InclusiveFuture:

Inclusive Pedagogical Model for Teaching, Learning and Assessment of Sustainability Competences

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Table of Contents

List of Tables and Figures

List of Tables

List of Figures

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Glossary

Term	Definition
Accessibility	Ensuring that environments, materials, and learning opportunities are usable and beneficial for all learners regardless of ability or background.
Bias (implicit/explicit)	Prejudices or assumptions—conscious or unconscious—that influence understanding, decisions, and behavior.
Climate Justice	An ethical and political framework addressing climate change by emphasising fairness, human rights, and protection of vulnerable populations.
Cultural Diversity	The coexistence and respect for multiple cultural identities, expressions, and languages within a learning environment.
Differentiated Instruction	Tailoring teaching methods, materials, and assessments to meet diverse learners' needs and preferences.
Discrimination	Unjust or prejudicial treatment based on characteristics such as gender, ethnicity, disability, or socioeconomic status.
Education for Sustainable Development (ESD)	Empowers learners with knowledge, values, and skills to promote environmental integrity, economic viability, and social justice for present and future generations.
Equity	Providing varying levels of support based on individual learner needs to achieve fair and inclusive outcomes.
Formative Assessment	Continuous feedback process aimed at improving both teaching and student learning during instruction.
Global Interdependence	The connection between people, communities, and countries, where actions in one place affect others around the world. A drought in one country can raise food prices worldwide, affecting people in other countries.
Green Skills	Competences enabling individuals to contribute to environmentally sustainable, resource-efficient societies.
GreenComp	European Sustainability Competence Framework: Defines core sustainability competences (values, attitudes, and skills) for lifelong learning within the EU.
Inclusive Education	Ensures that all learners, regardless of personal or social circumstances, participate, learn, and develop.
Intersectionality (Crenshaw)	An analytical approach highlighting how overlapping social identities (e.g., gender, race, class) create interdependent systems of discrimination or privilege.

Marginalised Groups	People or communities who are systematically excluded or pushed to the edges of society or education because of social, cultural, or structural barriers (e.g., racial minorities, people with disabilities, or linguistic minorities).
Modeling Values	Educators' deliberate demonstration of ethical, sustainable, and inclusive behaviors as part of the learning process.
Planetary Well-being (education) (Kortetmäki, et al., 2023).	Human flourishing is inseparable from the health of natural and social systems. It encourages learners to think beyond human-centered well-being and to act as part of an interdependent global and ecological community
Prejudice	Pre-formed negative attitudes or opinions about a person or group, based on characteristics such as race, gender, or ability, rather than facts.
Resilience	The capacity of individuals or systems to adapt and recover from challenges or disruptions.
Social Justice	Promoting equity, fairness, and the protection of rights to ensure all individuals have equal opportunities.
Structural Barriers	Systemic social, institutional, or economic obstacles that restrict full participation and learning.
Sustainable Development	Development that meets present needs without compromising the ability of future generations to meet theirs. Our Common Future, UNWCED 1987
Systems Thinking	Understanding interconnections and feedback loops within complex systems to address issues holistically.
Universal Design for Learning (UDL)	Educational framework for designing flexible environments that accommodate individual learning differences.
Vulnerable Groups	People or communities who are at higher risk of harm, disadvantage, or exclusion due to specific circumstances such as poverty, health issues, or displacement (e.g., refugees, children in poverty, or elderly populations).
Whole-School Approach	Embedding sustainability, inclusion, and well-being across the school's curriculum, operations, and community culture.

Executive Summary

InclusiveFuture Pedagogical Model for Teaching, Learning and Assessment of Sustainability Competences

The InclusiveFuture Pedagogical Model, developed within the European Union-funded InclusiveFuture project, addresses the crucial need to integrate sustainability and inclusion into educational practices across Europe and beyond. This document provides educators—including primary and secondary school teachers, educational leaders, and other school stakeholders—with an inclusive sustainability competence framework and a pedagogical model that outlines the core values, approaches and practices needed for teachers to effectively and inclusively integrate sustainability into their classrooms. The model is accompanied by additional guidance for practical implementation, potentially useful resources, and adaptable tools for teachers. Its primary goal is to bridge existing fragmented practices in sustainability education, and establish a consistent, inclusive approach to sustainability in schools, so teachers and students can be empowered to understand and address global challenges and collectively contribute towards an equitable and sustainable future for themselves, all fellow humans, and the planet.

The model is built upon a robust theoretical and conceptual foundation that encompasses various definitions of sustainability (environmental, social, economic, and cultural) and inclusion (as integration, diversity, equity, universal access, and the capability approach). For sustainability, it anchors to the European GreenComp framework, which outlines 12 core sustainability competences across four areas: Embodying Sustainability Values, Embracing Complexity, Envisioning Sustainable Futures, and Acting for Sustainability. GreenComp promotes systemic thinking, critical evaluation, and ethical action. On the inclusion side, the model moves beyond mere integration to embrace systemic transformation, drawing insights from the Salamanca Statement, Systems Theory, Ecological Systems Theory, Universal Design for Learning (UDL), and Crenshaw's Intersectionality Model. These frameworks collectively emphasize the interconnectedness of all learners within broader social and ecological systems, advocating for proactive design and the dismantling of structural barriers to meaningful participation.

The methodology for developing this model was comprehensive and iterative. It involved an in-depth analysis of existing curricula from partner countries, focus group discussions with a diverse range of educators, and the collection of insights into successful practices already in use. This was complemented by a critical review of relevant theoretical frameworks. The model underwent an iterative refinement process based on wide consultations with project partners and broader stakeholders, ensuring it is both research-based and practically applicable across diverse school settings. This comprehensive approach aimed to understand current realities, identify existing challenges in integrating sustainability and inclusion, and subsequently create a model that is responsive and effective.

The primary aim of the InclusiveFuture Pedagogical Model is to empower teachers to act as agents of environmental, social, cultural, and economic sustainability within their schools and classrooms, fostering planetary and human well-being. It seeks to provide clear, practical guidance for lesson design, assessment, and adaptation, including low-resource implementation options to ensure accessibility for all schools. Additionally, a key objective is to encourage a collaboration that encourages teachers to share best practices and collectively enhance their understanding and application of inclusive sustainability education.

