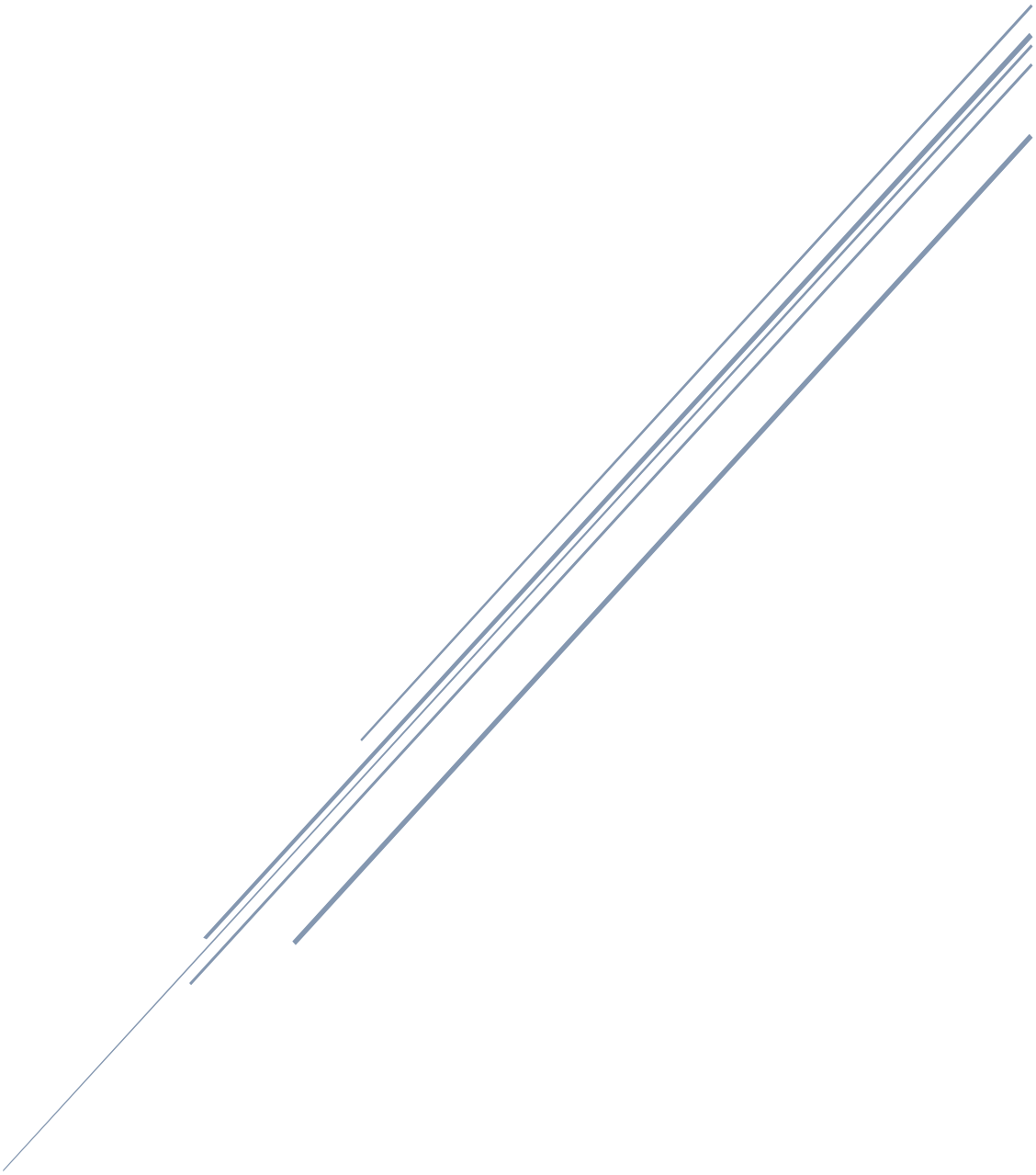
ESD:SUPERVISION 4.0 - TEACHER TRAINING MANUAL



Education for Sustainable Development SuperVision 4.0

Kofinanziert von der Europäischen Union

Erasmus+
Enriching lives, opening minds.

This project has been funded with support from the European Commission (Erasmus+). The document reflects the views only of the ESD:SuperVision 4.0 team and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Project partner consortium:
Casa Corpului Didactic Dambovita
Daugavpils Universitāte
Daugavpils Valsts gimnazija
Integrierte Gesamtschule Oyten
Italian Association for Sustainability Science
RCE Oldenburger Muensterland e.V.
Scoala Gimnaziala Buciumeni
University of Edinburgh
Univerzita Karlova
University of Vechta
Vytauto Didziojo Universitetas

Schools, training institutions and universities are well placed to engage with pupils, parents, and the wider community on the changes needed for a successful transition."
The European Green Deal (EU, 2019)

To encourage learners to become change agents who have the knowledge, means, willingness and courage to take transformative action for sustainable development, learning institutions need, themselves, to be transformed.
UNESCO, 2020

This Manual is the result of nearly three years of work on the Erasmus + "ESD_SuperVision 4.0" project building on the experience of the piloting of a teacher training programme for Education for Sustrainable Development (ESD) supervisors as well as the ERASMUS+ project MetESD (https://metesd.eu/).
The aim of this manual is to provide goals, principles, as well as evidence and tools for developing a teacher training programme on Education for Sustainable Development (ESD), based on the Whole School Approach (WSA). In particular, the manual suggests key elements to be included in advanced training to enable educators, school advisors, school administrators, school officials and teachers to initiate, support and implement an internal school change process in order to mainstream ESD throughout all aspects of school life.
Today, there are already numerous projects and initiatives on ESD in schools. Almost all European countries consider ESD as an important cross-curricular task of the school and in some countries ESD is also supported and made binding by national curriculum recommendations. Often, however, many initiatives and projects are not structurally and systematically implemented in schools and themes related to the UN Sustainable Development Goals (SDGs) are not permanently integrated in existing curricula.

Teachers and school staff play a fundamental role and for this reason their training has a strategic function to support a process of change. Teachers and school staff's professional development in ESD therefore plays a key part in helping to prepare students for the environmental, economic and social challenges the world faces.

This Manual presents a training proposal for the professionalisation of all school stakeholders; it is therefore relevant for anyone who teaches, supports learning, or works in staff development in schools. At the heart of the programme is the integration of Education for Sustainable Development into the school curriculum through the training of "supervisors" capable not only of transforming their own teaching, but also of playing a leading role in supporting the necessary change within the school as a whole system responsible for students' learning.

The training programme presented here is modular. It is intended to support the design of a school's-internal training processes (in-house-training), backed by rigorous self-assessment and training needs analysis, as well as a training offer for teacher training institutes or for integration into study courses for teachers.

The name of the project "ESD SuperVision 4.0' says it all. The training programme presented is intended to qualify teachers and educators for ESD in the sense of supervision. **Supervision** is a process in which an experienced person supports, advises, and accompanies another person or a group of persons. The training programme presented here, allows teachers and school's staff to create a structured space in which they can discuss their professional practice, challenges, questions and reflections regarding ESD in a collegial manner.

The supervisor acts as an experienced and qualified person who helps supervisees reflect on their work, gain new perspectives, improve their skills, and find solutions to professional problems. The focus is on enhancing the professional development and competences of teachers and school's staff as well as aligning their school practice and curriculum with ESD.

Supervision also provides an opportunity to talk about personal reactions, emotions, and dynamics in the work environment. It is important to note that supervision is, anyway, different from therapy or coaching in that its primary focus is on professional practice and development within an organisation, whereas therapy and coaching may focus more on personal or individual challenges.

In the title of the project "ESD SuperVision 4.0" the emphasis is also on the term **Vision**.
Developing vision in professional practice means having a clear vision or overarching goal for the future and sharing that goal with others, inspiring them to participate and work together towards it. This follows certain key principles:

1. Clarity: teachers should be empowered to develop a clear and coherent vision that is easily understood. The vision should include both the goals and the path to achieving those goals.

2. Inspiration: the training enables participants to inspire and motivate others by sharing their vision and conveying a passion for it.

3. Systems thinking: working with vision involves thinking with long-term perspectives. By applying systems thinking, individuals and organisations can better understand complex problems, identify unintended consequences, anticipate system behaviour, and develop more effective and sustainable solutions. It promotes a holistic perspective that goes beyond linear thinking and encourages a more comprehensive approach to addressing challenges in various domains, such as business, environment, healthcare, and social systems.

4. Innovation: encouraging teachers and educators to look for new ideas and solutions and fostering a culture of learning to achieve their vision.

5. Participation: the participation and collaboration of all in the school community is at the centre of the training. Methods are taught to involve the entire staff in decision-making processes and thus promote commitment and ownership.

6. Adaptability: Developing visions in a school requires flexibility and adaptability in order to face new challenges.

The attribute **"4.0"** added in the project name "ESD SuperVision 4.0", recalls the term Society 4.0, which refers to a future stage of development of society characterised by the extensive use of technology and digital transformation. The term builds on the concept of Industry 4.0, which describes the fourth industrial revolution through the integration of digital technologies into production processes. However, Society 4.0 goes beyond the industrial sphere to encompass social, ecological, economic and cultural spheres.

Here are some key characteristics often associated with Society 4.0:

1. Digitalization: digitalization is a fundamental aspect of Society 4.0., so long as there is widespread networking of devices, data, and processes. Digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), Big Data, cloud computing and robotics play a central role.

2 Automation and artificial intelligence: in Society 4.0, many tasks will be automated and taken over by machines or artificial intelligence systems. This can lead to efficiency gains and

productivity increases, but also has an impact on the labour market and requires an adjustment of people's skills and competences.

3. Networking and social media: the networking of people via social media and other online platforms is playing an ever-greater role in Society 4.0.; communication, interaction, and collaboration are increasingly taking place digitally and globally.

4. Knowledge society and lifelong learning: in Society 4.0, lifelong learning is of great importance.

5. Sustainability and resource efficiency: Society 4.0 strives for sustainable development in which technology is used to reduce environmental impact and use resources more efficiently. However, in addition to sustainable production, knowledge, skills and attitudes for responsible consumption and sustainable living must also be included.

That is why we focus on transformative education in the advanced training "ESD Supervision 4.0". Education is understood as "transformative" when it is not just about an increase in knowledge or skills, but about a fundamental qualitative change in views of self and the world. This is about learned patterns of thinking, feeling, and acting, about habitual evaluations and social models, norms, and values by which we orient ourselves. For example, it is about our relationship to other people and to the natural world;our understanding of social power relations and of global justice; our visions of alternative lifestyles, and how we see ourselves when we work towards a sustainable society.
In a narrower sense, transformative education is education towards ‘the great transformation’. This is momentous because it makes us more responsive to discourses of power, inequality, and justice in a Society 4.0.

In brief, this Manual provides a vision of education for the future that is competence based and provides opportunities for active involvement of students in a supportive environment. The training programme that follows is structured in such a way that the participants acquire the necessary skills and tools that have proven to be effective based on knowledge from theory, research and practice in organisational development, didactics, ESD, network work, change management and systemic advice.

The Manual contains 4 chapters pertaining to various aspects of professional development of teachers as ESD supervisors:
Chapter 1 Prerequisites for change deals with main prerequisites for change and how these should guide re-orientation of teacher training towards ESD. Teacher training (initial and continuos professional development) is considered strategically to ensure transformative impact on the school system.

Chapter 2 Education for the future –a training programme for ESD supervisors illustrates the teacher training structure implemented during the ESD SuVi 4.0 Project, in coherence with the competence framework outlined in the project (IO1: ESD curriculum framework). The training programme is divided into six modules and for each module the learning outcomes, methods and contents are specified.
Chapter 3 Evaluation tools to support the ESD teacher training, self-assessment and whole school change presents a proposal for an evaluation framework aimed to support the ESD supervisiors training programme and the implementation of the whole school approach to ESD and that can be used by teachers, principals and school administrative staff also as a self-assessment tool.

Finally, **Chapter 4 Lessons learned and recommendations,** highlights the main lessons learned and some key recommendations that emerged on how to design and implement effective training experiences for ESD Supervisors

Annexes complete the manual, providing detailed information about ESD competence frameworks for educators and tools piloted within the project.

1. Prerequisites for change

According to the UNESCO documents, educational systems should prepare a better future for our societies and in this regard, they should be transformed. Key actors in this transformation are teachers, who are not yet prepared for this task. Whether education processes and educational institutions as such can become more oriented to sustainability depends on the knowledge, competences, attitudes and values of educators, but also on their interaction with institutional frameworks and curricular structure. This is confirmed by recent ongoing literature debate about result-oriented models and core competences for teachers. As pointed out in the recent paper *Transforming Teaching, Learning, and Assessment. A Global Paradigm Shift* (Marope, Griffin, Gallagher, n.d.) «The success of competence-based curricula relies in part on the recognition of the role of teachers as co-designers and co-developers of curricula» (Marope, Griffin, Gallagher, n.d.:17).
Therefore, teacher training (initial and continuous professional development) becomes strategic, since it impacts on the school system as a whole and fosters processes of change by influencing both top-down processes (strategies, measures, guidelines) and bottom-up processes (school engagement and teacher agency).

Although it is broadly recognised that for the successful adoption and implementation of ESD, support of teachers is a crucial prerequisite (UNESCO 2014), even today, efforts to prepare teachers to implement ESD have not advanced far enough. Further work is needed to reorient teacher training towards ESD in terms of both content and teaching and learning methods.

1.1. Whole school approach

Priority action areas of the Global Action Program (UNESCO *Global Action Programme on Education for Sustainable Development* (2015-2019),UNESCO, 2020) stress the importance of taking 5 steps towards integrating ESD in school curricula. One of them, the Whole School Approach, has been recognised in many international documents as a strategic tool for structurally integrating ESD in schools.
The Whole School Approach[1] (WSA) requires not only the reorientation of teaching content and methodology, but also infrastructure management that is in line with sustainable development as well as the cooperation of the institution with stakeholders in the community. The United Nations Economic Commission for Europe (UNECE) stimulated the whole institution approach based on the ESD School Planning (UNECE, 2014) document as a precondition to efficient implementation of the UNECE ESD Strategy (UNECE, 2005).

