posters on the wall of the various migratory birds and breeding birds... They have made their own corn buns, carved bird boxes, watched when the migratory birds return ... (S3P2)

Whilst each grade has their own curriculum to follow, the WSA to ESD is enabled through this shared understanding that learning happens in relation to the natural world and practical engagement with it. This WSA is perhaps best illustrated through the whole school autumn festival where the school identifies the practical ways in which they promote ESD,

Autumn festival ... - We celebrate our garden. **4th-6th grade** responsible for harvesting and looking after the garden (the whole-school day). **2nd-3rd grade** are responsible for decorating for the autumn festival - find things in the garden for decoration, fold napkins, set the table. **1st grade** is responsible for cooking the meal -

Warm autumn soup with vegetables from our own garden and Apple cake with cream. Entertainment: All students. (Case 3 - School development plan 2022-202)

Professional development

Case 1: The school leader describes the professional support with a particular focus on the interdisciplinary themes; *“And we have spent a lot of time now in sections to coordinate annual plans in subjects so that there will start to be a connection between annual plans in subjects, the interdisciplinary plans.”* (S1P1) It was acknowledged that this work is on-going and the school is still trying to work out how to implement LK20. The school staff meetings were the primary way in which professional development was integrated, and these meetings happen in planning days at the start of the academic year and on specific days throughout the year.

Case 2: The school leader describes the professional support with a particular focus on the interdisciplinary themes and all-day school;

That is what we started with when we had to plan the new school year in August with an extended school day... We took learning activities as a starting point from the interdisciplinary themes ... Public health and life management and Democracy and citizenship, all of them together with Sustainable Development.... (S2P1)

The school staff meetings were the primary way in which professional development was integrated, and these meetings happen in planning days at the start of the academic year and on specific days throughout the year.

Case 3: As a new school (one-year old), the professional development was an ongoing process, however, no specific systems or structures were in place for this development work.

Local actors/community - connections between the school and the wider community

Case 1: During the group interview, participants listed a large number of external actors/companies that they collaborate with. These contacts are used in relation to different ESD projects that the school has explicitly stated in the documents analysed (Case 1 three-yearly interdisciplinary plan, School development plan 2022-2023). What is apparent is that the external actors/companies contribute to the project-based learning approaches taken by the school. However, what is not clear from the data is the ways in which these collaborations contribute to either a WSA to ESD or to the efforts to work in an interdisciplinary way.

Case 2: During the interviews, strong collaboration is mentioned as a way in which the wider community and the school collaborate, including two yearly meetings and communication through the school platform with parents. An important part of this collaboration is the promotion of the PALs approach as stated by S2P2, *“We have parent meetings twice a year. Then you take up what are the focus areas. The website is an*

important external channel for updating parents. The parents are also part of PALS.” To promote inclusion, the school also invites mothers from multilingual families to meet at the school to make food and build relations. To facilitate communication, they employ interpreters. This also helps the families to be better acquainted with the school and its approach. “They prepared food, and an interpreter was ordered for those who needed this. S2P5, who has the main responsibility for PALS, led these meetings. Through cooking and eating afterwards, they were able to discuss many things about how the school works.” (S2P4).

An example of this targeted work with community connections is language. Due to the use of bad language amongst the students, the school used the PALs positive language approach, extending this to the local sporting clubs, activity providers, parents, etc. to ensure the work continued in the wider school community. S2P2 stated that “... in this way we have transferred information that also strengthens the sports environment to support the students to continue to build on the competence and skills also outside the confines of the school. This is extremely important with this link in relation to education for sustainable development.” The focus here is on the social dimension of ESD.

The school also has links with the local government who “... see this as a prestigious project, so they want to see that the project is successful and that means they invest a lot of time, effort and money in this.” (S2P1). The local municipality provides the financial framework for the all-day school project and the university based in this city is also working on a research project linked directly to this.