Underpinning the model is a theoretical framework for educator competences, adapted from the GreenComp framework, which was created to provide a foundation for the more applicable part of the model. Built on the adapted competence framework, the InclusiveFuture Pedagogical Model itself is structured into four interconnected parts. The first part defines the **underlying values and principles**, which represent the ethical foundations of sustainability education held by the project consortium and stakeholders. The model is built on the following core values:

I. Participation and Collaboration

II. Equity and Equality

III. Curiosity and Critical Reflection

IV. Well-being

V. Ethical Responsibility and Action

VI. Future Orientation and Adaptability

These values emphasize aspects such as promoting nature, supporting fairness, and valuing sustainability, forming the core beliefs guiding the entire model.

The second part outlines **relevant pedagogical approaches**, which are existing teaching methods and strategies identified as best suited for developing inclusion and sustainability competences. These approaches, compiled from a compendium of good practices in both inclusive and sustainability education, are designed to align with the model's core values and support effective teaching and learning processes:

1. Learner-Centred Pedagogy as the Foundation

2. Whole-School Approach for Cultural Integration

3. Critical Pedagogy, Positive Pedagogy and Transformative Learning

4. Inquiry-Based and Problem-based Learning

5. Interdisciplinary and Phenomenon-based Learning for Complexity and Systems Thinking

6. Experiential and Project-Based Learning

7. Collaborative Learning

8. Portfolio Approach

The third component details **the teaching processes** involved in effective teaching, learning and assessment of inclusive sustainability competences, making the model more directly applicable.. These processes provide a roadmap for educators to translate the underlying values and pedagogical approaches into concrete instructional strategies.

Finally, each teaching process is further broken down into corresponding **teaching practices**. This fourth part provides practical, actionable guidance on the implementation of these practices for teachers.

To enhance usability, the consortium has also gathered example activities and assessment tools specifically designed for primary and secondary school teachers, enabling them to readily incorporate inclusive sustainability education into their daily work. These tools and activities offer tangible ways for educators to apply the model's principles and foster both inclusive and sustainable learning environments.

Teaching processes and practices within the InclusiveFuture Pedagogical Model
1. Motivating Learners
a. Understanding and connecting sustainability and inclusion
b. Valuing sustainability and inclusion
c. Modeling values
d. Finding suitable motivation strategies for different identities and intersectionalities
2. Co-designing Sustainable and Inclusive Learning Environments
a. Removing barriers to participation in the school and classroom environment
b. Improving sustainability in the school's physical, social and digital environment
c. Collaborating within and beyond school boundaries for holistic planning
3. Incorporating Inclusion and Sustainability into Lessons
a. Considering complexity of sustainability issues while planning lessons
b. Setting stage for inquiry and critical reflection
c. Integrating inclusion and sustainability practices into everyday activities
d. Promoting student agency and voice
4. Assessing sustainability and inclusion competences
a. Combining different assessment strategies
b. Integrating sustainability & inclusion competences into regular assessments
c. Following up on progress and needs
5. Investing in Professional Learning for Developing Sustainability and Inclusion Competences in All Learners
a. Reflecting on own strengths and needs
b. Building capacity in using digital tools and resources
c. Improving research skills
d. Participating in cross-school exchanges

Table 1. Teaching processes and practices within the InclusiveFuture Pedagogical Model