[1] **Whole School Approach** involves addressing the needs of learners, staff and the wider community, not only within the curriculum, but across the whole-school and learning environment. It implies collective and collaborative action in and by a school community to improve student learning, behaviour and wellbeing, and the conditions that support these. http://www.ibe.unesco.org/en/glossary-curriculum-terminology

Recent UNESCO documents, such as *Education for sustainable development: A roadmap* (UNESCO, 2020), *Berlin Declaration on Education for Sustainable Development* (2021) and the *Input Paper: A Whole School Approach to Learning for Environmental Sustainability* (EC, 2022) confirm the relevance of the whole-institution strategy for ESD:

«The aim is to establish a culture of sustainability across the school thus extending the contribution of individual champion teachers who are seen to be engaging in islands of good practice. Instead, a whole school approach brings environmental sustainability to the heart of the school, college or university and provides a space for living sustainabily» (EC, 2022: 8). It aims to integrate sustainability issues, structurally and coherently, into the school organisation leading pupils to "learn what they live, and live what they learn".

The whole institutional approach thus involves rethinking the curriculum[2], operations, organisational culture, learner participation, leadership and management, community relations, and networking. In this way, the institution itself is perceived holistically, and plays a role as a model for the learners.

The WSA change process at school level should be carried out systematically and practically, in order to establish (and sustain in the long term) an environment that promotes transformative education. To this end, in the schools should be qualified "ESD teachers" with a role of "ESD School Supervisors". These professionals have to be able to initiate and to support a change process for the implementation of ESD in school curricula, in their own school (in-house training), but also in other schools as external supervisors.

Teacher training programmes aiming to create "ESD School Supervisors" should, therefore, be structured around whole institutional approaches: this is the underlying methodological idea which guided the design and implementation of the ESD_SuVi teacher training proposal.

1.2. ESD supervisors' competences

In order to perform their role as "ESD supervisors" educators should be able to motivate, empower and guide learners to transform themselves and society, they should acquire not only competences for sustainable development as defined for learners in IO1 (see Annex 1 in IO1). In addition, they need to develop the so-called 'ESD competences' for implementing an ESD curriculum through action-oriented pedagogical practices and act as facilitators of learning and of change, as well as improving their own school context. This requires deep transformations in the management of teaching, learning and assessment processes and these are changes that also require a strong commitment and capacity for action. Moreover, learning based on societal challenges and local contexts requires cooperation with external partners (e.g., academics, private sector, and civil society). In this context, Rieckman and Barth (2022) underline that educators are «powerful agents for change, delivering the educational response required to achieve sustainable development in general and the Sustainable Development Goals (SDGs) in particular » (UNESCO 2017).

A number of frameworks of educators' competences in ESD have been elaborated and are currently available for structuring training for educators. Key examples include the CSCT model (Curriculum, Sustainable development, Competences, Teacher training) (Sleurs, 2008), the UNECE model (UNECE, 2012), the KOM-BiNE model (Kompetenzen für Bildung zur nachhaltigen

[2] See ESD_SuVi IO1: "ESD Curriculum Framework for School Development in Europe"

Entwicklung; Competences for ESD in Teacher Education) (Rauch and Steiner, 2013) and the RSP model (Rounder Sense of Purpose) (Vare et al., 2019) – in more detail see Annex 1.
A comparison of the above examples allows us to identify 9 common areas of competences that educators and teachers should develop to be able to perform the role of ESD supervisor and integrate ESD into a school's practice. According to the frequency in which they are mentioned, such competences are:

- **disciplinary and, interdisciplinary competence**, which consists of possessing knowledge on sustainability related topics, being able to use knowledge and methods from different disciplines and to work with experts from other disciplines;
- **cognitive competence** (including, system thinking and complexity, critical thinking and problem-solving) which is the ability to take different perspectives, evaluating information and making sense of the world as an interconnected whole;
- **interpersonal competence**, which is the ability to motivate, enable and facilitate collaborative and participatory learning activities;
- **anticipatory competence,** which is the ability to collectively analyse, evaluate, and craft rich ''pictures'' (simulations, forecasts, scenarios, and visions) of the future of sustainability issues and anticipate how sustainability action plans might play out in the future (if implemented);
- **emotional intelligence**, which is the ability to monitor one's own emotions and other's feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions;
- **action competence,** which is the ability to take action at the individual and collective level to shape sustainable futures and demand action from those responsible to make change happen;
- **normative competence**, which is the ability to collectively map, specify, apply, reconcile, and negotiate sustainability values, principles, goals, and targets;
- **intra-personal competence**, which is the ability to avoid personal health challenges and burnout in advancing sustainability transformations through resilience-oriented self-care (awareness and self-regulation); and
  innovation competence, the ability to experiment with new ways of doing things and solving problems.

The above areas of professional competence are consistent with the transformative education approach advocated in recent UNESCO documents and pedagogical literature. Transformative education involves teaching and learning in order to motivate and empower learners to make informed decisions and actions at the individual, community and global levels[3]. At the same time, these professional competences are essential to support transformative learning that goes beyond the acquisition of skills and knowledge, to support students to develop critical and action skills in relation to their own life contexts[4].

In this context, it is evident that ESD curricula require an action-oriented transformative pedagogy (Lozano, Berreiro-Gen 2021; Rickman 2018; UNESCO 2017). Teachers need to have a clear vision and be able to ensure learner centredness, to maintain a focus on action and reflection, to apply methods supporting discovery learning and problem-based learning. This means that the focus of teaching has to shift from content/subject related learning to methods-based learning oriented to achieve learning objectives.
A real barrier to the use of effective pedagogical approaches that could support implementation of ESD competence-based curricula comes from educational systems in some EU countries which do not adequately support teacher professionalism.

[3] https://www.unesco.org/en/articles/five-questions-transformative-education

[4] https://www.switch-asia.eu/site/assets/files/3599/bhutan_recommendations.pdf

Therefore, adequate teacher training becomes fundamental, not only to "know" innovative methods that support the development of sustainable development competences, but, above all, being able to manage them in teaching-learning processes. Hand-on experience of these methods allows teachers to understand their educational value in promoting learning. The possibility of experimenting with alternative methods during training therefore acquires a value of meta-cognition: the teacher not only knows new approaches and new teaching techniques (See Chap. 2), but also understands their effectiveness in supporting the development of learners' ESD competences.

The next chapter introduces a programme for ESD_Supervisors training. The training programme aims to support teachers, educators to perform their function as ESD supervisors for supporting students to acquire the competences for sustainable development which have been described in the ESD_SuVi curriculum frame (IO1).

2. Education for the future –a training programme for ESD supervisors

Against the background of the comparisons of different competence models, three types of competence were distinguished in the model on which the ESD-SuperVision 4.0 training concept described below is based (cognitive, social-emotional and action competence), which in turn relate to four dimensions of learning (learning to learn; learning to live together; learning to be and learning to do).

Three key abilities were assigned to each of these competences (see table 1 in this document and ESD-SuVi curriculum frame-IO1), which should and can be practised in the individual training modules.

Dimension of learning	Key abilities
Cognitive (Learning to learn)	Systems thinking Critical thinking **Innovative decision**
Personal(social-emotional) (Learning to live together)	Communication Collaboration **Solidarity**
Personal (social-emotional) (Learning to be)	Reflexivity Value-orientation **Responsibility**

Behavioural (Learning to do)	Exploring alternative futures Making innovative decisions Taking **Transformative action**

Table 1: ESD SuperVision 4.0 Competence grid

The individual key abilities must be specified in relation to the content. In the ESD SuperVision 4.0 training concept, the 12 key abilities are generally understood as follows:

Cognitive dimension:
Critical thinking means questioning and evaluating ideas, solutions, norms and practices. Furthermore, the participants of the training could identify strengths and weaknesses of evidence, arguments, claims and beliefs. They can reflect on one's values, perceptions and actions and take a position in the sustainability discourse according to the context.

Systems thinking means to recognize and understand relationships and their interdependence. Participants can analyse complex systems, research how systems are embedded within different fields and different scales. This support the ability to deal with uncertainty.

Creative thinking means to approach a problem or challenge from a new perspective, alternative angle, or with an atypical mind-set ("think outside the box").

Personal dimension:
Communication as a key ability means to communicate respectfully and constructively in different environments (including multicultural). The participants use multiple media and technologies as well as networking tools. They are able to express and understand different viewpoints, being tolerant and prepared both to overcome prejudices and to compromise.

Collaboration as a key ability means to identify team members and stakeholders and their interests. Participants are motivated to facilitate participatory decision making and commitment for implementation. They work effectively in diverse teams by distributing responsibilities and leadership; exercise negotiation and consensus building in conflict resolution.

Solidarity as a key ability means to understand and respect the different values, needs and perspectives of individuals and groups. The participants can debate and explore equity and justice in resolving dilemmas and conflicts.

Reflexivity as a key ability means to reflect on one's own role in the local community and (global) society. The participants can deal with one's feelings and desires with empathy.

Value-orientation as a key ability means to identify and clarify values, understand and reflect on the norms and values that underlie one's actions. The participants can negotiate sustainability values, principles, goals, and targets as well as make appropriate decisions and judgments, and act in accordance with such judgements.

Responsibility as a key ability means to promote and support human rights, social and cultural diversity, and to take responsibility for the environment. The participants are able to evaluate the consequences of their own actions and of collective actions. They can handle obstacles and change, and participate in civic and social life

Behavioural dimension:

Exploring alternative futures means to understand and judge multiple futures (possible, probable and desirable; future) and create one's own visions for the future.

Making innovative decisions means to search new information, design and evaluate scientific inquiry within complex systems. The participants can develop new knowledge, insights, ideas, techniques, strategies and solutions, and apply them in real-life situations. They are able to make informed decisions based on data and evidence, scientific arguments and value clarification.

Taking transformative action means to apply different approaches to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development. The participants can collaboratively plan, mobilise resources (people and things) and implement innovative actions that further sustainability at the local or regional level.

Teaching key abilities in the breadth and depth described seems like overkill in the context of an advanced training program. However, we assume that the participants of the ESD SuperVision 4.0 training offer already have many of these competences, so that the competences related to sustainable development only need to be deepened and supplemented. Here it is important that training providers adapt the modules described below to the initial situation of the participants.
The ESD SuperVision 4.0 training concept is based on six modules, the contents of which can be taught within half a day (4-6 hours). However, the contents can also be elaborated in a more differentiated and extensive manner within the framework of one to two-day seminars.

Module 1	ESD - Fundamentals - learning for transformation
Module 2	Systems thinking - learning for the future
Module 3	ESD - Curriculum - learning and teaching
Module 4	ESD - Curriculum – Whole School Approach
Module 5	ESD – Curriculum – Learning and assessment
Module 6	Networking schools on ESD

Module 1
ESD – FUNDAMENTALS

Learning outcomes
At the end of Module 1, participants

- have acquired a basic understanding of sustainability, including global challenges, sustainable development goals, and the links between individual actions and global impacts.
- will know how to integrate sustainability into schools by promoting sustainable education and awareness, incorporating sustainability into the curriculum or school culture.

At the end of module 2, participants can:

- Describe actors, approaches, concepts and strategies of Education for Sustainability.
- Analyse the challenges and good practices for environmental, social, cultural, political and economic sustainability in a global context.
- Analyse and reflect on the different dimensions of sustainability in their own individual and professional environment.

Duration
3-4 hours

Content
As an introduction to the topic of ESD, the 2030 Agenda with its 17 Sustainable Development Goals is briefly introduced.
In addition to environmental and climate-related issues, this module also addresses global learning topics such as fair trade, environmental education, intercultural competence and empathy. Depending on the target group of the ESD training (according to the needs of the participants in early childhood, general, vocational, higher education, or adult education), some selected ESD topics can be deepened.
At the beginning, a common understanding of the terms "education for sustainable development" as well as "sustainability" is created with the participants by collecting terms from the participants that build on their knowledge, values, and experiences. These definitions are then compared with selected definitions from the global discourse.

1. introduction to sustainability
   - Definition and meaning of sustainability.
   - Global challenges and sustainable development goals (SDGs) and ESD for 2030 Roadmap
   - Dimensions of sustainable development (ecological, social, economic, cultural and political)
2. sustainability skills in everyday life
   - Sustainable consumption and lifestyle
   - Resource and energy efficiency
   - Waste avoidance and recycling
   - Sustainable mobility and transport
3. sustainability in education
   - Sustainable education and awareness
   - Integration of sustainability into the curriculum and everyday school life
4. sustainability in communities and local contexts
   - School and Community-based projects and initiatives
   - School and Community participation and collaboration
5. sustainability in politics and society
   - Give students a voice - Advocacy and political engagement for sustainability.
   - Sustainability communications and campaigns

- Collaboration with interest groups and stakeholders

Proven methods:

- Expert lectures and presentations on the various sustainability topics
- Group work and discussions to co-develop approaches to solutions.
- Case studies and practical examples from different areas of sustainability
- Interactive exercises and simulations to strengthen understanding and action skills.
- Reflection rounds and exchange of experiences to deepen what has been learned.

Method 1 Introduction to the topic Education for Sustainable Development
Method 2 The Global Perspective: Why is it important?
Method 3 Establishing points of reference to one's own (professional) everyday life.
Method 4 How sustainability can look like in (professional) everyday life.
Method 5 Good Practice ESD-Gallery Walk

Alternative methods
Method: World-Café
Method: Walk and Talk

Module 2
Systems thinking and future learning

Learning Outcomes
At the end of Module 2, participants will be able to:

- develop an understanding of complex systems: The seminar aims to provide participants with a basic understanding of what constitutes complex systems and how they work. It will help them to recognize and understand the interactions, interdependencies, and feedback effects in such systems.
- encourage thinking in context: The seminar is designed to enable participants to move beyond linear thinking and recognize interrelationships and interactions between different elements of a system. The goal is to promote holistic thinking and encourage participants to view problems and situations from a holistic perspective.
- analyse and solve complex problems: The seminar is designed to provide participants with tools and methods of systems thinking to analyse complex problems and develop innovative solutions. They should be able to identify the cause-effect relationships and feedback loops in a system and thus target the crucial points.
- enable application in practice: The seminar will provide participants with concrete tools, methods, and practices of systems thinking in schools. The goal is to give them the tools they need to solve complex problems, make decisions, and effectively implement change in their school or classroom.