Case 3: During the group interview, participants discussed the school’s close connection with the parents who were influential in the starting up of the school and who are a part of the local community known as the ‘Eco village’. “We have a close collaboration with parents and require hard work from this group as well.” (S3P3). In addition, the school is planning to contribute to the development of a cultural garden in collaboration with the owner (S3P1). The school also plans “... to make an agreement with the organisation ‘household crafts’ to come ... and teach the students to spin wool.” (S3P1) These community connections are closely connected to the environmental dimension of ESD with a focus on local impact.

Challenges - Perceived challenges to a WSA to ESD.

Whilst all three cases presented many positive elements to their WSA to ESD, at the same time Case 1 and Case 2 were very open about their perceptions of challenges that they face.

Case 1: The interview participants particularly refer to the challenges of working in an interdisciplinary way with the three themes Public Health and Life skills, Democracy and Citizenship, and Sustainable Development. The school is in the second year of the three-year plan, and they say that it is a bit messy and that some of the subject teachers are reluctant to work in an interdisciplinary way. S1P3 “...explains that

they face resistance from certain people at [the school] when it comes to interdisciplinary work. These people believe that if they don't get their lessons, that the students don't learn anything." However, S1P3 also explains how they have tried to solve this,

"... that within the teams there is great disagreement and this can lead to the implementation not being as good as it could have been. Therefore, they have agreed in the planning that they have changed the groups to a maximum of 3 people (one from each team's group) who are responsible..."

These individuals then have responsibility to plan these teaching events/activities and communicate the plan to the other teachers in the team. It can be argued that whilst the school attempted to solve this challenge, what they have done is remove the problem by reducing the number of people who must work together to create interdisciplinarity. Is this then a WSA, if not everyone is involved or supportive?

Case 2: Whilst stakeholders saw the benefits of the all-day school, this approach requires additional teachers for those extra hours added on to the school day. This can be a challenge as teachers do not want to work these extra hours, *"One thing is that more [teacher] resources are needed...But if you go into the teaching profession here and ask if anyone wants it, you would probably get a flat no from most people."* (S3P4). Now the school solves this by employing an assistant. Additionally, there is a challenge with finding the connection between what happens with the classroom teacher and in the final hour of school with the assistant, *"So, the whole school works continuously and sometimes we get it done and other times we don't quite see the connection between the school hours and the 6th hour."* (S2P1-Interview). Again, it can be argued that it is not a WSA when there are colleagues who are not committed to the school vision.

Discussion

Firstly, we discuss the insights into the WSA to ESD taken by the three cases. Secondly, we discuss the perceptions of school stakeholders on both enabling factors and challenges to this WSA.

WSA to ESD: In each case, the ESD school mission statements are institutionally grounded in school planning documents/ development plans, the perceptions shared in the interviews, and observations made by the authors. The school mission statements offer *coherence* to the school community (Holst et al., 2024; Mathie & Wals, 2022). In each case, the *moral capital* (shared vision) (Gericke & Torbjörnsson, 2022) prioritises different dimensions with different entry points to interpreting LK20. In Case 1, the focus is mainly on the environmental dimension of ESD and is largely enabled through the interdisciplinary themes and projects that are often in collaboration with external actors in the local community. Whereas the social dimension is largely built into the school practices and often student council led, supporting the democratic processes in the school. Whereas in Case 2 the social dimension is prioritised and enabled through a shared vision of adopting the PALs approach, and through strong focus on community collaboration and an

extended school day. However, Case 2 also incorporates the interdisciplinary themes and supports project work with a focus on the environmental dimension. Case 3 is institutionally grounded in the Steiner pedagogical approach and with a priority on the environmental dimension, which is enabled through a shared vision of learning in and through the natural world. However, Case 3 also seeks to enable a school environment in which the social dimension of ESD is promoted.

The data suggest that in each case there is an intention to promote a WSA to ESD that is *relevant* to the school, community, stakeholders and national curriculum; *resourced* to some extent with professional development time allocated; and that there is an element of *reflection* on the part of the school over their own progress with the interdisciplinary themes (Henderson & Tilbury, 2004). So, whilst there appears to be a genuine intention to adopt a WSA, at the same time the opportunity for *responsive* development and ongoing *reform* are somewhat limited by the challenges discussed below.