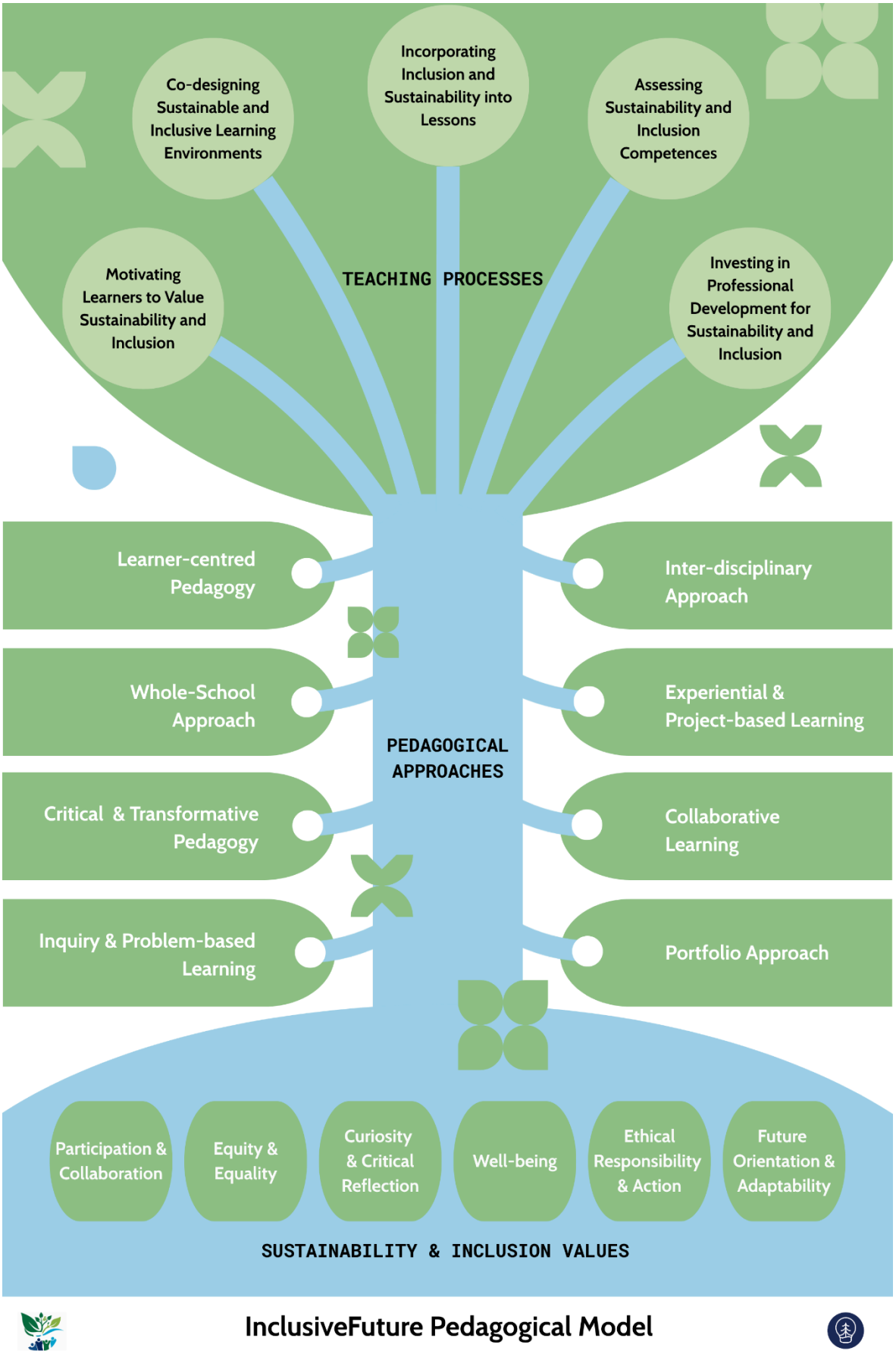


Figure 1. Visual Representation of the InclusiveFuture Pedagogical Model

1. Introduction

As countries, societies and education systems face rapid social, environmental, and digital transformations, there is a growing need for pedagogical models that address both inclusion and sustainability in an integrated manner. The InclusiveFuture Pedagogical Model for Teaching, Learning, and Assessment of Sustainability Competences, developed within the InclusiveFuture project, addresses the critical need for integrating sustainability and inclusion into educational practices in countries across Europe and beyond. The InclusiveFuture project, funded by the European Union, aims to support the integration of sustainability competences into the educational process, which will lead to a more inclusive environment for teachers and learners and will empower the transition of schools towards sustainable and inclusive practices. Website: www.inclusive-future.eu; read more in Annex 1 (only available in English).

The InclusiveFuture model is designed to empower educators of primary to secondary school level and policymakers and educational leaders to foster environmental, social, cultural, and economic sustainability in an inclusive way. It provides a structured competence framework, and outlines the desirable values, approaches and practices needed for effectively realizing the framework in practice. It also contains implementation guidance for teachers, adaptable resources, and practical tools to bridge the gap between existing, often fragmented practices and a consistent, inclusive approach to sustainability education. It builds upon the Erasmus+ priorities of inclusion, green transition, and digital transformation by proposing a structured pedagogical approach for educators.

The model is built upon a foundation of theories and concepts, including various definitions of sustainability and inclusion. While inclusion focuses on ensuring equitable access and participation for all learners, sustainability emphasises long-term ecological and social responsibility, this model integrates both as mutually reinforcing pillars of educational practice. For sustainability, it is anchored to the European GreenComp framework for sustainability competences. In addition, it delves into the complexities of inclusion, moving beyond integration to embrace systemic transformation, as informed by many existing inclusion frameworks that collectively emphasise the interconnectedness of all learners within broader social and ecological systems, advocating for proactive design and the dismantling of structural barriers to meaningful participation.

The methodology for developing this model involved a comprehensive analysis of existing curricula, focus group discussions with educators, collection of insights from good practices in partner countries, and a critical review of relevant theoretical frameworks. The model was created after an iterative refinement process based on wide consultations with project partners and broader stakeholders. This approach aimed to understand current realities, identify challenges, and create a model that is both research-based and practically applicable for diverse school settings. Underpinning the model is a theoretical framework for educator competences, adapted from the GreenComp framework, which was created to provide a foundation for the more applicable part of the model. The model itself consists of underlying core values, relevant pedagogical approaches, desirable teaching processes, and their corresponding teaching practices. Each practice area includes implementation guidance for teachers.

To enhance usability, the consortium has also gathered example activities and assessment tools specifically designed for primary and secondary school teachers to readily incorporate into their work.

2.User Guide

2.1 Who is the InclusiveFuture Pedagogical model for?

- **Passionate Educators** (families, parents too!) who see themselves as change-makers and mindset-makers
- **Primary and secondary school teachers** of all subjects who want to become agents of environmental, social, cultural and economic sustainability in their schools
- **Researchers and like-minded thinkers,** who understand the value of pedagogy and education towards planetary well-being
- **Educational leaders, principals and teacher trainers** who wish to be better equipped to provide knowledge, competences and relevant assessment tools
- **Policy makers** to realise the power and potential of adequate and applicable teacher education with up-to-date pedagogical content and toolkits

We have designed the InclusiveFuture Pedagogical model for educators who are interested in learning more about the dimensions sustainability focusing on social sustainability, education for sustainable development, inclusion, and have the passion and curiosity to expand their knowledge and develop pedagogical competences to foster action for sustainability and inclusion.

2.2 Why use the InclusiveFuture Pedagogical model?

While different pedagogical approaches to enhance sustainability competences are being encouraged in schools across Europe, their implementation can be uneven. Background research within the InclusiveFuture project shows that while inspiring examples exist, they are often isolated, unevenly implemented, and dependent on individual or local initiative, and **therefore using a structured pedagogical model can:**

- consolidate proven strategies into a coherent framework for school, classroom use,
- provide adaptable, inclusive tools for teachers in diverse contexts,
- strengthen underdeveloped areas of sustainability competence in schools, and
- support ongoing teacher learning and collaboration.

In doing so, using the InclusiveFuture Pedagogical model can bridge the gap between existing practice and a consistent, inclusive approach to sustainability education that is both practical and transformative at the school level.

2.3 How to use the model?

There are many ways to use this model, and we encourage readers to navigate the table of contents to identify the resources most relevant to their needs. Throughout the document, you will also find a range of supplementary materials for further exploration.

Category	Content to Read	Chapter Numbers	Estimated Reading time
Background and Concepts	Reading material needed to understand inclusion and sustainability for educators	Chapters 3-4	20 minutes
	Background research for the InclusiveFuture Pedagogical Model Methodology of the Model-building	Chapters 5-6	15 minutes
Understanding the model	InclusiveFuture Framework & Model - Underlying Competence Framework for Educators - The InclusiveFuture Pedagogical Model*	Chapter 7-8 (8.1, 8.2, 8,3)	30 minutes
Applying the model	- Example classroom activities - Assessment methods and tools	Chapter 8.4 and 8.5	15-30 minutes
Executive summary	Summary and key takeaway points	Executive Summary Chapter	5 minutes

Table 2: Guidance on how to use this document

*The **InclusiveFuture Pedagogical Model** has four parts to it:

1. **Underlying values and principles**: These represent the shared ethical foundations of sustainability education held by the project consortium and stakeholders, forming the core of the model.
2. Relevant pedagogical approaches: List of existing teaching methods and strategies best suited for developing inclusion and sustainability competences in learners. These pedagogical approaches, extracted from a compilation of good practices in inclusive and sustainability education, also follow the core values and support teaching processes and practices of the model.
3. **Desirable teaching processes:** Here, the model becomes more applicable, i.e., it shows the processes involved in effective teaching, learning and assessment of sustainability competences and how they can be best carried out in schools and classrooms.
4. Each teaching process is then further broken down into corresponding **teaching practices,** each accompanied by practical guidance on their implementation for teachers.