Duration
3-6 hours

Content

The seminar offers a mix of theoretical knowledge and practical exercises to provide participants with a solid understanding of Systems Thinking. The interactive design of the seminar gives participants the opportunity to contribute their own knowledge and experience and learn from each other.

1 Introduction to Systems Thinking
- What is Systems Thinking?
- Why is Systems Thinking important in a complex world?
- Examples of the application of Systems Thinking in schools.

2. basic principles of Systems Thinking
- Interconnectedness: the importance of interdependencies and interactions in systems.
- Feedback Loops: Positive and negative feedback effects and their implications.
- Emergence: how emergent properties arise in complex systems.

3. thinking in systems
- Defining system boundaries and visualising systems.
- Cause-effect analysis and causal loop diagrams.
- Identifying feedback loops and leverage points.

4. dynamics in systems
- Understand and predict changes in the system.
- Identifying delays and feedback loops.
- Dealing with unanticipated consequences and non-linear behaviour.

5. implementation of systems thinking
- Integrating Systems Thinking into the school day.
- Resources and tools for further learning and application.

Proven Methods

1. Cause and effect diagrams: Also known as Ishikawa diagrams or fishbone diagrams, cause-effect diagrams help identify the root causes of a particular problem or situation. They visualise the different causes and show the relationships between them.
2. Scenario analysis: scenario analysis involves developing various future scenarios to examine potential developments and impacts on the system. It helps evaluate opportunities, risks, and courses of action in different environments and supports strategic decision-making.
3. Stakeholder analysis: stakeholder analysis aims to identify the different interest groups or actors that are affected by a system. By analysing the interests, needs, and relationships of the stakeholders, a better understanding of the system and potential conflicts or synergies can be gained.

Alternative methods

The seminar can also be modelled after Peter Senge's concept (Peter Senge (1990) The Fifth Discipline: The art and practice of the learning organisation, Doubleday, New York.; Senge (1994) The Fifth Discipline Fieldbook; Senge (1999) The Dance of Change) and include the following methods:

1. Causal loop diagrams (CLDs): Causal Loop Diagrams are visual representations of feedback loops in a system. They help to understand the interactions and feedback effects between the different elements of a system. CLDs show the connections between cause and effect and allow analysis of dynamic changes in the system.
2. System archetypes: System archetypes are recurring patterns of behaviour in systems. They help to identify and understand typical behaviours and structures in complex

systems. By identifying system archetypes, potential problems and possible solutions can be identified.
3. System dynamics: The system dynamics methodology uses computer-based models to simulate the behaviour of complex systems over time. These models capture the dynamics and interactions within the system and allow testing of different scenarios and their effects.
4. U-method based on Otto Scharmer's U-theory:

The following modules 3-5 refer to the curriculum framework developed in the ERASMUS+ project "ESD Supervision 4.0", as illustrated in IO1.

Module 3
ESD-curriculum development and competences

Learning Outcomes
At the end of Module 3, participants will deepen and focusing following skills:

1. Subject matter expertise: to develop a quality curriculum, it is important to have sound subject matter expertise in the relevant subjects. This includes a solid understanding of subject content, current developments and didactic approaches.
2. Pedagogical competence: school and curriculum development require knowledge and skills in pedagogy. This includes an understanding of learning theories, teaching and learning methods, individual learning needs, and evaluation methods.

Duration
3-6 hours

Content
The module aims to develop an understanding of ESD in curriculum development, to examine examples of ESD in practice from different European countries, to explore opportunities for embedding ESD specific to the individual school context and to explore how to make connections between different areas of learning using ESD themes.

The seminar on curriculum development focuses on ESD related pedagogies (real-world learning; problem-oriented learning etc.) and aims to provide participants with the necessary knowledge, skills and tools to design a contemporary and future-oriented ESD-based curriculum. Innovative didactic methods and approaches are explored to make the learning process more effective, interactive and motivating.

- Introduction to ESD didactic approaches
- Definition and meaning of ESD didactics
- Current trends and developments in education
- Role of the teacher as a learning activator and facilitator (Hattie (2012)

1. Competence-oriented curriculum development

- Basics of competence-oriented education
- Identification of key competences for sustainable development
- Integration of competences into the curriculum

2. Active and self-directed learning
- Methods of action-oriented and experiential learning
- Promotion of self-reflection and problem-solving skills

3. Digitization in the classroom
- Use of digital media and tools in the curriculum
- Integration of e-learning, online resources and virtual learning environments
- Promotion of media competence and critical use of digital content

4. Cooperative learning and teamwork
- Methods of group work and cooperation in the classroom
- Preparing a group work environment
- Cooperation with external, local stakeholders, partners and experts

5. Individualization and differentiation in the classroom
- Consideration of different learning needs and styles
- Adapting the curriculum to the diversity of learners
- Use of differentiated tasks and support measures

Proven Methods

· Expert lectures and presentations on ESD related didactical approaches
· Group work and discussions for joint development of curriculum concepts
· Practical exercises and case studies on the application of ESD related methods
· Presentations and exchange of best practices from the field
· Reflection sessions and feedback for personal and professional development

Alternative methods

· planning and reflecting on teaching units (lessons) based on a specific ESD-related didactic concept

Module 4
ESD-curriculum development and whole school approach (WSA)

Learning Outcomes

At the end of Module 3, participants will deepen and focusing the following skills:

1. Analytical skills: careful analysis is required to identify student needs and adapt curriculum accordingly. Analytical skills help to collect relevant data, interpret it, and make decisions based on it.
2. Creativity and innovation skills: school and curriculum development require creative and innovative approaches to meet the changing demands and needs of learners. The ability to generate new ideas, combine different methods, and develop new approaches is essential.
3. Communication and collaboration skills: collaboration with various stakeholders, such as teachers, students, parents, and school administrators, is an essential part of school and curriculum development. Good communication and collaboration skills are necessary to share information, receive feedback, and achieve common goals.
4. Reflective skills: the ability to self-reflect and continuously improve is important in adapting curriculum to meet the needs of students. It is important to evaluate the success and effectiveness of the curriculum and make adjustments based on that evaluation.

5. Knowledge of legal and policy frameworks: School and curriculum development must be consistent with the legal and policy framework of the educational system and local circumstances.

These skills are necessary to develop an effective curriculum that meets the needs of learners. It is important to note that school and curriculum development is an ongoing process that requires continuous training and development.

Duration
3-6 hours

Content
The ESD Curriculum Development module aims to provide participants with the necessary knowledge, skills and tools to develop an effective and forward-looking whole-school concept. It is designed to help schools formulate a clear vision and strategic goals for their educational work and anchor them in an ESD school curriculum. It is based on the whole-school-approach.

1. Introduction to curriculum development
   - Definition and meaning of a school curriculum
   - Basics of the whole school approach (strategic planning process)
2. Analysis of the current situation
   - Inventory of the school: strengths, weaknesses, opportunities, challenges
   - Involvement of relevant stakeholders (teachers, students, parents, administration) in the analysis process
   - Data collection methods and tools
3. Develop vision and goals
   - Identify the school's core values and educational philosophy.
   - Develop a shared vision for ESD
   - Formulation of clear, measurable and achievable goals and objectives
4. Strategies and action planning
   - Identification of strategic priorities and areas of action
   - Development of concrete strategies and measures to implement the goals
   - Integration of innovative approaches, technologies and methods
5. Implementation and monitoring (detailed in Module 5)
   - Resource planning and management
   - Definition of responsibilities and tasks
   - Implementation of the school program in everyday school life
   - Monitoring and evaluation of progress
6. Communication and participation
   - Communication strategies to inform and involve all stakeholders
   - Creating an open and participatory culture
   - Involving students, parents, and community in the development process
7. Sustainability and further development
   - Integration of the ESD curriculum into long-term school development
   - Creation of mechanisms for sustainability and further development

Proven Methods
- Presentations and lectures to convey theoretical knowledge.
- Brainstorming and discussion sessions to generate ideas together
- Practical exercises to develop visions, goals and strategies
- Reflection and feedback rounds for continuous improvement

Alternative methods

- Case Study work and reflection of best practice (flagship projects)

Module 5
ESD curriculum development - Critical reflection and assessment of ESD school programs, curricula and syllabuses

Learning outcomes

At the end of Module 3, participants will be able to:

- analyse a progressive, SDG-related approach to curricula design
- contrast this approach with their own teaching experience and curricula
- reflect and assess this approach as a stimulus to design potential own projects

Duration

3-6 hours

Content

The module aims to present concepts on evaluation and further development of the ESD-curriculum. It provides tools on formative and summative evaluation of curriculum content and methods. It should be shown how to establish a feedback culture and enable continuous improvement. The module works out how schools can adapt to current developments, challenges and needs of staff, students, parents and community.

The module is based on the “critical friends” concept. The Critical Friends method is a collaborative feedback method often used in educational contexts, especially in school and classroom development. It offers participants the opportunity to receive constructive feedback and gain new perspectives on their work by colleagues from other schools.

The module consisted of two parts, a presentation of the school’s programme and a workshop session. The main objective of the presentation is to embed the ESD-implementing approach of teaching into a general approach of school development. During the workshop teachers and students of the school explain and discuss exemplary curricula, syllabuses and methods with the participants.

Presentation:

- Basic ideas of the didactic and pedagogical objectives of the school’s programme
- Explanation and exemplification of these basic ideas
- Explanation and exemplification of objectives of school and curricula development

Workshop: Groups are constituted depending on the number of participants. The participants are invited to choose the topic of the workshop they want to participate in. In each workshop one teacher and several students describes the objectives and the contents. The students are very important because they give first person impressions.

Proven methods:

Method: **Critical Friends Conference**

Critical assessment of progressive, SDG-implementing school programs, curricula and syllabuses

- Aim

In order to reflect and change mostly subjective attitudes it is important to get to know and assess new approaches to be able to reflect on one's own routine of teaching

- Time required

90 minutes

- Materials

- Students (not considered as material!) with first-person impressions
- Short version of a syllabus or a curriculum

- Process

- Short presentation of the basic ideas
- Discussion between participants, students and teacher

Alternative methods:

Method: Critical Friends Visit

Visiting progressive schools which implemented ESD as a Whole-School-Approach in programmes, curricula and syllabuses

Aim

The aim of this approach goes beyond the aim of method 1 'Critical Friends Conference' because the participants have the opportunity to get a direct and close impression of the new teaching approach. They also have various ways to talk to teachers and students.

Time required

1 – 2 days

- Process

- Short presentation of the school
- Visiting teaching sessions

Observations by the critical friends

- Reflexion with teachers and students

The Process of the Critical Friends Method in general:

- Goal Setting: Participants work together to determine the goals and focus of the feedback. This may include, for example, reviewing and refining instructional materials, pedagogical approaches, or projects.
- Forming feedback groups: Participants are divided into small groups in which they will receive and provide feedback.
- Presentation of Work: Each participant will present their work, whether it is a teaching concept, project idea, or other educational material. This includes presentation of objectives, background information, and specific questions or challenges.
- Feedback round: The group members give feedback on the presented work. In doing so, they follow agreed feedback rules that promote constructive and respectful exchange. Feedback can be oral or written.
- Reflection and discussion: The reflection and discussion allow for different perspectives to be considered and new ideas to be generated.

Conclusion and summary: At the end of the feedback process, each participant summarizes key findings and recommendations. This allows for clear feedback and supports reflection on one's own development process.

Advantages of the Critical Friends Method:

- Constructive feedback: the method allows participants to receive qualified and –
- constructive feedback to improve their work and adopt new perspectives.
- Diverse perspectives: By working with individuals from different backgrounds and experiences, participants gain a variety of perspectives and ideas.
- Collaborative learning: the method promotes shared learning and sharing of best practices among participants.
- Supportive environment: the Critical Friends method creates a supportive and respectful environment in which participants can openly present their work and receive feedback.
- Reflection and development: The method supports reflection on one's own work, promotes further development of skills and enables the identification of opportunities for improvement.

Module 6
Networking school on ESD – a tool for developing the quality of schools

Learning outcomes

At the end of Module 6, participants will be able to:

- understand school networks as social networks.
- explain networks in terms of organizational theory.
- determine criteria for the quality and functionality of networks.
- analyse and evaluate networks.
- consider specific characteristics for school networks.
- implement school networks for ESD in the region.

Duration

3-6 hours

Content

Networks initially start with an idea or a problem that moves someone. Then like-minded people are sought out and meetings are arranged. The actors are independent of each other, but their interactions are mutually dependent, and they take the interests of their partners into account because this enables them to achieve a certain goal or carry out an innovative project that they would not be able to realise on their own with their limited resources. As simple as this sounds, it is significant for the development of networks.

"Networks thus fulfil two functions that no other form of coordination of actions can provide in this form:

- They reduce uncertainty about the behaviour of other actors, e.g., competitors, partners, etc. (strategic function)
- They enable an increase in performance, i.e., an increase in one's own output (instrumental function)"

Against this background, theoretical basics of networks as a form of organisation are taught. Practical examples are used to illustrate internal school networks, school networks and regional networks in which formal and informal educational institutions as well as regional actors cooperate.
On the basis of 5 criteria, the requirements for the design and operation of networks are explained: Networks require
- relationship work
- clear and binding working structures
- places for joint learning
- external support
- evaluation and reflection on oneself.

To understand and improve networks, formal network analysis is introduced. Formal network analysis is an empirical tool that is implemented in a simplified way for this seminar in order to evaluate school networks.

Finally, six success factors are presented that summarise the contents of the seminar.
1. common understanding and common goals
2. motivation
3. network management
4. cooperation
5. functionality
6. sustainability

In practical exercises (sociometry) the understanding of networks is deepened and linked to the concept of ESD.

Proven methods

Formal Network Analysis
Sociometry

3. Evaluation tools to support ESD_teacher training, self-assessment and whole school change

To develop ESD competences in schools implies promoting innovation as an important and ambitious goal: it requires the teachers and administrative staff involved to "know how" to ensure a global and substantial transformative impact in the school.
The proposal for an advanced teacher training course outlined in chapter 2 aims to support the development of this "knowing how" in teachers and administrative staff so that they are able to perform their role as ESD supervisors.