Additionally, whilst the cases presented here highlight democratic processes, it can be argued that participation does not include all members of the school community, but rather those who choose to engage themselves, particularly with regards to teachers in Cases 1 and 2. It could therefore be suggested that *democratic decision-making* is limited to a few (although with student council, arguably they represent the many) and this can be a hindrance to a truly *shared vision* for ESD (Verhelst et al., 2024, p. 74-5).

Perceptions of school stakeholders on both enabling factors and challenges to this: The implementation of these WSA approaches to ESD is enabled through a commitment by school leaders to *capacity building* (Mathie & Wals, 2022) by prioritising time for planning and professional development at school staff meetings and planning. This is particularly mentioned in Case 1 and 2, and rather implicitly implied in Case 3. However, at the same time there is a limit to how much time school leaders can allocate to this work and creating space for *continuous learning* and *long-term commitment* can be challenging when schools have many professional demands placed on them (Holst et al., 2024). Additionally, in each case there is a connection to *community-connections* (Mathie & Wals, 2022) and *continuous learning* is achieved in the sense that each school has set out to undertake a collective development project that engages with staff, students, parents and other stakeholders in a *participatory* way (Holst et al., 2024). The community-based and collaborative approach facilitated in each of these cases is key to creating processes of social learning which is enabled when learning communities develop a sense of belonging, commonality, situatedness, and interdependence and are supported by an infrastructure for participation and accountability (Didham & Ofei-Manu, 2015; 2017).

In each case there is also an element of transformative learning as the schools seek to enable students to reflect over their own behaviour and learning, albeit with different prioritisation. Two key factors present in

each case are that a level autonomy is transferred to the students for being *responsible* for their own learning, and the students work together collaboratively to create new knowledge through investigation, action and reflection (Holst et al., 2024). A key shift in perspective that facilitates the WSA is the move from the role of the teacher as a “teacher of content” to a “facilitator of learning” (Mathie & Wals, 2022, p. 57) and each of the cases were working towards this to some extent, at least with those who were interviewed. This is evident in the *curricular capital* (strategies for teaching) (Gericke & Torbjörnsson, 2022) and particularly a focus on project-based learning in each of the cases that represents a move away from knowledge as a finite commodity towards approaches for collaborative knowledge generation, and in fact also addresses the power relationships between teachers and students and between different students in a manner that supports more democratic processes of learning.

All three cases also adopted a localised curricula approach, working in the communities surrounding the school to promote ESD that was of relevance. An optimal starting point in the process of sustainability learning is to work with localised issues and real-world topics, and to utilise open questions that stimulate student-led processes of inquiry (Mathie & Wals, 2022). Through project-based learning (Case 1), focus on the students’ role in developing an inclusive and effective learning environment (Case 2), and through experiential learning and outdoor education (Case 3), each case presents a different pedagogical focus in how they achieve this important construct of a WSA.

However, the school stakeholders also identified challenges to a WSA to ESD. Both Case 1 and Case 2 mention the challenge of getting everyone on board. In Case 1, this is largely related to working in interdisciplinary teams, when teachers are used to working only within their discrete subject area (Biseth, et al., 2022). Whilst these cases are exemplary in the context of Norway, the challenge of getting whole school support remains. In Case 2, the issue surrounds the extended school day with teachers not wanting to add to their workload, leading to a disconnect between what is happening with the class teacher and the assistant. Case 3 did not explicitly identify any challenges, but as a new school that has been set-up at the request of the local community and employing teachers trained in Steiner pedagogy, they are perhaps able to avoid conflicts of interest and institutional challenges at this point.

Mathie and Wals (2022) recognise the importance of, “continuous or frequent dialogue between different stakeholders” to realise a WSA to ESD and the need for an introspective process to “unlearn”, to create a transition in the school, and to regenerate school-community relations (p. 56). “[A] WSA demands involvement of all parts of schools and stakeholders in the society to expose students to real sustainability issues” (Gericke, 2022, p. 153). This process is something all three cases are working towards and yet something that they acknowledge is a challenge.