3. Sustainability and Inclusion in Education

"We do not inherit the Earth from our ancestors; we borrow it from our children."

-Antoine de Saint-Exupéry

3.1 Definitions of Sustainability

Sustainability means using resources and making decisions today in ways that do not prevent future generations from meeting their needs. It includes four dimensions: **1. environmental** (protecting ecosystems and natural resources), **2. social** (ensuring equity, health, and well-being), **3. economic** (maintaining long-term prosperity), and **4. cultural** (preserving traditions, values, and diversity). These dimensions are interrelated and essential for achieving the Sustainable Development Goals (United Nations, 2015). Central concepts in sustainability education have been collected under the umbrella term Education for Sustainable Development (ESD) including Environmental Education (EE) and Climate Change Education (CCE) and Global Citizenship Education (GCE) (Blum et al., 2013; Andreotti, 2006).

Education for Sustainable Development (ESD)

Sustainable development aims to address issues like poverty, hunger, and natural disasters. According to the European GreenComp framework, sustainability involves developing the knowledge, skills, and attitudes to act responsibly and with care for the planet and public health (Bianchi et al., 2022). It also means using natural resources fairly and efficiently to meet current and future needs while promoting well-being (Aithal & Aithal, 2021). Education concepts and pedagogies designed to address the intricate challenges of sustainable development have grown (Laurie et al., 2016; Bianchi, 2020). Education for sustainable development (ESD) empowers learners with knowledge, values, and skills to promote environmental integrity, economic viability, and social justice for present and future generations. Through teaching critical thinking, empathy, and problem-solving, ESD helps build societies that protect the environment, uphold justice, and promote lasting well-being.

Some forms of ESD are included in compulsory curricula worldwide but have been criticised for focusing more on ecological knowledge than on sustainability competencies and transformative impact (Hungerford, 2009). As a result, researchers emphasize action competence—the willingness and ability to act and participate in democratic processes (Jensen & Schnack, 1997; Schönstein & Budke, 2024; Sass et al., 2022; Oinonen et al., 2024; Mogensen & Schnack, 2010). For example, the European Commission's GreenComp Conceptual Reference Model (2021) highlights "acting for sustainability," and UNESCO's Education 2030 initiative integrates action competence across multiple sub-competences of ESD aligned with Agenda 2030.

Environmental Education (EE)

Environmental Education (EE) is present in compulsory education curricula across the world and aims to increase learners' understanding of environmental systems and challenges. However, it has attracted criticism from scholars who argue that it often prioritises teaching *about* the environment rather than fostering the skills, values, and dispositions required for responsible citizenship and informed decision-making

(Hungerford, 2009). Critics have expressed concerns about whether educators possess the expertise to address the scientific, economic, political, and social complexities inherent in environmental issues—an ongoing debate that remains highly relevant today.

Environmental Education (EE) has the tendency to focus too much on facts and ecological knowledge while neglecting action competence—the ability to understand problems, imagine solutions, and take meaningful action (Jensen, 2002). Without this, learners may know about environmental issues but feel powerless to act. However, modern EE approaches use participatory, interdisciplinary, and hands-on methods, such as real-world projects and community activities, to connect knowledge with action. When done well, EE empowers learners to become active contributors to sustainable futures, fostering both personal initiative and shared responsibility (Mogensen & Schnack, 2010).

Global Citizenship Education (GCE)

Global Citizenship Education (GCE) addresses the structural inequalities, cultural disparities, and imbalances of power that shape global relations, as well as the uneven distribution of wealth in an increasingly interconnected yet uncertain world (Andreotti, 2006). It aims to foster learners' empathy, intercultural understanding, and sense of responsibility to engage with pressing global challenges, from poverty reduction to environmental protection. Central to GCE is the recognition that local actions have far-reaching global consequences, and that sustainable change requires cooperation across cultures, borders, and sectors (Goodale et al., 2024; Pashby et al., 2020; Gaudelli, 2009).

GCE encourages students to examine their own positionality within global systems, critically interrogate the historical and contemporary processes that drive inequality, and appreciate the diversity of perspectives that can contribute to transformative solutions. By combining civic engagement with cultural literacy, it aspires to develop active citizens who are capable of navigating complexity and working collaboratively for the common good.

Planetary well-being (PW)

PW embodies systems-oriented thinking, integrating both human and non-human welfare within a unified framework, fostering transformative action for sustainability through the reevaluation of societal activities and wellbeing (Kortetmäki et al., 2024). Education for planetary wellbeing (EfPW) advocates a 'more-than-human' view, or a planetary perspective, characterised by a dialogic, interconnected relationship between nature and the inhabitants of the Earth, emphasising transformative learning and responsible decision-making. EfPW refers to the "processes of upbringing, teaching, and learning that enable individuals and communities to promote the well-being of the planet and its inhabitants, which we refer to as life on Earth" (Aaltonen et al., 2023). The shift towards a planetary well-being approach is imperative due to the increasing disparity between environmental challenges and the direction of political goals, highlighting the urgency to shift focus from anthropocentric norms to holistic ecological considerations in order to effectively address pressing environmental issues while ensuring the well-being of non-human nature (Matero & Arffman, 2024).

3.2 Definitions of Inclusion

Inclusion is not an easy concept. Even when narrowed to the context of education, it remains highly complex and without a universal interpretation. Definitions vary according to cultural, ideological, political, and even spiritual foundations (Ainscow, 2020). Despite these differences, inclusion is widely recognised as both a core need and a defining challenge of our time. In recent years, the concept of inclusion has evolved significantly, reflecting the profound changes brought about by global crises, digital transformation and the growing urgency of sustainability-related challenges.

Today, inclusion is no longer limited to issues of access or participation: it is increasingly understood as a multidimensional and transformative process that integrates social justice, environmental responsibility and digital equity. Contemporary perspectives agree that inclusion should be seen not as a fixed destination, but as an ongoing ethical and political commitment (Crenshaw, 2020; Allan & Slee, 2023; Lotz-Sisitka et al., 2023; Fettes & Blenkinsop, 2023). They invite teachers, policymakers, and communities to build learning environments that are not only accessible and equitable, but also responsive, sustainable, and deeply human.

Below, we present some of the most relevant and thought-provoking definitions and interpretations of inclusion in the context of schools and teaching, alongside related concepts such as diversity and equity.