In this chapter an Evaluation Framework is illustrated which can support implementation of the whole school approach to ESD and that can also be used by teachers and school administrative staff as a self-assessment tool. This Framework aims to support evaluation of the training programme for ESD supervisors, not only to assess **its** effectiveness, but also to support professional development of teachers and accompany self-evaluation processes which can be carried out by training participants and other relevant stakeholders within the school context. It is therefore an integrative part of the formative development process.

Adapted from UNESCO 2018[5], this approach is based on an evaluation framework as part of the ESD integration cycle.

The observer stage can help with conducting the evaluation of ESD integration as well as to assess the ESD competences of teachers and administrative staff involved.

To ensure an impact in terms of holistic vision and whole school approach to ESD, it is considered useful to implement an **observe and reflect stage**, allowing schools to acquire elements/information on the current situation and to identify those elements that need to be improved so as to produce change. The observe and reflect phase (observation and evaluation of school context) should be implemented mid-term so as to allow observation and assessment of the school context with more awareness and collect, in a more effective way, critical elements that need to be improved for fostering transformation in the school.

In this way, teachers and school staff have the opportunity to firstly familiarise themselves with the requirements of a whole-institution-approach and to reflect on appropriate process-related tools, didactical material, new and participatory methods that could be applied in their school as well as in classroom settings to address the needs of change for implementing ESD in their schools.
This allows evaluation of the impact, or the contribution that the ESD_teacher training programme could generate in terms of change, and to assess to what extent the participation in the course has facilitated this process as well as their professionalisation.

This approach which considers the evaluation as part of the training itself is consistent with the ESD Integration Cycle proposed by UNESCO (UNESCO 2018), that states that:
«ESD Integration needs to be effective through identifying content that develops knowledge, skills and attitudes, via teaching and learning approaches that are appropriate for the specific learners and their local contexts and relevant to current policy frameworks. These ESD integration efforts need to be mainstreamed within both the institution demonstrating a commitment to transformation, and a curriculum that continues to be adaptable to the dynamic context of change».

[5] https://esdteachers.bangkok.unesco.org/?page_id=78

Therefore, the Evaluation Framework described here aims to provide a set of significant elements/indicators capable of offering guidance on what a school should do to strengthen awareness about the key dimensions of an ESD whole school approach, and to describehow to foster its implementation.
The Evaluation Framework includes the following tools: questionnaire (See Annex 2), in-depth interviews and focus group
Some of these tools have been piloted within the ESD_SuVi project (see Annex 3 and Annex 4).

The **questionnaire** (Annex 2) is divided into three sections:

Section 1 is a re-elaboration of "Tool 5: School and Community Evaluation Tool" proposed by UNESCO for the evaluation of the whole system approach to ESD. It is designed to identify key areas of ESD - including policy and infrastructure, curriculum, cultural, environmental and economic aspects. This can help to gain a better understanding and appreciation of the role of context in integrating ESD in teaching and learning practice and better understand the specific situation and needs on which the training should have impact. This section intends to provide empirical indications of teachers' and staff perceptions about their school in terms of the key dimensions of an ESD whole school approach, and the importance assigned to: holistic vision, routines and structures, professional knowledge creation, and practical pedagogical work;

Section 2 is based on an evaluation checklist that aims to detect ESD integration regarding the 6 dimensions proposed by UNESCO for an integrated approach to ESD in educational institutions. In particular, it aims to detect the perception of the participants to the teacher training on the effectiveness of the course in terms of improvement of their professionalism with respect to the identified dimensions.

Section 3 takes into consideration that involved teachers, teacher educators and school management are required to be trained and prepared for facilitating ESD curriculum development and the necessary change processes. Therefore, this section aims to identify possible challenges and further training needs which may emerge in a first piloting of the training and that could be addressed in further editions of the course. The aim is to address those factors that will have been identified as possible obstacles to the development of an ESD whole school approach in their schools.

Suggestions and recommendations are sought on how the training proposal could be improved.The reflections stimulated by the responses to the questionnaire are designed to allow a logical analysis based on criteria and concepts on which the questionnaire has been constructed, therefore identifying lessons learned from course implementation.

The questionnaire also seeks "to measure"/assess the level of ESD integration in respondents' schools and to be relevant to support "Supervisors" in making improvements towards ESD in their own schools (but also in other schools).

In-depth interviews
'Triangulation' is introduced in the proposed evaluation approach of the ESD- teacher training, with the aim of collecting the point of view from "external" stakeholders and identifying additional areas of improvement. In-depth interviews can be carried out with key actors selected from the Ministry of Education/Environment, Universities, teacher training institutes or other organisations that carry out teacher training. Criteria for selection includes their knowledge/ experience in

planning/outlining/organising/carrying out/reflecting on ESD professional development courses for teachers.

Before being interviewed these selected people should be given a short description of the ESD teacher training being piloted, with its structure and modules and be asked to provide their observations, recommendations and suggestions.
The method suggested for implementing this triangulation is unstructured interviews aiming to highlight strengths, weaknesses, opportunities, and threats (e.g. swot analysis approach) of ESD-teacher training, based on the experience of those nterviewed.
This triangulation could also be achieved through unstructured interviews with principals and teachers not involved in the training, always with the aim of highlighting strengths, weaknesses, opportunities, and threats of the ESD- teacher training, based on the experience of those interviewed.
Both options are valid for implementing triangulation but of course provide different type of data.

Guiding questions for in-depth interviews have been elaborated and tested within the ESD_SuVi project. The results of piloting one of these demonstrated the effectiveness of these "tools" for activating processes of reflection and self-evaluation and for developing awareness of specific training and professional development needs (see Annex 4).

Focus Groups carried out at community level, representa methodological opportunity to address the objectives of the assessment, consistent with the overall approach of any training initiative, namely:
- involve the various stakeholders in the evaluation process,
- bring out strengths and weaknesses through a bottom-up and participatory process,
- detect elements for setting up improvement actions that are shared and functional to offer answers to the needs expressed.

Use of Focus Group also makes it possible to raise awareness and encourage commitment by the institutions. In order to guarantee coherence in the assessment approach, and effective links with the questionnaire, the focus groups should consider the main elements that emerged in the survey conducted through the questionnaire and prompt the participants to reflect on those elements.

4. Lessons learned and recommendations

A number of key elements for delineating a model of training ESD supervisors and providing a school environment that enables a whole institution approach to ESD can be derived from the ESD_SuVi experience.

In particular, the piloting of the training activity and its assessment, together with the teacher training needs' survey conducted in partner countries (see chap. 3 and Annex 3) allowed better understanding of the main training needs a programme for ESD Supervisors should address.
The training needs analysis indicated that a ESD supervisor training program should support teachers and school staff to:

- Design and implement interdisciplinary activities that will transform the traditional school curriculum.
- Build experiential learning environments that engage students in real world problems.

- Make better use of teaching methods and techniques for conducting effective ESD activities and assessment of learning outcomes
- Promote students' development of sustainability awareness and sense of responsibility.
- Facilitate access to and participation in ESD opportunities already present and offered by the school.
- Foster cooperation between educational institutions and local government
- Promote stakeholders' engagement in integrated training activities related to sustainability issues
- Promote dialogue with local governments to develop consistent and integrated practices between educational institutions and communities
- Develop a comprehensive ecological approach with respect to the integration of care/efficiency of school facilities and the environmental impacts, resource use, and energy issues.
- Improve the use of financial resources for the development of sustainable practices (e.g., recycling collection), but also for the energy efficiency of school facilities
- Promote the development of students' awareness regarding financial management and decision-making processes of the educational institution.
- Promote the development of students' awareness and agency regarding financial management and decision-making processes of the educational institution.
- Building pathways to micro-entrepreneurship.
- Fostering knowledge on certain topics such as the circular economy or the possibility of starting fund-raising activities.
- Support development of pedagogical skillsEnhance the use of inclusive and differentiated teaching strategies and materials.
- Develop a clear vision for embedding education for sustainable development in the quality criteria for schools, and assessment for improvement processes.

Teachers' engagement in continuous professional development is essential to maintain autonomy and critial sense in the exercise of their profession and decision-making that guides the practice of teaching and learning to better respond to the evolving learners' needs and contexts. (Guerriero 2017).

The ESD SuVi training programme received positive comments about its effectiveness. In particular, the experience was perceived as an opportunity to:

- bring out potential areas for future development and critical issues about what is already being implemented in one's own school context;
- check the adequacy of professional skills already possessed;
- develop new ideas and understand how to adapt them to one's own context, while also managing to overcome any critical issues;
- create a link between school activities and out-of-school experiences;
- develop professional skills useful in the implementation of ESD activities.

Based on the results of Project activities, some key recommendations emerged on how to design and implement effective training experiences for ESD Supervisors:

- start from a self-assessment of the actions already implemented within the organisation, to reflect analytically on the practices already implemented and to bring out strengths and weaknesses
- enhance reflective and self-evaluation sessions to increase awareness of one's professional skills
- offer opportunities for cooperative learning to strengthen the ability to work in teams
- support development of both theoretical and methodological pedagogical skills shown to support effective education for sustainable development
- use innovative and alternative methodologies to let participants experience non-traditional ways of managing teaching andlearning processes
- be strongly connected and responsive to the specific needs of the different school contexts.
- support networking learning by fostering cooperation between educational institutions and local government
- be modular to answer different levels and areas of needs

Finally, schools involved in the project found that taking a whole school approach is the main turning point in reorienting curricula towards ESD. This requires that:

- ESD is an integral component of the professional development programmes of all teachers.
- teacher education and professional development programmes focus on the development of sustainability competences as well as professional competences, and are more structured around ESD competences framework for educators.
- teachers and senior school managers are supported to implement transformative whole institutional approaches to ESD.
- school leaders are equipped with the tools for embedding a strong sustainable development ethos in the culture, curricula and operations of their school and its relationship with the wider community.

Enabling these changes requires targeted educational policies which recognise the role of teachers, school managers and school staff, invest in their initial and continuos training and embed ESD in teacher professional standards.

Annexes

1 Most prominent framework of ESD competences for teachers
2 ESD SuperVision 4.0 - Teacher Training Programme Survey
3 ESD_SuperVision 4.0 Survey Report on teachers' training needs
4 Report on piloting guiding questions in collective interviews (Focus Group) and unstructured in-depth interviews- case study: Italy
5 Bibliography

Annex 1

Most prominent frameworks addressing ESD competences for teachers

The Curriculum, Sustainable development, Competences, Teacher training (CSCT) project is an attempt to meet the call of the UNECE ministers of the Environment to offer curriculum models to teacher training institutes which are searching for attainable possibilities to integrate ESD in their curricula (https://www.ensi.org/Projects/Our_Projects/CSCT/). The result of the international group three years long process is a dynamic model for ESD competences for teacher education.

In this model the professional dimension of the teacher is considered as:

- a dynamic relationship with the educational institution as well as the wider society that is seeking to confront the issue of sustainability;
- based on three overall competencies for ESD: teaching, reflecting/visioning and networking;
- a combination between the professional dimension and the overall competencies;
- an integration of five domains of competencies (knowledge, systems thinking, emotions, ethics and values and action) that interact intensively and are in reality inseparable and that have to be applied to each of the professional dimensions and to all the overall competencies

The United Nations Economic Commission for Europe (UNECE) (2012) proposes a set of 39 competences for educators as a goal to which all educators should aspire for their professional development in order for them to engage in Education for Sustainable Development. The framework is designed as a guide for educators, composed of 4 domains:

- learning to know, which refers to understanding the challenges facing society both locally and globally and the potential role of educators and learners;
- learning to live together, which contributes to the development of partnerships and appreciation of interdependence, pluralism, mutual understanding and peace;
- learning to be, which addresses the development of one's personal attributes and ability to act with greater autonomy, judgement and personal responsibility in relation to sustainable development; and
- learning to do, which refers to developing practical skills and action competence in relation to education for sustainable development.

The competences are clustered around 3 essential characteristics of ESD:

- a holistic approach, which seeks integrative thinking and practice;
- envisioning change, which explores alternative futures, learns from the past and inspires engagement in the present; and
- achieving transformation, which serves to change in the way people learn and in the systems that support learning (UNECE, 2012).

While the document emphasizes formal education, the competences identify the knowledge and abilities of all educators, including, but not limited to, teachers. Education happens not only through formal learning and teaching, but also through facilitation and support of non-formal educators who operate in informal and social contexts.

Moreover, a competence model for ESD for educators was generated in the Austrian research project KOM-BiNE (Competences for ESD in Teacher Education) as part of a larger scale EU project, the CSCT mentioned above (Sleurs, 2007). Rauch & Steiner (2013) developed a model of

competencies that the ESD teachers should have acquired, through training, in the context of the KOM-BiNE project. The originality of this competency framework relies on the fact that competencies are not elaborated at the individual level but rather for a group that acts as a team, in line with the idea that only with cooperation and targeted competency development within a team is it possible to fulfil the complex task presented by ESD.

The model includes the following competence fields: knowing and acting, valuing and feeling, communicating and reflecting, visioning, planning and organizing, and networking.

Teachers are presumed to use those competencies in 3 different social settings (or fields of action): instruction (classroom), participation in the design of one's own educational institution, and reaching out to society.

Finally, "A Rounder Sense of Purpose (RSP)" EU-funded project developed a framework of educator competences for educators who wish to act as change agents (Vare et al., 2019, Millican R. 2022, Farioli & Mayer 2022). The RSP project set out to revisit the UNECE (2012) competence framework, looking for overlap and redundancies with the explicit aim of developing a workable set of competences for all educators, working at any level and range of contexts, who wish to provide ESD. . RSP partners reorganised UNECE's original 39 competence statements in 12 through a process of "distillation". The resulting framework is a matrix of 12 competences (Table 2) visually represented by an artist's palette with the intention of showing that they are mutually supportive and therefore should be seen not in isolation, as well as they might be combined by educators in creative ways based on the context.