Conclusion

In the context of Norway, this article sought firstly, to gain insights into how three exemplary case studies promote ESD adopting a WSA and secondly, what the perceptions of school stakeholders are on both enabling factors and challenges to this WSA.

Limitation of the research design include, a small selection of cases and participants, preventing us from generalising these results beyond the individual cases and those who participated in the data collection. However, the intention of this study was to purposely select cases known for their strong ESD promotion and to better understand what enables them to do this and the challenges they face.

In future studies, we recommend exploring ESD with a more specific focus on the formulations in LK20 (Ministry of Education and Research, 2017). It would be beneficial to better understand how schools have incorporated the “interdisciplinary themes” after multiple years. Longitudinal studies to follow the processes schools go through when implementing and integrating ESD practices would allow for a better understanding of the enabling factors and barriers they experience. Finally, the voice of the pupils, and how they perceive their own learning, is absent in this article.

What is apparent from these case studies is that leaders consider ESD to be important, however, their understanding of what ESD is still largely leans towards the environmental and social dimensions, as supported by the literature (Mellingen, 2024). Within each school, there is some sense of clarity over the overall purpose, value and implementation of ESD, but at the same time this is not necessarily shared by all in schools 1 and 2, and each school has a different entry point to a WSA to ESD (Buseth et al., 2025). The institutional structures and norms of the school such as number of hours teachers work, challenges of working in discrete disciplines, etc. still appear to be a challenge in the work towards a WSA (Buseth et al., 2025). Based on the findings of this study, the authors ask if there is enough support and guidance for school leaders and teachers to equip them to implement these curriculum guidelines or is too much left to the discretion and motivation of individuals? The authors recommend further professional development for in-service school leaders/teachers to support them in their work with ESD and the LK20 interdisciplinary themes.

Availability of data and material

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

References

- Angrosino, M.V. (2007). *Naturalistic Observation*. Routledge. <https://doi.org/10.4324/9781315423616>
- Bartlett, L., & Vavrus, F. (2016). *Rethinking case study research: A comparative approach*. Routledge.
- Bianchi, G., Pisiotis, U. & Cabrera, M. (2022). *GreenComp. The European sustainability competence framework*. Publications Office of the European Union. <https://doi.org/10.2760/13286>
- Biseth, H., Svenkerud, S. W., Magerøy, S. M., & Rubilar, K. H. (2022). Relevant transformative teacher education for future generations. *Frontiers in Education*, 7. <https://doi.org/10.3389/feduc.2022.806495>
- Buseth, J. T., Didham, R. J., Høvik, K. Ø., Martinsen, M., & Øyehaug, A. B. (2025). Exploring teacher educators' views on interdisciplinary teaching: a cross-disciplinary study of interdisciplinarity for sustainability education. *Acta Didactica Norden*, 19(2). <https://doi.org/10.5617/adno.11405>
- Didham, R. J., & Ofei-Manu, P. (2015). Social learning for sustainability: Advancing community-based inquiry and collaborative learning for sustainable lifestyles. In *Responsible living: Concepts, education and future perspectives* (pp. 233-252). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-15305-6_15
- Didham, R. J., Ofei-Manu, P., & Nagareo, M. (2017). Social learning as a key factor in sustainability transitions: The case of Okayama City. *International Review of Education*, 63, 829–846. <https://doi.org/10.1007/s11159-017-9682-x>
- Gericke, N. (2022). Implementation of Education for Sustainable Development through a WSA. In Güliz Karaarslan-Semiz (Ed.), *Education for Sustainable Development in Primary and Secondary Schools: Pedagogical and Practical Approaches for Teachers* (pp. 153-166). Springer International Publishing. https://doi.org/10.1007/978-3-031-09112-4_11
- Gericke, N., & Torbjörnsson, T. (2022). Identifying capital for school improvement: recommendations for a whole school approach to ESD implementation. *Environmental education research*, 28(6), 803-825. <https://doi.org/10.1080/13504622.2022.2045256>
- Hargreaves, L. G. (2008). The whole-school approach to education for sustainable development: From pilot projects to systemic change. *Policy & Practice: A Development Education Review*, 6, 69-74.
- Henderson, K., & Tilbury, D. (2004). *Whole-school approaches to sustainability: An international review of sustainable school programs*. Australian Research Institute in Education for Sustainability (ARIES), Macquarie University.
- Holst, J., Grund, J., & Brock, A. (2024). Whole Institution Approach: measurable and highly effective in empowering learners and educators for sustainability. *Sustainability Science*, 19, 1359-1376. <https://doi.org/10.1007/s11625-024-01506-5>
- Kuckartz, U. (2014). *Qualitative text analysis: A guide to methods, practice and using software*. Sage. <https://doi.org/10.4135/9781446288719>
- Mathie, R. G., & Wals, A. E. J. (2022). *WSAes to sustainability: Exemplary practices from around the world*. Wageningen University. <https://doi.org/10.18174/566782>
- Mellingen, Ø. K. (2024). "Because they have technology": A comparative study of sustainable development discourses among secondary school teachers in Tanzania and Norway. *Nordic Journal of Comparative and International Education (NJCIE)*, 8(2). <https://doi.org/10.7577/njie.5627>
- Ministry of Education and Research. (2017). *Core curriculum – values and principles for primary and secondary education*. Laid down by Royal decree. The National curriculum for the Knowledge Promotion 2020. <https://www.regjeringen.no/contentassets/53d21ea2bc3a4202b86b83cfe82da93e/core-curriculum.pdf>