Inclusion as integration

A review of research from 2012 found that the term inclusion was still largely linked to special education and disability (Norwich, 2014). Inclusive education emerged partly in response to the limitations of integration, which was the main approach in the 1960s. Integration maintained a divide between mainstream and special education and failed to prevent segregation, marginalisation, or discrimination in regular schools (Vislie, 2003). It focused on changing student placement, assuming this would automatically improve classroom learning for those integrated – but it didn't. In contrast, inclusion aimed to transform teaching practices, a shift that began in the US in the 1970s and reached Europe later (Graham & Jahnukainen, 2011). In contrast, inclusion aimed to transform teaching and learning practices to meet the needs of all learners, not only those with disabilities. This pedagogical shift began in the United States in the 1970s and reached Europe in subsequent decades (Graham & Jahnukainen, 2011). Contemporary approaches emphasise a rethinking of the curriculum, teaching strategies, and school culture, rather than simply relocating students (Ainscow et al., 2006; Arduin, 2015).

Diversity

Diversity in education refers to the presence and recognition of differences among learners in terms of culture, language, ethnicity, gender, socioeconomic background, ability, and learning styles. While diversity is a factual condition in all societies, its educational significance lies in how schools respond to it. Recognition alone is insufficient; diversity must be accompanied by inclusive pedagogies that value varied perspectives and experiences (Banks, 2015). Approaching diversity as a resource rather than a challenge can enrich learning environments, foster intercultural understanding, and strengthen social cohesion (Gay, 2018). This requires teachers to engage in culturally

responsive teaching, create spaces for dialogue across differences, and ensure that curricula reflect multiple voices and knowledge systems. From a critical inclusive education perspective, diversity is not only about acknowledging differences but also about addressing the structural inequalities and power relations that shape opportunities.

Equity and Universal Access

Education is a basic human right and the foundation for a more just society (United Nations, 2015). Sustainable Development Goal 4 calls for inclusive and equitable quality education for all, underscoring that access alone is not enough. Equity in education implies a concern for fairness, which means actively addressing the structural and systemic barriers that prevent certain groups from benefiting equally from learning opportunities (OECD, 2012). Slee (2011, 2018) contends that inclusive education must be understood as a political project aimed at dismantling systemic barriers and transforming school systems so that they are built upon principles of democracy, participation, and social justice.

The UNESCO rights-based definition of inclusion frames it as both a process and a principle. It defines inclusion as "a process of addressing and responding to the diversity of needs of all learners through increasing participation in learning, cultures and communities, and reducing exclusion within and from education" (UNESCO, 2009, p. 8). This vision positions inclusion as a driver of educational transformation and links it directly to human rights and social justice imperatives. From this perspective, equitable education requires changes to cultures, policies, and practices so that all learners—regardless of ability, background, or identity—can participate and succeed. Inclusive education policies increasingly stress that equity is not about treating everyone the same, but about ensuring that all learners have what they need to succeed (Loreman, 2017).

The Capability Approach

The Capability Approach, originally developed by Amartya Sen (1999) and expanded by Martha Nussbaum (2011), has been increasingly applied to inclusive education (Norwich, 2014; Terzi, 2010). Within education, capabilities refer to what learners are genuinely able to achieve, both academically and socially, given the resources, support, and opportunities available to them. This approach highlights that equality in inputs (such as school resources) does not guarantee equality in outcomes if some learners face additional barriers. It therefore calls for proactive removal of structural obstacles and provision of tailored opportunities that allow each student to develop their potential. The capability approach thus offers a strong ethical foundation for inclusion, aligning educational aims with broader social justice principles by ensuring that students are not merely present in classrooms but are empowered to thrive.

Climate Justice as Inclusion

The concept of climate justice draws attention to the reality that the Global North is largely responsible for the environmental degradation that has taken place over the past century. Yet it is the countries in the Global South — often those with fewer resources — that bear the brunt of the impacts. These countries experience the most severe consequences of climate change, such as rising sea levels, droughts, and biodiversity loss. In many cases, cheap labour and extractive practices have served external economic

interests at the expense of local ecosystems and communities. Climate justice calls not only for awareness, but for responsibility, equity, and reparative action. It asks for a shift from viewing sustainability through a purely technical lens to embracing it as a matter of fairness, inclusion, and shared humanity.

In the context of climate change and climate justice, GCE intersects with Climate Change Education (CCE) by promoting critical awareness of the disproportionate impacts of climate disruption on vulnerable populations, particularly in the Global South, and by emphasising the ethical responsibilities of high-emission societies (Favier et al., 2024). It encourages learners to evaluate socio-political dimensions, question dominant narratives, and participate in democratic processes that influence climate policy. In doing so, GCE fosters not only informed decision-making and critical thinking, but also the motivation and skills necessary for collective action towards a just and sustainable future.

Interpretations of Inclusion

Göransson and Nilholm (2014) synthesised four qualitatively different definitions of inclusive education that capture its conceptual diversity. The Index for Inclusion is particularly valuable because it operationalises inclusion, offering schools a practical self-evaluation tool for continuous improvement.

Interpretation	Description
Placement definition	inclusion as the placement of students with disabilities or in need of special support in general education classrooms
Specified individualised definition	inclusion as meeting the social and academic needs of students with disabilities or in need of special support
General individualised definition	inclusion as meeting the social and academic needs of all students
Community definition	inclusion as the creation of learning communities with specific characteristics, such as respect, participation, and shared responsibility
An additional widely used framework is the Index for Inclusion (Booth & Ainscow, 2011), which approaches inclusion through three interconnected dimensions:	
Creating inclusive cultures	developing a school ethos of respect and belonging
Producing inclusive policies	ensuring that school structures, policies, and resources promote participation for all

Evolving inclusive practices	adapting teaching and learning to engage the full diversity of learners

Table 3: Definitions of Inclusive Education by Göransson and Nilholm (2014)

3.3 Connection between Inclusion and Sustainability

When we speak of inclusion and sustainability in education, we must acknowledge that sustainability cannot exist without social inclusion, collaboration, and support systems that ensure all students (regardless of gender, age, race, socio economic background, or ability) have equitable opportunities to learn, participate, and thrive within their communities.