Table 2: The Rounder Sense of Purpose Framework

Thinking Holistically	***Envisioning Change***	***Achieving Transformation***
Integration:		
Systems The educator helps learners to develop an understanding of the world as an interconnected whole and to look for connections across our social and natural environment and consider the consequences of actions.	**Futures** The educator helps learners to explore alternative possibilities for the future and to use these to consider how behaviours might need to change.	**Participation** The educator helps learners to contribute to changes that will support sustainable development.
Involvement:		
Attentiveness The educator helps learners to understand fundamentally	**Empathy** The educator helps learners to respond to their feelings and	**Values** The educator develops an awareness among learners

unsustainable aspects of our society and the way it is developing and increases their awareness of the urgent need for change.	emotions and those of others as well as developing an emotional connection to the natural world.	of how beliefs and values underpin actions and how values need to be negotiated and reconciled.
Practice:		
Transdisciplinarity The educator helps learners to act collaboratively both within and outside of their own discipline, role, perspectives and values.	**Creativity** The educator encourages creative thinking and flexibility within their learners.	**Action** The educator helps the learners to take action in a proactive and considered manner.
Reflexivity:		
Criticality The educator helps learners to evaluate critically the relevance and reliability of assertions, sources, models and theories.	**Responsibility** The educator helps learners to reflect on their own actions, act transparently and to accept personal responsibility for their work.	**Decisiveness** The educator helps the learners to act in a cautious and timely manner even in situations of uncertainty.

INTRODUCTION

ESD SuperVision 4.0
Survey_Teacher Training Programme

The following survey is used to provide an overview of the state of the art regarding the implementation of the whole school approach to ESD in your institution, identify case studies and to collect data to improve the ESD_SuVi Teachers Training Program.
SECTION ONE is related to implementation of the whole school approach to ESD.
SECTION TWO aims to measure participants' perception of the effectiveness of the ESD_SuVi Teachers Training Program.
SECTION THREE intends to identify possible flaws and further training needs for the development of an ESD whole school approach in the participating schools.
All data are collected and analysed anonymously.

- ○ I agree

Country

- ○ Czech Republic
- ○ Germany
- ○ Italy
- ○ Latvia
- ○ Lithuania
- ○ Romania
- ○ United Kingdom

Please specify your role within the institution

- ○ Teacher
- ○ ESD Projects Coordinator

- ○ Headmaster/Principal
- ○ Administrative staff
- ○ Others working in ESD activities in the institution (but are not teachers)

Type of Institution

- ○ Primary School
- ○ Secondary school
- ○ Other educational institutions (specify)

Name of Institution

Teaching subject/discipline

Number of years of involvement in environmental /ESD education

- ○ Beginner
- ○ From 5 to 10 years
- ○ More than 10 years

Please state your engagement within ESD activities (multiple choice):

- ☐ I have participated to the ESD_SuVi Teachers Training Program
- ☐ I have a coaching/leadership/networking role within my school
- ☐ I am ESD responsible contact persons in my school
- ☐ I have already been involved in ESD activities for my school
- ☐ I have an evaluation/monitoring task of educational projects/activities in terms of impact on local community

Did you attend the ESD_SuVI Teachers Training Program?

- ○ YES, at least one meeting
- ○ YES, the whole program
- ○ NO

FIRST SECTION. Assessing ESD implementation in your institution

FIRST SECTION. Assessing ESD implementation in your institution

The Formal Curriculum (learning activities that are planned, organized and implemented within regular school hours)

Rate in a scale from 1 to 4 each of the following features within your institution

	1 Getting started	2 Fair	3 Good	4 Excellent
There is a written policy that states the aims and objectives of ESD in our school	○	○	○	○
There is a co-ordination of ESD as a cross-curricular theme	○	○	○	○
Teachers have competencies to introduce issues of sustainable development into their subjects	○	○	○	○
The school can offer teaching materials on issues of sustainable development for all grades	○	○	○	○
Teachers regularly evaluate the effectiveness of teaching/learning activities or topics about sustainable development	○	○	○	○

Please leave a comment regarding ESD implementation into the Formal Curriculum

Socio-political Dimensions of Sustainability

Rate from 1 to 4 each of the following features within your institution

	1 Getting started	2 Fair	3 Good	4 Excellent
The vision of the school and the curriculum are sensitive to issues of (social) entrepreneurship	○	○	○	○
Students are given opportunities and equipped with skills to participate constructively in helping to solve local community problems	○	○	○	○
The prevailing vision of the school and the curriculum adequately prepare students for life as citizens of a global community	○	○	○	○
The prevailing vision of the school and the curriculum adequately deal with inclusion	○	○	○	○
Teachers and staff are skilled in conflict resolution strategies as a support for positive student behaviour	○	○	○	○

Please leave a comment regarding the implementation of socio-political dimension of sustainability in your institution

Ecological Dimensions of Sustainability

Rate from 1 to 4 each of the following features within your institution

	1 Getting started	2 Fair	3 Good	4 Excellent
The school uses recycled materials whenever possible and has an active and comprehensive recycling policy	○	○	○	○
The school actively promotes and practices energy efficiency	○	○	○	○
The school purchases and uses resources with a view to minimize harm to the planet	○	○	○	○
School buildings and surroundings provide an aesthetically pleasing environment in which to live and learn	○	○	○	○

	1 Getting started	2 Fair	3 Good	4 Excellent
The school actively promotes attitudes of care and responsibilities for nature	○	○	○	○
The vision of the school and the curriculum is sensitive to environmental issues	○	○	○	○

Please leave a comment regarding the implementation of ecological dimensions of sustainability within your institution

Economic Dimensions of Sustainability

Rate from 1 to 4 each of the following features within your institution

	1 Getting started	2 Fair	3 Good	4 Excellent
A spirit of co-operation and sharing – not competition – is customised in the allocation of resources in the school	○	○	○	○
Students learn small business skills through opportunities to organize school and community's projects (for example in the frame of circular economy)	○	○	○	○
Students have opportunities to participate in decisions about how resources are allocated in the school	○	○	○	○
A culture of maintenance ensures that all school buildings and equipment are kept in good repair and maintained in a good condition	○	○	○	○
The school's fund-raising activities reflect ethical principles	○	○	○	○

Please leave a comment regarding the implementation of economic dimensions of sustainability within your institution

Cultural/pedagogical Dimensions of Sustainability

Rate from 1 to 4 each of the following features within your institution

	1 Getting started	2 Fair	3 Good	4 Excellent
The school vision and teaching approaches foster self-esteem, mutual respect and human social relationships	○	○	○	○
The prevailing vision of the school and the curriculum adequately prepare students for life in a multicultural society	○	○	○	○
The school plays an active role in building support for cultural diversity, both within the school and its wider community	○	○	○	○
The school plays an active role in the community and the community in the school	○	○	○	○
The prevailing vision of the school demonstrates that people matter and that everyone has a contribution to make to sustainable development	○	○	○	○
The school participates to local governance on issues related to sustainable development	○	○	○	○
The ethical principles that are at the basis of ESD are made explicit and clarified in the educational offer of the school	○	○	○	○

Please leave a comment regarding the implementation of cultural/pedagogical dimensions of sustainability within your institution

Further clarifications

Is training/professional development opportunities provided on Education for Sustainable Development in your country? (multiple choice)

- [ ] YES, promoted by my school
- [ ] YES, promoted by other institutions
- [ ] NO

If yes, who does provide it?

What kind of training action is carried out?

How long does the training last?

What are the learning outcomes?

What future professional learning needs regarding ESD implementation do you consider relevant in your institution?

SECOND SECTION. Assessing Course with regard to ESD integration

SECOND SECTION. Assessing ESD_SuVi Teachers Training Program with regard to ESD integration

Rate in a scale from 1 to 4 each of the following features

	1 Getting started	2 Fair	3 Good	4 Excellent
The training course develops an understanding of the concept and practice of ESD through the identified content areas	○	○	○	○
The proposed teaching and learning approaches are appropriate for the level and experience of the learners	○	○	○	○
The training course (content and method) is relevant to my local context	○	○	○	○
The training course is relevant according to current policy frameworks	○	○	○	○
The training course gives opportunities to develop competences for institutional leadership and commitment to ESD integration	○	○	○	○
There are processes in act to ensure that the training structure and content are flexible in relation to adjust to the dynamic context	○	○	○	○
Overall, the training experience is sufficient to develop competencies to foster ESD as mainstream in the curriculum and in my institution	○	○	○	○

Please leave a comment regarding ESD integration within the ESD_SuVi Teachers Training Program

THIRD SECTION. Highlight further training needs

THIRD SECTION. Highlight further training needs

Rate in a scale from 1 to 4 each of the following features of the ESD_SuVi Teachers Training Program

	1 Getting started	2 Fair	3 Good	4 Excellent
The training experience allows us to familiarise with the requirements of a whole-institution-approach	○	○	○	○
The training experience offers appropriate process-related tools to deal with and to coach a whole-institution-approach	○	○	○	○
The training experience supports competence development to address the needs of change process concerning the implementation of ESD in curricula of secondary schools	○	○	○	○
The training experience supports competence development to prepare solid didactical material	○	○	○	○
The training experience supports competence development in managing participatory methods	○	○	○	○
The training experience supports competence development to deal with a whole institution process, change management, networking, and campaigning	○	○	○	○

Please indicate strengths and flaws of the course and how it could be improved in case of future piloting of it

FINAL SECTION

Do you think the Survey is an effective tool to self-assess your institution?

YES NO

○ ○

Please leave a comment on your last response

Do you have any documents to share?

Through the following link you can upload evidence (data/info) on actions/practices currently in place in your institution. You can provide one or more examples but you can upload max 1 document (as PDF file). The PDF should be named with COUNTRY_INSTITUTION NAME.

Link: https://bit.ly/Evidence_SurveyESD

YES NO

○ ○

Co-funded by the Erasmus+ Programme of the European Union

ESD_SuVi Survey Report on teachers' training needs

Report by IASS- Italian Association for Sustainability Science

1. Introduction

Within the Erasmus project "ESD Supervision 4.0" a semi-structured questionnaire was administered aimed at providing an overview of the state of the art on the implementation of ESD in the different partner countries. The purpose was also to understand the current situation of the development and integration of ESD in the specific school context, identify main criticalities in implementing a Whole School Approach (WSA) to ESD, point out areas for a more effective implementation, as well as key elements (as training needs) for designing a teacher training course which addresses the identified criticalities. The areas investigated referred to the key dimensions of the WSA: holistic view, organization and practices, professional development, and pedagogical methods and approaches. The instrument was structured in three parts:

- SECTION ONE: related to implementation of the whole school approach to ESD;
- SECTION TWO: aims to measure participants' perception of the effectiveness of the ESD_SuVi Teachers Training Program;
- SECTION THREE: intends to identify possible flaws and further training needs for the development of an ESD whole school approach in the participating schools

Sections two and three were made accessible only to participants in the ESD_SuVI Teachers Training Program. The total sample involved was 109 participants spread across six countries (Figures 1), with different roles within their educational institution (Figures 2) and diverse professional experience (40 percent with less than 5 years of service; slightly more than one in three had experience beyond 10 years) (Figures 3). The sample also showed varying involvement/engagement within the project:

- 47.7 % have participated to the ESD_SuVi Teachers Training Program;
- 26.6% have a coaching/leadership/networking role within the school;
- 25.7% is ESD responsible contact persons in the school;
- 53.2% have already been involved in ESD activities for the school;
- 22% have an evaluation/monitoring task of educational projects/activities in terms of impact on local community.

Country	Frequency	%
Czech Republic	24	22.0 %
Germany	9	8.3 %
Italy	9	8.3 %
Latvia	39	35.8 %
Lithuania	3	2.8 %
Romania	25	22.9 %
TOTAL	**109**	**100%**

Figure 1. Sample

Role within the institution	Frequency	%
Administrative staff	5	4.6 %
ESD Projects Coordinator	6	5.5 %
Headmaster/Principal	7	6.4 %
Others working in ESD activities in the institution (but are not teachers)	10	9.2 %
Teacher	81	74.3 %
TOTAL	**109**	**100%**

Figure 2. Professional role

Number of years of involvement in environmental /ESD education	Frequency	% del Totale
Beginner	44	40.4 %
From 5 to 10 years	25	22.9 %
More than 10 years	40	36.7 %
TOTAL	**109**	**100%**

Figure 3. Working Years

1.1. Methodology

For each of the 5 areas in SECTION 1, the following data processing? were made:
- Frequency distribution related to scoring from 1 to 4 for each item;
- Basic descriptive statistics: mean and standard deviation;
- Identification of training needs of teachers and school staff from the descriptive/narrative summary of the most significant common aspects that resulted from the processing of the open-ended responses for each area.
- Further professional training needs for a more meaningful and effective ESD implementation in school context were then identified (§2.6).

For SECTION 2, the following data processing ? were carried out:
- Frequency distribution related to scoring from 1 to 4 for each item;
- Basic descriptive statistics: mean and standard deviation;
- Participants' perceptions related to the usefulness of the delivered training program (§3.1).

For SECTION 3, the following data processing were carried out:
- Frequency distribution related to scoring from 1 to 4 for each item;
- Basic descriptive statistics: mean and standard deviation;
- Participants' reflections related to the strengths and weaknesses of the implemented course and suggestions for improvement.

In the conclusions we present the elaboration of qualitative data related to participants' reflections on the instrument's ability to self-assess the actions implemented within their organization.