- Mogren, A., Gericke, N., & Scherp, H. Å. (2019). Whole school approaches to education for sustainable development: A model that links to school improvement. *Environmental education research*, 25(4), 508-531. <https://doi.org/10.1080/13504622.2018.1455074>
- NOU 2015: 8. (2015). *The School of the Future: Renewal of subjects and competences*. The Ministry of Education and Research. <https://www.regjeringen.no/en/dokumenter/nou-2015-8/id2417001/>
- Rončević, K., & Rieckmann, M. (2024). How can a whole school approach to sustainability be inclusive to all learners?. In *Whole school approaches to sustainability: Education renewal in times of distress* (pp. 121-135). Springer International Publishing. https://doi.org/10.1007/978-3-031-56172-6_8
- Schröder, L. M. U., Wals, A. E., & Van Koppen, C. S. A. (2020). Analysing the state of student participation in two Eco-Schools using Engeström's Second Generation Activity Systems Model. *Environmental Education Research*, 26(8), 1088-1111. <https://doi.org/10.1080/13504622.2020.1779186>
- Shulman, L. S., & Shulman, J. H. (2009). How and what teachers learn: A shifting perspective. *Journal of Education*, 189(1-2), 1-8. <https://doi.org/10.1177/002205740918900102>
- Smeplass, E. (2025). Status, Trends and Issues of Education for Sustainable Development (ESD) in Norway. In Y.-F. Lee & L.-S. Lee (Eds.), *Status, Trends and Issues of Education for Sustainable Development (ESD) in Highly Competitive Countries: Country Reports and International Comparison* (pp. 277-326). Technological and Vocational Education Research Center (TVERC), National Taiwan, Normal University, Taiwan.
- UNESCO. (2014). *Shaping the Future We Want: UN Decade of Education for Sustainable Development (2005-2014) - Final Report*. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000230171>
- United Nations General Assembly. (2015, September 25). *Transforming our world: The 2030 agenda for sustainable development (A/RES/70/1)*. <https://docs.un.org/A/RES/70/1>
- Verhelst, D., Mogren, A., Boeve-de Pauw, J., & Van Petegem, P. (2024). Getting to a whole school approach: lessons from school effectiveness and school improvement in ESD research. In *Whole School Approaches to Sustainability: Education Renewal in Times of Distress* (pp. 71-86). Springer International Publishing. https://doi.org/10.1007/978-3-031-56172-6_5