While environmental sustainability tends to receive the most attention, it is becoming increasingly clear that sustainable development is incomplete without the social, cultural, and economic dimensions. True sustainability must be holistic. It requires interdisciplinary collaboration and participatory approaches that promote innovation and support resilient societies working towards planetary wellbeing. Culture, history, and social conditions all have a significant influence on how individuals and communities behave. Despite the increasing digital connectivity in the world today, many people feel disconnected — from their roots, from nature, and from one another. Experiences of isolation and loneliness are becoming more common, undermining the foundations of supportive and inclusive communities. Agency, action competence, and a mindset grounded in inclusion are essential for building communities that are not only sustainable, but also adaptable, compassionate, and resilient. In this context, sustainability refers not just to environmental indicators such as emissions reductions, but to the capacity of communities and ecosystems to remain connected, inclusive, and supportive of all life.

Education plays a vital role in nurturing this responsibility. At the intersection of social sustainability and inclusion, the eco-social approach to education emphasises the deep interconnectedness of ecosystems, societies, and the more-than-human world, recognising the power imbalances inherent in human systems and the ethical duty to act in ways that safeguard planetary well-being. Schools serve as critical sites for developing sustainability competences, including systems thinking, critical analysis, and action competence, that foster long-term shifts in behaviour and mindset (Mestawot Beyene Tafese & Kopp, 2025). These shifts support the creation of inclusive communities that value both human and non-human life, reinforcing the principle that sustainability begins with ethical, inclusive relationships.

Moreover, emerging paradigms such as the eco-social turn in social pedagogy challenge traditional, human-centred educational frameworks by advocating for a broader, integrated understanding of social and ecological concerns as inseparable (Nivala & Ryynänen, 2025). This paradigm urges educators to reconstruct pedagogical structures that embrace holistic, relational approaches and foreground the interdependence between humans and their environments. Transformative education theories further reinforce the eco-social emphasis by proposing that education for sustainable futures must address the underlying cultural narratives and dominant systems that contribute to ecological decline. Fettes and Blenkinsop (2023) argue that educators should adopt

transformational design stances—critical, community, change, and care (the "four Cs")—which support shifts toward eco-social-cultural change and help dismantle entrenched patterns that hinder sustainability.

3.4 Rethinking Inclusion and Sustainability

The INCLUSIVE.FUTURE definition of Inclusion and Sustainability:

> *"A critical, justice-oriented pedagogical approach that recognises diverse forms of learning and continuously creates opportunities for inclusion, responding to the varying needs of individuals, communities, and environments to promote the well-being of the whole school."*

Our definition of inclusion and sustainability offers a renewed understanding of inclusion as a driver for not only whole-school well-being but planetary well-being, accounting for the ecosystems schools and humans are part-of. This critical and justice oriented pedagogical approach responds to diverse learning needs and calls for educators to consistently create opportunities for meaningful inclusion at individual, community, and environmental levels in order to support the well-being of whole school communities within their ecosystem. By introducing the concept of the ecosystem into education, we bring attention to the fact that schools, learners, and communities are all part of the wider planet. By broadening our understanding of inclusion we help in repositioning it as a central principle for achieving both human and planetary flourishing. All humans have a fundamental desire to feel heard, valued, and needed. When learners understand their role within their school community and the broader ecosystem, a deeper sense of belonging emerges. Inclusive education creates conditions where learners feel safe to be themselves and are able to grow in accordance with their individual needs, abilities, and identities.

Growing awareness of the climate crisis has broadened the concept of inclusion to encompass eco-inclusive education, an approach that connects social justice with ecological justice. Several authors argue that inclusive education must also empower students to address sustainability challenges, addressing issues of environmental equity and encouraging collective action for planetary well-being (Lotz-Sisitka et al., 2023; Fettes & Blenkinsop, 2023). Sustainable development cannot be considered meaningful if it excludes individuals, communities, or species, or if it fails to prioritise the well-being of the planet and its life systems. The UNESCO report Reimagining our futures together: a new social contract for education (2021) calls for a rethinking of education systems from a perspective of solidarity, interdependence, and collective responsibility. It emphasises that inclusive education must prepare students to navigate contexts of uncertainty, cooperate across differences, and participate meaningfully in building equitable and sustainable societies.

These challenges are complex, and teachers across the globe are being asked to serve as facilitators of change. They are expected to raise awareness of the links between human actions and planetary crises while operating within systems that may not provide them with adequate support or influence. For this reason, teacher voice in education policy is also a matter of inclusion. Equally important is the question of whose voices are amplified in global dialogues on inclusion and sustainability. Global power dynamics, rooted in

colonial histories and economic inequalities, continue to shape whose knowledge is valued and whose experiences are heard. Questioning the sources of knowledge and asking whether local, indigenous, and community based perspectives are included are critical practices in advancing more inclusive conversations.

3.5 Sustainable and Inclusive Learning Environments

Sustainable and inclusive learning environments are foundational to fostering responsible citizens who can address complex global challenges. These environments go beyond mere physical accessibility; they encompass pedagogical practices, curriculum design, and school culture that actively promote equity, diversity, and ecological awareness. Universal Design for Learning (UDL)'s (refer to section 3.6) principles extend beyond physical classroom environments to encompass social, cultural, and digital learning spaces, ensuring that online platforms, collaborative projects, and diverse cultural content are accessible and engaging for all.

For example, a sustainable and inclusive school might integrate hands-on projects that address local environmental issues (Oinonen et al., 2024), while simultaneously ensuring that all students, regardless of their background or abilities, have the necessary support and resources to participate meaningfully (Loreman, 2017). This integrated approach recognizes that the well-being of the planet is inextricably linked to social justice, and that empowering all learners is crucial for building resilient communities capable of enacting positive change (Mestawot Beyene Tafese & Kopp, 2025). Creating such environments requires a holistic "whole-school approach" (as defined in the Glossary) where sustainability and inclusion are embedded across all aspects of school life—from lesson content and teaching methodologies to daily operations and community engagement. This includes fostering open dialogue, encouraging critical thinking about global issues like climate justice, and providing opportunities for students to develop agency and collective action skills (Bianchi et al., 2022). By prioritizing these elements, primary and secondary schools can equip students with the knowledge, values, and competencies not only to understand sustainability and inclusion but also to become active contributors to a more just and sustainable future.

3.6 Current Realities of Teachers' Readiness

Teacher readiness is a cornerstone for achieving meaningful change in sustainability and inclusion in education. As outlined in the Inclusion chapter, creating equitable and participatory learning environments requires a combination of structural support, pedagogical skill, and cultural openness. Similarly, the environmental justice approach (Banzhaf et al., 2019) highlights that the success of sustainability education depends not only on curriculum design but also on teachers' capacity to foster democratic dialogue, critical thinking, and action competence among diverse learners. However, teacher education and training remain uneven globally, with many countries lacking systematic professional development opportunities that address the integration of inclusive practices with sustainability competences (UNESCO, 2017).