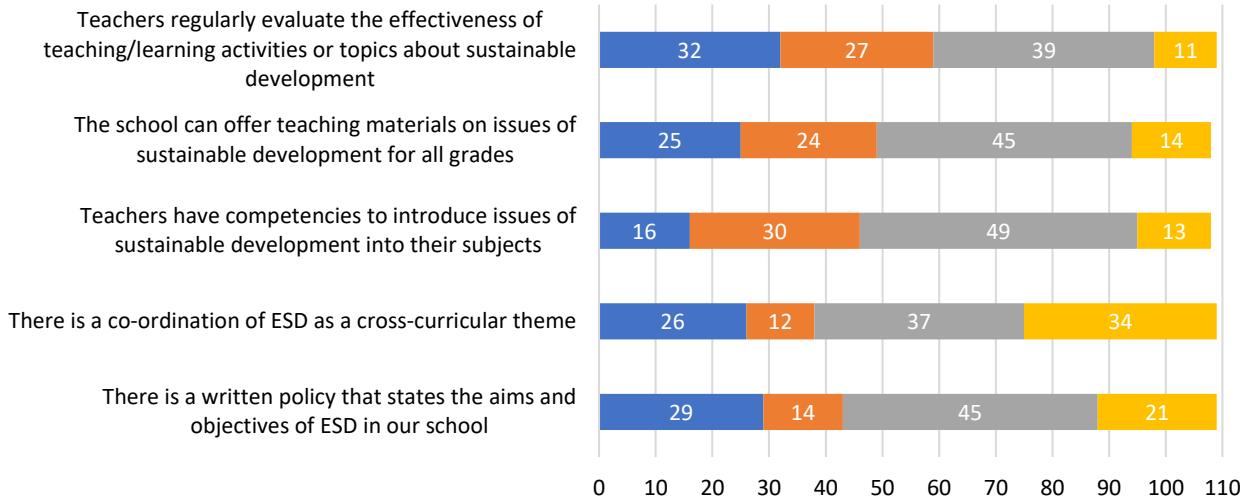
2. SECTION ONE: Assessing ESD implementation in your institution

The first part of the questionnaire aimed to assess the implementation of sustainability education in different partner countries. The areas investigated were:

- ESD implementation into the Formal Curriculum;
- Implementation of socio-political dimension of sustainability;
- Implementation of ecological dimensions of sustainability;
- Implementation of economic dimensions of sustainability within your institution;
- Implementation of cultural/pedagogical dimensions of sustainability.

Each of the 5 areas corresponded to a variable number of items rated on a 1-4 scale (1 Getting started; 2 Fair; 3 Good; 4 Excellent) and an open question for personal reflections and comments. A final question addressed to participants was, "What future professional learning needs regarding ESD implementation do you consider relevant in your institution?"

2.1. ESD implementation into the Formal Curriculum (Figure 4)



	There is a written policy that states the aims and objectives of ESD in our school	There is a co-ordination of ESD as a cross-curricular theme	Teachers have competencies to introduce issues of sustainable development into their subjects	The school can offer teaching materials on issues of sustainable development for all grades	Teachers regularly evaluate the effectiveness of teaching/learning activities or topics about sustainable development
1	29	26	16	25	32
2	14	12	30	24	27
3	45	37	49	45	39
4	21	34	13	14	11

1 2 3 4

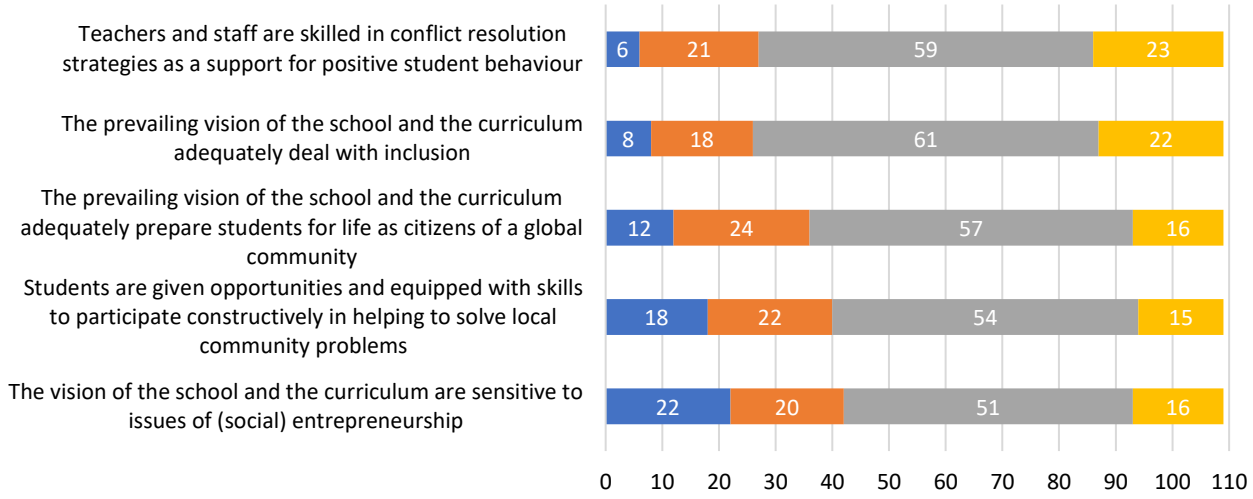
	N	Missing	Media	DS
There is a written policy that states the aims and objectives of ESD in our school	109	0	2.53	1.085
There is a co-ordination of ESD as a cross-curricular theme	109	0	**2.72**	1.146
Teachers have competencies to introduce issues of sustainable development into their subjects	108	1	**2.55**	0.890
The school can offer teaching materials on issues of sustainable development for all grades	108	1	2.44	0.989
Teachers regularly evaluate the effectiveness of teaching/learning activities or topics about sustainable development	109	0	2.27	0.997

Figure 4. ESD implementation into the Formal Curriculum

TRAINING NEEDS

- Design and implement interdisciplinary activities capable of transforming the traditional school curriculum.
- Promote the involvement of all stakeholders in integrated training activities related to sustainability issues.
- Enhance the daily use of targeted teaching materials that are functional for the conduct of activities and the assessment of learning outcomes.
- Promote integration and shared work between educational institutions and local administrative institutions, with facilitation related to procedures and bureaucratic aspects.

2.2. Implementation of socio-political dimension of sustainability (Figure 5)



	The vision of the school and the curriculum are sensitive to issues of (social) entrepreneurship	Students are given opportunities and equipped with skills to participate constructively in helping to solve local community problems	The prevailing vision of the school and the curriculum adequately prepare students for life as citizens of a global community	The prevailing vision of the school and the curriculum adequately deal with inclusion	Teachers and staff are skilled in conflict resolution strategies as a support for positive student behaviour
1	22	18	12	8	6
2	20	22	24	18	21
3	51	54	57	61	59
4	16	15	16	22	23

1 2 3 4

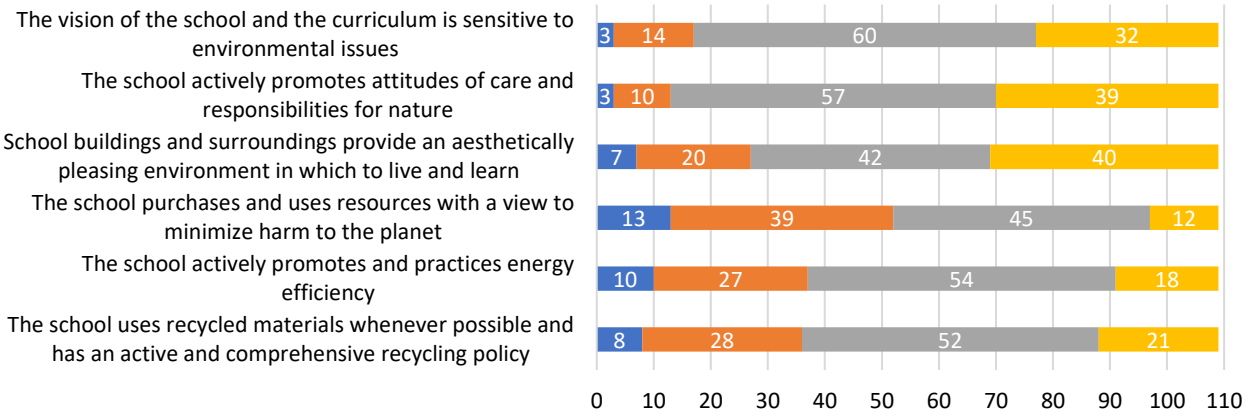
	N	Missing	Media	DS
The vision of the school and the curriculum are sensitive to issues of (social) entrepreneurship	109	0	2.56	0.976
Students are given opportunities and equipped with skills to participate constructively in helping to solve local community problems	109	0	2.61	0.923
The prevailing vision of the school and the curriculum adequately prepare students for life as citizens of a global community	109	0	**2.71**	0.853
The prevailing vision of the school and the curriculum adequately deal with inclusion	109	0	**2.89**	0.809
Teachers and staff are skilled in conflict resolution strategies as a support for positive student behaviour	109	0	**2.91**	0.788

Figure 5. Implementation of socio-political dimension of sustainability

TRAINING NEEDS

- Build experiential learning environments that engage students in real problems.
- Promote students' development of awareness and sense of responsibility.
- Facilitate access to and participation in opportunities already present and offered by the school.
- Strengthen teachers' skills through targeted training courses.
- Foster cooperation between educational institutions and local administrative institutions.

2.3. Implementation of ecological dimensions of sustainability (Figure 6)



	The school uses recycled materials whenever possible and has an active and comprehensive recycling policy	The school actively promotes and practices energy efficiency	The school purchases and uses resources with a view to minimize harm to the planet	School buildings and surroundings provide an aesthetically pleasing environment in which to live and learn	The school actively promotes attitudes of care and responsibilities for nature	The vision of the school and the curriculum is sensitive to environmental issues
1	8	10	13	7	3	3
2	28	27	39	20	10	14
3	52	54	45	42	57	60
4	21	18	12	40	39	32

1 2 3 4

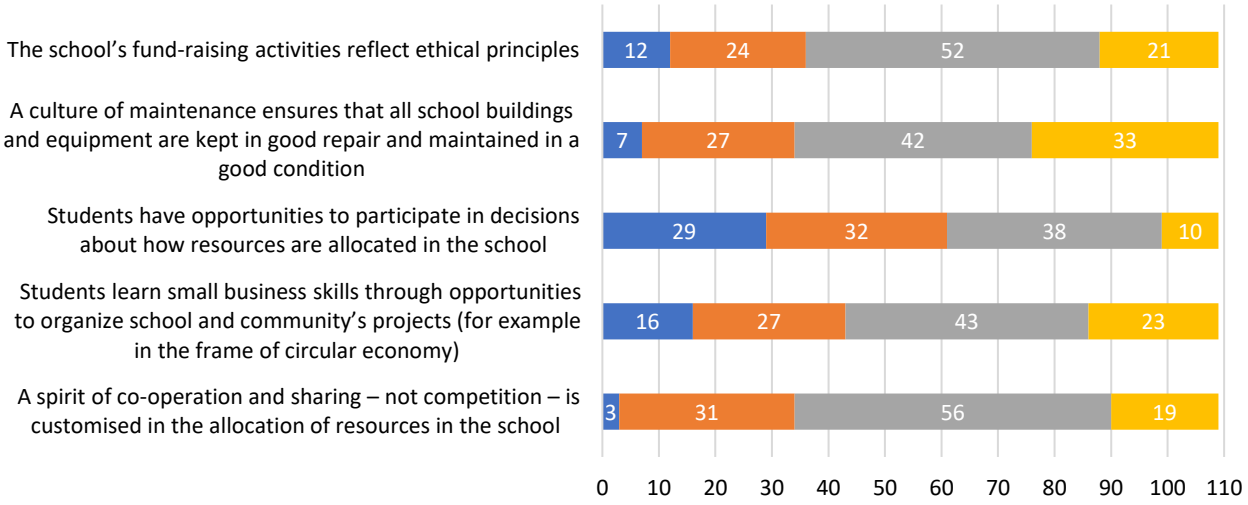
	N	Missing	Media	DS
The school uses recycled materials whenever possible and has an active and comprehensive recycling policy	109	0	2.79	0.840
The school actively promotes and practices energy efficiency	109	0	2.73	0.846
The school purchases and uses resources with a view to minimize harm to the planet	109	0	2.51	0.846
School buildings and surroundings provide an aesthetically pleasing environment in which to live and learn	109	0	**3.06**	0.901
The school actively promotes attitudes of care and responsibilities for nature	109	0	**3.21**	0.721
The vision of the school and the curriculum is sensitive to environmental issues	109	0	**3.11**	0.724

Figure 6. Implementation of ecological dimensions of sustainability

TRAINING NEEDS

- Develop a comprehensive ecological approach with respect to the integration of care/efficiency of school facilities and the environmental impacts, resource use, and energy issues.
- Improve the use of economic resources for the development of sustainable practices (e.g., recycling collection), but also for the energy efficiency of school facilities.
- Promote dialogue with local governments to develop consistent and integrated practices between educational institutions and communities.

2.4. Implementation of economic dimensions of sustainability within your institution (Figure 7)



	A spirit of co-operation and sharing – not competition – is customised in the allocation of resources in the school	Students learn small business skills through opportunities to organize school and community's projects (for example in the frame of circular economy)	Students have opportunities to participate in decisions about how resources are allocated in the school	A culture of maintenance ensures that all school buildings and equipment are kept in good repair and maintained in a good condition	The school's fund-raising activities reflect ethical principles
1	3	16	29	7	12
2	31	27	32	27	24
3	56	43	38	42	52
4	19	23	10	33	21

1 2 3 4

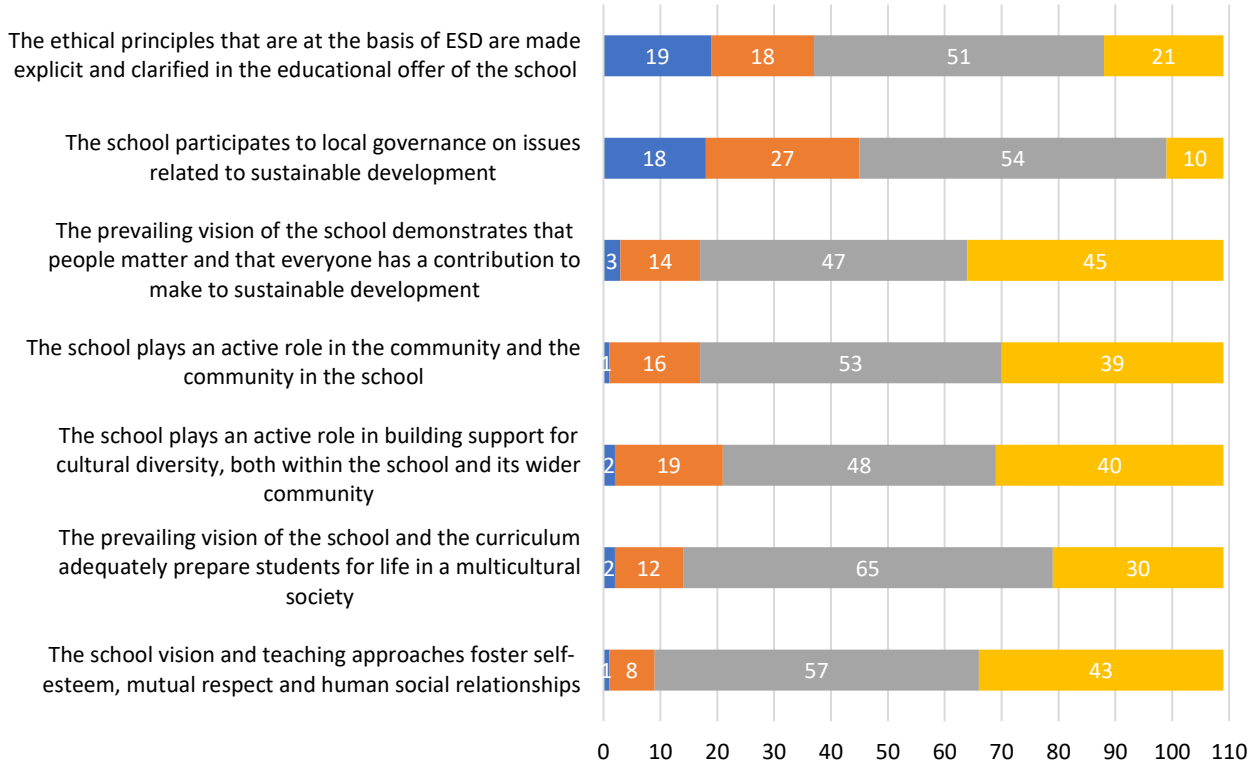
	N	Missing	Media	DS
A spirit of co-operation and sharing – not competition – is customised in the allocation of resources in the school	109	0	**2.83**	0.739
Students learn small business skills through opportunities to organize school and community's projects (for example in the frame of circular economy)	109	0	2.67	0.972
Students have opportunities to participate in decisions about how resources are allocated in the school	109	0	2.27	0.959
A culture of maintenance ensures that all school buildings and equipment are kept in good repair and maintained in a good condition	109	0	**2.93**	0.900
The school's fund-raising activities reflect ethical principles	109	0	2.75	0.894

Figure 7. implementation of economic dimensions of sustainability within your institution

TRAINING NEEDS

- Promote the development of students' awareness regarding the care and economic management of the school facility.
- Involve students within the decision-making processes of the educational institution.
- Promote dialogue with the private sector.
- Building pathways to micro-entrepreneurship.
- Fostering knowledge on certain topics such as the circular economy or the possibility of starting fund-raising activities.

2.5. Implementation of cultural/pedagogical dimensions of sustainability (Figure 8)



	The school vision and teaching approaches foster self-esteem, mutual respect and human social relationships	The prevailing vision of the school and the curriculum adequately prepare students for life in a multicultural society	The school plays an active role in building support for cultural diversity, both within the school and its wider community	The school plays an active role in the community and the community in the school	The prevailing vision of the school demonstrates that people matter and that everyone has a contribution to make to sustainable development	The school participates to local governance on issues related to sustainable development	The ethical principles that are at the basis of ESD are made explicit and clarified in the educational offer of the school
1	1	2	2	1	3	18	19
2	8	12	19	16	14	27	18
3	57	65	48	53	47	54	51
4	43	30	40	39	45	10	21

1 2 3 4

	N	Missing	Media	DS
The school vision and teaching approaches foster self-esteem, mutual respect and human social relationships	109	0	**3.30**	0.646
The prevailing vision of the school and the curriculum adequately prepare students for life in a multicultural society	109	0	3.13	0.668
The school plays an active role in building support for cultural diversity, both within the school and its wider community	109	0	3.16	0.772
The school plays an active role in the community and the community in the school	109	0	3.19	0.713
The prevailing vision of the school demonstrates that people matter and that everyone has a contribution to make to sustainable development	109	0	**3.23**	0.777

The school participates to local governance on issues related to sustainable development	109	0	2.51	0.878
The ethical principles that are at the basis of ESD are made explicit and clarified in the educational offer of the school	109	0	2.68	0.980

Figura 8. Implementation of cultural/pedagogical dimensions of sustainability

TRAINING NEEDS

- Foster the development of teachers' pedagogical skills through targeted trainings.
- Enhance the use of inclusive and differentiated teaching strategies and materials.
- Strengthen the intercultural dimension of sustainability in the school curriculum.
- Promote institutional dialogue between schools and local governments on intercultural issues.

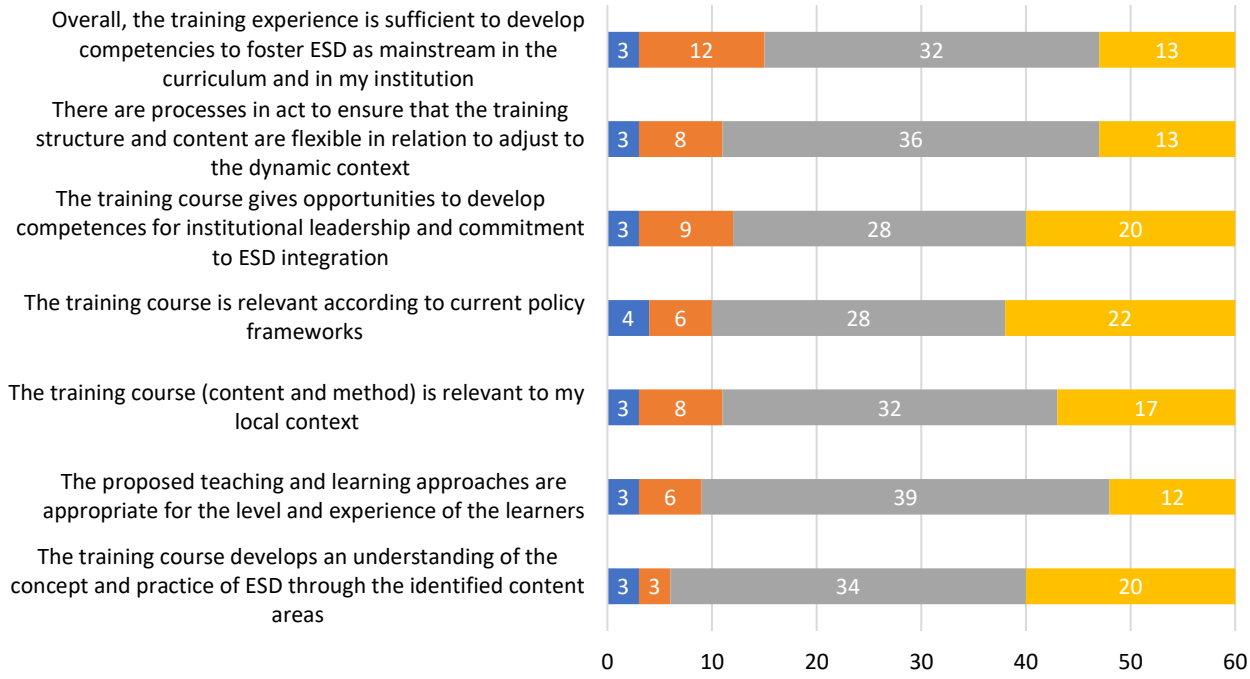
2.6. Areas for improvement related to professional training needs for ESD implementation

From the processing of the responses provided to the question "What future professional learning needs regarding ESD implementation do you consider relevant in your institution?" a number of areas for improvement and development related to a more meaningful and effective implementation of ESD within school settings were identified. The areas for development can be traced to all the dimensions of sustainability investigated in section one of the questionnaire. In particular, 3 aspects emerge as most relevant:

- Construction of cooperative learning environments and activation of self-directed processes in which students can activate empowerment processes, be protagonists, actively participate in the opportunities offered by the school and develop problem solving skills;
- Initial and ongoing training for teachers aimed at the development of interdisciplinary curricula oriented to the dimensions of education for sustainability, including through the study of relevant and replicable practices; training related to methodological-didactic strategies of education for sustainability, including design centered on the definition of coherent learning outcomes,;
- Promotion of learning communities among all stakeholders (school, family, institutions, community, world of work, etc.) including the possibility of activating shared projects that primarily involve students on the different dimensions of ESD and the potential concretization of the SDGs.

3. SECOND SECTION. Assessing ESD_SuVi Teachers Training Program with regard to ESD integration

With the second part of the questionnaire, the aim was to assess, from the participants' perspective, the effectiveness of the teacher training program implemented within ESD_SuVi project. A battery of 7 items rated on a 1-4 scale (1 Getting started; 2 Fair; 3 Good; 4 Excellent) was constructed. At the conclusion of the structured part, respondents could leave a personal comment on the items covered (§3.1).



	The training course develops an understanding of the concept and practice of ESD through the identified content areas	The proposed teaching and learning approaches are appropriate for the level and experience of the learners	The training course (content and method) is relevant to my local context	The training course is relevant according to current policy frameworks	The training course gives opportunities to develop competences for institutional leadership and commitment to ESD integration	There are processes in act to ensure that the training structure and content are flexible in relation to adjust to the dynamic context	Overall, the training experience is sufficient to develop competencies to foster ESD as mainstream in the curriculum and in my institution
1	3	3	3	4	3	3	3
2	3	6	8	6	9	8	12
3	34	39	32	28	28	36	32
4	20	12	17	22	20	13	13

	N	Missing	Media	SD
The training course develops an understanding of the concept and practice of ESD through the identified content areas	60	49	**3.18**	0.748
The proposed teaching and learning approaches are appropriate for the level and experience of the learners	60	49	3.00	0.713
The training course (content and method) is relevant to my local context	60	49	3.05	0.790
The training course is relevant according to current policy frameworks	60	49	**3.13**	0.853
The training course gives opportunities to develop competences for	60	49	3.08	0.829

institutional leadership and commitment to ESD integration				
There are processes in act to ensure that the training structure and content are flexible in relation to adjust to the dynamic context	60	49	2.98	0.748
Overall, the training experience is sufficient to develop competencies to foster ESD as mainstream in the curriculum and in my institution	60	49	2.92	0.787

3.1. Usefulness of the training programme

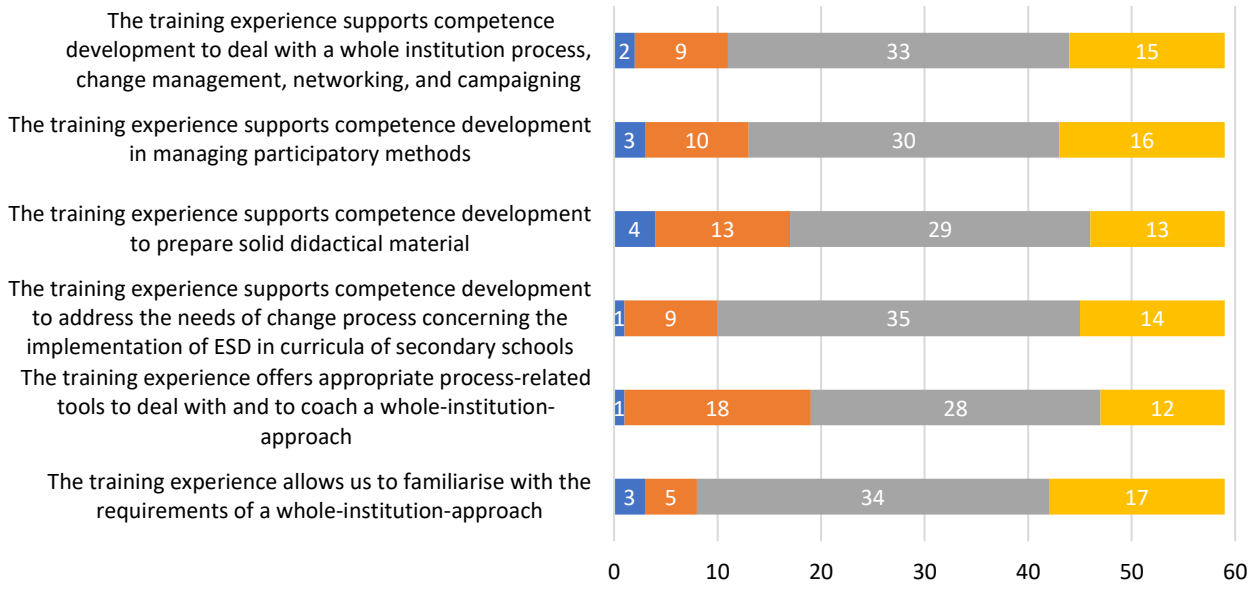
The evaluation of the training program recorded positive comments about the usefulness of the course, going in line with the positive mean values obtained in the structured part of section 2.
In particular, the experience was perceived as an opportunity to:

- learn about experiences in other countries and reflect on sustainability issues;
- bring out potentials and critical issues about what is already being implemented in one's own school context;
- check the adequacy of professional skills already possessed;
- develop new ideas and understand how to adapt them to one's own context, while also managing to overcome any critical issues;
- create a link between school activities and out-of-school experiences;
- develop professional skills useful in the implementation of ESD activities.

4. THIRD SECTION. Highlight further training needs

The third part of the questionnaire sought to map additional emerging training needs related to the development of a whole-school ESD approach within respondents' organizations. A battery of 6 items rated on a 1-4 scale (1 Getting started; 2 Fair; 3 Good; 4 Excellent) was constructed. At the conclusion of the structured part, respondents could leave a comment indicating strengths and weaknesses of the pathway implemented and suggestions for improvement and future development.

Participants' comments indicate that the experience implemented should be more widely disseminated in terms of the number of participants. It represents an opportunity to develop new knowledge and skills useful for the implementation of sustainability education actions, professional development and improvement of their own organizations. This type of course has also been considered important for increasing personal motivation and for experimenting with tangible methods and tools for working on sustainability issues. The course was found to be very challenging and in some cases it is felt that it could have been structured over a longer time. There was a lot of satisfaction, but it was also considered that adequate time for personal reflection and reworking will be needed to be able to put what was learned into practice in one's own work and organization, given also the constraints that each country presents.