Inclusion cannot function without ongoing communication and a shared language among educators and learners, as well as between educators themselves. The human element is essential, since teacher–student dynamics influence how students feel able to express

their sense of inclusion. Collaborative efforts among teachers are therefore vital, allowing them to share approaches and perspectives—whether encouraging full participation in activities or ensuring learners with specific needs, such as dyslexia, can contribute equally. While all aspects of inclusion are important, teachers have limited time and resources, though in some contexts, support staff can assist students with additional needs without removing them from their learning environment.

Challenges and Opportunities

In many school systems, the integration of sustainability and inclusion is still more aspirational than fully realised. While policy frameworks and strategic visions often make strong commitments, the classroom reality is shaped by a combination of structural constraints, cultural attitudes, and local priorities (Florian & Pantić, 2017). Teachers are at the centre of this implementation gap, navigating the tensions between curriculum expectations, diverse learner needs, and their own professional capacity.

- **Insufficient Professional Preparation**

Many teachers report that their initial teacher education offered only limited exposure to sustainability and inclusion, often addressed in isolated modules rather than as integrated, cross-curricular themes (UNESCO, 2020). Continuous professional development in these areas is also uneven, with access depending heavily on local budgets, leadership priorities, and national policy incentives (Ainscow, 2020).

- **Resource and Infrastructure Constraints**

In both high-income and lower-income contexts, schools often lack the resources to adapt learning environments for diverse needs while also supporting project-based or experiential sustainability learning (OECD, 2012). This includes shortages of teaching assistants, limited access to outdoor learning spaces, insufficient digital infrastructure, and inadequate teaching materials that reflect both sustainability and diversity perspectives.

- **Fragmented Policy and Curriculum Design**

Sustainability education and inclusive education are often addressed in separate strands of policy, leading to parallel but disconnected initiatives. This fragmentation means teachers receive mixed messages about priorities, and opportunities to embed justice-oriented approaches are missed (Bianchi et al., 2022).

- **Time and Workload Pressures**

Teachers face heavy timetable demands, assessment requirements, and administrative duties that limit the time available for planning, reflection, and innovation (Hargreaves & Fullan, 2020). The challenge is particularly acute for early-career teachers who are still developing classroom management skills alongside new pedagogical approaches.

- **Sociocultural Barriers**

In some communities, sustainability issues may be politically contested or perceived as secondary to “core” academic subjects, while inclusion practices can be hindered by entrenched deficit thinking about certain groups of learners (Slee, 2011). These factors can affect teacher motivation, community support, and student engagement.

- **Emerging Inclusive Assessment Tools**

As discussed in the section on the Inclusive Sustainable Pedagogical Model, more teacher-friendly tools are beginning to appear that combine sustainability competence assessment with inclusion monitoring. These offer practical entry points for teachers who wish to adapt their practice without adopting complex research methodologies

- **Growing Teacher Collaboration Networks**

Professional learning communities, both in-person and online, are enabling teachers to share inclusive sustainability resources, lesson plans, and assessment tools. Such networks encourage experimentation, mutual support, and the localisation of global frameworks like GreenComp and UNESCO's Education 2030 goals (Hargreaves & O'Connor, 2018).

- **Student-Driven Engagement**

Participatory, project-based sustainability learning tends to generate high levels of student motivation, particularly when linked to real-world issues in the local community (Oinonen et al., 2024). This engagement can have a ripple effect, increasing teacher enthusiasm and community involvement.

- **Policy Momentum**

International initiatives, including the UN Sustainable Development Goals and the European Green Deal, are prompting national governments to update curricula and develop competence-based frameworks. When well-aligned, these frameworks provide clearer guidance for teachers and legitimise the integration of sustainability and inclusion in mainstream education (European Commission, 2022).

4. Frameworks, theories and models in sustainable and inclusive education

4.1 The GreenComp Framework

The **GreenComp framework** (Bianchi, 2022), used as a reference framework in this study, is the European Union's official framework for developing sustainability competencies across all areas of education and training. Developed by the Joint Research Centre (JRC) as part of the European Green Deal, GreenComp aims to empower individuals of all ages to live, learn, and work in ways that support ecological, social, and economic sustainability. It provides a shared foundation for promoting a sustainability mindset across formal, non-formal, and informal learning environments.

At the heart of GreenComp is the belief that meaningful action for sustainability requires more than just knowledge—it requires the ability to think systemically, envision change, and act ethically. To this end, the framework organizes 12 key competences into four interconnected areas:

1. **Embodying Sustainability Values** – This area focuses on internalizing values that support sustainability. It includes:
    - Valuing Sustainability: Reflecting on personal and societal values in relation to sustainable living.
    - Supporting Fairness: Promoting social and intergenerational equity.
    - Promoting Nature: Recognizing human-nature interdependence and fostering care for ecosystems.
2. **Embracing Complexity in Sustainability** – This area cultivates the skills needed to understand and address complex, interconnected sustainability challenges. It includes:
    - Systems Thinking: Seeing the bigger picture and interrelations across systems.
    - Critical Thinking: Evaluating information, questioning assumptions, and resisting greenwashing.
    - Problem Framing: Understanding sustainability issues from multiple perspectives and defining them appropriately.
3. **Envisioning Sustainable Futures** – Learners are encouraged to imagine and shape possible futures. This area includes:
    - Futures Literacy: Anticipating and planning for alternative futures.
    - Adaptability: Navigating change and making informed decisions under uncertainty.
    - Exploratory Thinking: Using creativity and interdisciplinary approaches to generate new solutions.
4. **Acting for Sustainability** – This area emphasizes taking initiative and influencing change. It includes:
    - Political Agency: Understanding governance systems and advocating for policy change.
    - Collective Action: Collaborating with others for sustainable outcomes.
    - Individual Initiative: Identifying and exercising one's own capacity to contribute meaningfully.

GreenComp is not a prescriptive curriculum but a reference model. It is designed to inform curriculum development, teacher education, policy design, and assessment strategies. The competences are non-hierarchical and interrelated, meant to be adapted to different learning levels and contexts.

The development of the framework was guided by a participatory methodology, drawing insights from educators, researchers, policymakers, and youth organisations across Europe. While it is broad in scope and not yet tested across all contexts, GreenComp is

intended as a living document—flexible, evolving, and adaptable to new sustainability challenges.