	The training experience allows us to familiarise with the requirements of a whole-institution-approach	The training experience offers appropriate process-related tools to deal with and to coach a whole-institution-approach	The training experience supports competence development to address the needs of change process concerning the implementation of ESD in curricula of secondary schools	The training experience supports competence development to prepare solid didactical material	The training experience supports competence development in managing participatory methods	The training experience supports competence development to deal with a whole institution process, change management, networking, and campaigning
1	3	1	1	4	3	2
2	5	18	9	13	10	9
3	34	28	35	29	30	33
4	17	12	14	13	16	15

	N	Missing	Media	SD
The training experience allows us to familiarise with the requirements of a whole-institution-approach	59	50	**3.10**	0.759
The training experience offers appropriate process-related tools to deal with	59	50	2.86	0.753

and to coach a whole-institution-approach				
The training experience supports competence development to address the needs of change process concerning the implementation of ESD in curricula of secondary schools	59	50	**3.05**	0.680
The training experience supports competence development to prepare solid didactical material	59	50	2.86	0.840
The training experience supports competence development in managing participatory methods	59	50	3.00	0.809
The training experience supports competence development to deal with a whole institution process, change management, networking, and campaigning	59	50	3.03	0.742

5. Conclusions: self-evaluation tool

In the concluding part of the questionnaire, participants were asked to leave a comment regarding the tool's ability to self-assess the actions implemented within their organization.

Among the comments that welcomed this moment of self-assessment, it emerges that the tool is considered useful to:

- reflect analytically on the practices already implemented in one's own organization, bringing out strengths and weaknesses;
- gain greater personal and institutional awareness of needs and potentials, starting with what is already being implemented;
- reflect on the sustainability education actions implemented as part of formal education pathways;
- get useful feedback on the implementation of sustainability education actions and understand the current state of the art from which to start new processes and improve results;
- build a global vision on sustainability and have new ideas to share with one's own organization;
- learn more about one's own organization.

In some cases, the questionnaire was not considered useful for self-assessing the actual situation of organizations on the implementation of sustainability education actions. An in-depth qualitative questionnaire was indicated as more effective for better understanding and analyzing the state of the art, highlighting those areas of improvement needed for targeted development of sustainability education actions.

Annex 4

Report on piloting Guiding Questions in collective interviews (Focus Group) and unstructured in-depth interviews- case study: Italy

Guiding questions for in-depth interviews and focus groups have been elaborated and tested within the ESD_SuVi project.

A - Guiding questions for unstructured in-depth interviews

- Please explain what you understand by the Whole School Approach?
- (after a short explanation) Do you think it could be applied within your school? Which are the key elements to be transformed or reinforced?
- In what way and with which activities (methods, offers, contents) could an ESD-teacher training support the process of implementing an Education for Sustainable Development or Whole School Approach?
- Please name and explain the training needs of teachers/principals/other schools' staff for implementing a Whole School Approach within your school from your point of view.
- Please name and explain your learnings from participating in previous ESD trainings that you would recommend to other schools.

B – Piloting phase: testing guiding questions in collective interviews (Focus Group) and unstructured in-depth interviews

1. **Introduction**

Within the Erasmus project "ESD Supervision 4.0" two focus groups (FG1, FG2) and 2 semi-structured interviews (I1, I2) were carried out, at the Italian level, respectively with university tutors of students enrolled to become primary school teachers and with in-service teachers with several years of experience in implementing ESD in schools. Guiding questions above illustrated have been used in this piloting. The focus groups and interviews aimed at understanding, based on the interviewee's experience, what are the training needs of teachers and what might be helpful in making sure that an integrated approach to developing sustainability competences can be adopted, with particular reference to initial and in-service teacher training.

The above "Guiding Questions", although initially elaborated in order to collect elements useful for the Project, in their piloting application demonstrated they can usefully be applied for activating processes of reflection and self-evaluation and for developing awareness of specific training and professional development needs.

1. Methodology

Seven people attended the first focus group and five the second one. Two people have participated in the structured in-depth interviews. The focus groups and the interviews were divided into 3 'rounds of table' each touching a specific topic related to ESD:

1. teachers' competences;
2. teacher training needs for the implementation of a whole school approach;
3. Key stakeholders for the implementation of a whole school approach.

Specifically the questions were the following:

Round 1
Based on your experience, do you think the school is working on the following competences?

- Critical thinking
- Systems thinking
- Innovative decision
- Communication
- Collaboration
- Solidarity
- Reflexivity
- Value-orientation
- Responsibility
- Futures thinking
- Creativity
- Transformation

Are they integrated into the curriculum? In what way? Are teachers "trained"/equipped to enable the development of these competences in the learners? Are there school actions/policies that can support the process of applying sustainability competences?

During the interview an additional question was asked:
What is your commitment/role in sustainability education activities in your school? and what are the key elements of sustainable development education in your school?

Round 2
How can teacher training support the process of implementing an educational approach for sustainable development or WSA?
What are the training needs of teachers/headmaster/staff for implementing a comprehensive approach within the school?

Round 3
What key stakeholders are important to support the Whole School Approach process or effective Sustainable Development Education? What is needed to integrate the school into the broader local community?

2. Results

The results follow the logic of the questions and are divided into three main emerged topics:

- the state of implementation of a WSA within the Italian school system, challenges and opportunities;
- teachers' training needs;
- key stakeholders that can play a role in it.

3.1 The state of implementation of a WSA within the Italian school system

Interviewees report that ESD is implemented within the Italian school curriculum according to the "Civic Education" law emanated in 2019. However, many activities are carried out as extra-curricular activities and therefore are perceived as marginal.
The most recognised issue concerning the implementation of ESD in the Italian school curriculum is what the participants called "the domain of disciplines" (FG1,2; I1,2) hence the organization of knowledge in separate forms that makes the effort of implementing a WSA vain. Along with it, the Italian school system is seen as "strongly theoretical, strongly hierarchical and anchored to content knowledge" (I1). The problem interests predominantly secondary schools where "professors are trained in specific disciplines" (I1) while "in primary school and kindergarten, teachers are more used to work transversally" (FG1,2; I2).
Nevertheless, interdisciplinarity and transdisciplinarity are seen as the solution to this issue by all interviewees, in terms of teachers capable of working with colleagues from different disciplines and implementing sustainability transversely to all disciplines.

Another aspect of the Italian school system that is seen as a limit to the implementation of a WSA is that learning is focused around "content transmission rather than the application of participatory methodologies to stimulate competencies development" (I1). This aspect has been exacerbated by the Covid-19 restrictions. Moreover, an interviewee highlighted that "if we want to transmit civic education competences to students, it is not so much the "civic education hour" that is effective, but it is effective to build a framework, a climate, a situation, in which civic education is not something theoretical, but something in which school life is permeated with civic values, and this must also be the case for sustainability education" (FG1).On the other hand, the introduction of "new didactic methodologies and new ways of being in school" (I1) are recommended.

In terms of buildings, the interviewees highlight that there are "too many pupils per room, poor setting, no equipment" (FG1). Moreover, in terms of operations, the participants suggested that there are "too many activities and not enough time to digest them". The situation is made worse by "parents [that too often] do not respect the teacher profession". Furthermore, teachers perceive themselves as "overwhelmed by bureaucracy". To overcome these issues, the interviewees suggest learning "new ways of being in school where spaces and context are anchored in values". Finally, the implementation of a WSA depends also on the creating "a setting that takes into account the spaces and times appropriate to the pupils, i.e. that everything is functional for the pupils using these spaces" (FG2).

3.2 Teachers' training needs

In terms of professional development, an element that concur to prevent a WSA implementation is "to conceive the teacher profession as a job done alone" (FG2). In fact, "the sharing and intertwining aspect of what is didactic management is absolutely negligible" (FG2). However, "It is there [in sharing] that those aspects that have to do with promoting the kind of relationship you establish with the pupils, how much freedom to give, what kind of experiences to have are at play" (FG1). Nonetheless, "competences [development] depend on the subjectivity of the teacher's preparation, of his/her own competence, not only methodological-didactical but also relational, because if the teacher approaches the teaching-learning process with those same competences, then they are passed on indirectly to the pupils, so sustainability becomes really transversal" (FG2). Thus, what is needed according to the interviewees are, on one hand, "Initial and in-service training

pathways for teachers and study of practices relevant to the dimensions of ESD", and on the other hand, "Changing mindsets and defining what ESD means for the schools".

3.3 Key stakeholders

In terms of key stakeholders, both the participants of the focus groups and of the interviews agree that having a headmaster who "has a vision [in terms of sustainability]" (I2) plays a fundamental role in implementing sustainability in schools as he/she can "give teachers the reassurance of working critically across disciplines and without being asked to mechanically apply the syllabuses of individual disciplines" (FG2). At the same time, the interviewees agree also on the fact that implementing sustainability "has to be a common effort" (I2) negotiated among "the headmaster, the teachers, the students, the families and the school personnel" (FG2; I1) in order to achieve the goal.

For those stakeholders to work together for the implementation of a WSA, "what is needed is precisely a change and development of the mindset, perception, clarification of what sustainable development actually represents for the school" (FG2, I2).

Annex 5
Bibliography

1. European Commission (2019) COM(2019) 640 final. Communication from the Commission to the European Parliament, the European Council, the Council, the European economic and social committee and the committee of the regions. The European Green Deal

2. European Commission. (2022). *Input Paper: A Whole School Approach to Learning for Environmental Sustainability* https://education.ec.europa.eu/document/input-paper-a-whole-school-approach-to-learning-for-environmental-sustainability

3. European Commission (2022). *Recommendations on Transformative Education in Bhutan's Schools. European Commission*, SWITCH-Asia Programme, 2022. https://www.switch-asia.eu/site/assets/files/3599/bhutan_recommendations.pdf

4. Farioli, F. & Mayer, M. (2022). Breaking the mould: educators as agents of change. In *Competences in education for sustainable development: Critical perspectives* (pp. 85-92). Cham: Springer International Publishing.

5. Guerriero, S. (Ed.) (2017). Pedagogical Knowledge and the Changing Nature of the Teaching Profession. Paris: OECD Publishing.

6. Hattie, J. (2012). Visible learning for teachers: Maximizing impact on learning. Routledge/Taylor & Francis Group. https://doi.org/10.4324/9780203181522

7. Lozano, R. & Barreiro-Gen, M. (Eds.). (2021). *Developing sustainability competences through pedagogical approaches*. Springer International Publishing.

8. Millican, R. (2022). A rounder sense of purpose: Competences for educators in search of transformation. In *Competences in education for sustainable development: Critical perspectives* (pp. 35-43). Cham: Springer International Publishing.

9. Marope, M.; Griffin, P.; Gallagher, C. n.d. Transforming Teaching, Learning, and Assessment: A Global Paradigm Shift. Geneva: IBE-UNESCO (UNESCO International Bureau of Education). http://www.ibe.unesco.org/sites/default/files/resources/03_transforming_teaching_learning_and_assessment_31oct.pdf.

10. Peter Senge (1990) The Fifth Discipline: The art and practice of the learning organisation, Doubleday, New York.

11. Senge, P. M. (1994). *The fifth discipline fieldbook: Strategies and tools for building a learning organization*. Currency.

12. Senge, P., Kleiner, A., Roberts, C., Ross, R., Roth, G., Smith, B., & Guman, E. C. (1999). The dance of change: The challenges to sustaining momentum in learning organizations.

13. Rauch, F., & Steiner, R. (2013). Competences for Education for Sustainable Development in Teacher Education. *Kompetence Za Poučevanje Za Trajnostni Razvoj Na Področju Izobraževanja Učiteljev.*, *3*(1), 9–24.

14. Rieckmann, M. (2018). Learning to transform the world: Key competencies in Education for Sustainable Development. Issues and trends in education for sustainable development, 39, 39-59.

15. Rieckmann, M., & Barth, M. (2022). Educators' competence frameworks in education for sustainable development. In *Competences in education for sustainable development: Critical perspectives* (pp. 19-26). Cham: Springer International Publishing.

16. Sleurs, W. (2008). *Competencies for ESD (Education for Sustainable Development) teachers. A framework to integrate ESD in the curriculum of teacher training institutes*. UNECE.https://unece.org/fileadmin/DAM/env/esd/inf.meeting.docs/EGonInd/8mtg/CSCT%20 Handbook_Extract.pdf

17. UNECE (2005). UNECE STRATEGY FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT. https://unece.org/DAM/env/documents/2005/cep/ac.13/cep.ac.13.2005.3.rev.1.e.pdf

18. UNECE (2012). *Learning for the Future. Competences in Education for Sustainable Development*. https://unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf

19. UNECE (2014). United Nations Economic Commission for Europe Steering Committee on Education for Sustainable Development. Working Group on 'ESD School Planning': Outcomes. https://unece.org/fileadmin/DAM/env/Information_document_4_school_planning_02.pdf
20. UNESCO (2014).*Shaping the Future We Want. UN Decade of Education for Sustainable Development (2005-2014)*. Final Report, http://unesdoc.unesco.org/images/0023/002301/230171e.pdf

21. UNESCO. (2017). *Education for Sustainable Development Goals: learning objectives*. https://unesdoc.unesco.org/ark:/48223/pf0000247444

22. UNESCO (2018). *Integrating education for sustainable development (ESD) in teacher education in South-East Asia: a guide for teacher educators.* https://unesdoc.unesco.org/ark:/48223/pf0000265760

23. UNESCO (2020). Education for sustainable development: partners in action; Global Action Programme (GAP) key partners' report (2015-2019). https://unesdoc.unesco.org/ark:/48223/pf0000374270

24. UNESCO (2020). *Education for sustainable development: A roadmap* https://unesdoc.unesco.org/ark:/48223/pf0000374802

25. UNESCO (2021). *Berlin Declaration on Education for Sustainable Development*. https://en.unesco.org/sites/default/files/esdfor2030-berlin-declaration-en.pdf

26. Vare, P., Arro, G., de Hamer, A., Gobbo, G. D., de Vries, G., Farioli, F., Kadji-Beltran, C., Kangur, M., Mayer, M., Millican, R., Nijdam, C., Réti, M., & Zachariou, A. (2019). Devising a competence-based training program for educators of sustainable development: Lessons learned. *Sustainability (Switzerland)*, *11*(7), 1890.