Beyond its comprehensiveness and European relevance, GreenComp's flexibility is a significant advantage for this curricular mapping study. Its competence-based structure allows for the identification of diverse approaches to integrating sustainability across various subjects and educational levels, rather than being tied to specific content. Furthermore, the framework's development through a participatory methodology, involving experts and stakeholders from various backgrounds, ensures that it represents a wide range of perspectives on sustainability education, making it a robust and widely accepted reference point for comparison across different national contexts. This inclusive development process enhances its legitimacy and applicability for analyzing diverse curricula (Hooda & Tuba, 2025).

4.2 Theories related to Social Justice and Human Rights

Theories of social justice and human rights offer critical foundations for understanding and advancing inclusive education. At their core, both frameworks emphasize dignity, equality, and the right of every individual to participate fully in society, including within educational systems. Inclusive education, which aims to ensure equitable access, participation, and outcomes for all learners—especially those who are marginalised—is inherently a social justice project. Theories of justice and rights inform both the philosophical underpinnings and the practical implementation of inclusive education across diverse contexts.

One foundational perspective is Rawls' Theory of Justice, which emphasizes fairness as the guiding principle of social institutions. Rawls (1971) proposes that justice should be understood as fairness, determined through hypothetical agreement made behind a "veil of ignorance," where decision-makers are unaware of their own social positions. In education, this theory calls for structures that do not advantage any group over others and that ensure the greatest benefit to the least advantaged students. Applying Rawls' principles means schools should be designed to support the needs of those who have historically been excluded or underserved, such as female students or students with disabilities, ethnic groups, or those from low-income families.

Critical pedagogy, most notably advanced by Paulo Freire, also plays a central role in connecting social justice to inclusive education. Freire (1970) critiques traditional forms of education as oppressive and calls for a dialogical model where learners and teachers engage in mutual inquiry. In inclusive classrooms, critical pedagogy encourages the recognition of students' lived experiences and promotes teaching methods that empower marginalised voices. This challenges deficit-based models that see difference as a problem and instead centers inclusive education as a transformative, liberatory process.

Human rights frameworks, such as the **Universal Declaration of Human Rights** (United Nations, 1948) and the Convention on the Rights of Persons with Disabilities (United Nations, 2006), explicitly recognise education as a fundamental right. These documents

affirm that all individuals are entitled to free and compulsory primary education and to secondary and higher education on the basis of merit. They further insist that education should promote respect for human rights, dignity, and diversity. Article 24 of the Convention on the Rights of Persons with Disabilities, in particular, outlines the right to inclusive education, emphasizing that persons with disabilities should not be excluded from general education systems on the basis of disability.

Key Theories on Human Rights and Social Justice from this section and their connection to Inclusive Education are summarised in the table below:

Theory	Core Concepts	Key Thinkers	Contribution to Inclusion
Rawl's theory of justice	Justice as fairness; veil of ignorance	John Rawls	Advocates structures/solutions that benefit the least advantaged
Capabilities approach	Real opportunities to achieve well-being	Amartya Sen, Martha Nussbaum	Focuses on meaningful participation and success
Critical pedagogy	Paulo Freire	Dialogue, empowerment, liberation	Encourages student voice and challenges oppression
Human Rights frameworks	Education as a right for all irrespective of identities and backgrounds	United Nations, UNESCO	Serves as a legal foundation for inclusive education

Table 4: Summary of Key Theories in Human Rights and Social Justice

The integration of these theories into educational practice are important so that need to move beyond access to address participation, representation, and outcomes. Inclusive education must be concerned not only with placing students in the same space but also with transforming systems to support diverse ways of learning and knowing. This includes anti-bias training for teachers, curricular reform to reflect multiple perspectives, and equitable distribution of resources.

4.3 The Salamanca Statement and Framework for Action on Special Needs Education

The Salamanca Statement and Framework for Action on Special Needs Education, adopted in June 1994 at the World Conference on Special Needs Education in Salamanca, Spain, was a transformative milestone in the global discourse on inclusive education. Convened by UNESCO and the Spanish government, the conference gathered over 300 participants from 92 countries, including representatives from governments, non-governmental organisations, and advocacy groups. Its principal goal was to reaffirm

the right to education for all children, particularly those with disabilities and special educational needs, and to promote inclusive schools as the most effective means of achieving this objective (UNESCO, 1994).

At the heart of the Salamanca Statement is the conviction that "schools should accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other conditions" (UNESCO, 1994, p. 6). This position goes beyond traditional special education approaches, advocating for inclusive educational systems that serve all learners within mainstream classrooms. The document affirms that every child has a unique set of characteristics, interests, abilities, and learning needs, and that education systems should be designed and implemented to reflect this diversity.

The Framework for Action: The accompanying Framework for Action provides practical guidance for governments, educational institutions, and international organisations. It calls for policy reforms to remove barriers to inclusion, including the development of inclusive curricula, teacher training programs, and community partnerships (UNESCO, 1994). Crucially, the framework promotes the idea that inclusive education is cost-effective, particularly in low-income countries, as it utilizes existing community schools and builds upon shared resources rather than establishing parallel systems for special education (Peters, 2003). Teacher preparation is a key concern in the framework. It advocates for reorientation of teacher education programs to include training on inclusive practices, collaborative teaching, and differentiated instruction. This focus on capacity-building is central to the sustainability of inclusive education systems (Florian & Black-Hawkins, 2011).

Despite its global resonance, the implementation of the Salamanca principles has varied significantly across regions. While some countries have made substantial progress in transforming their education systems, others continue to struggle with inadequate resources, entrenched segregation, and insufficient teacher support (Miles & Singal, 2010). Nevertheless, the Salamanca Statement remains a seminal document, continuing to inspire advocacy and policy reform toward educational inclusion. It represents a cornerstone in the movement toward inclusive education. By articulating a clear vision of schools as institutions that welcome and serve all learners, the document challenges educational systems to reimagine equity, diversity, and participation.

4.4 Systems Theory in a socio-constructionist perspective

Systems Theory, particularly with a socio-constructivist view, provides a valuable framework for inclusive education. It highlights schools as dynamic parts of larger social, cultural, and political systems (Bertalanffy, 1968). Combined with socio-constructivism, which emphasizes knowledge co-construction through social interaction (Vygotsky, 1978), this theory addresses the complexity of inclusive practices. Learning is co-constructed within a social context, aligning with inclusive education's goal to value diversity and support all learners. Systems Theory highlights multi-layered influences like policy, community, and institutional culture that shape educational outcomes (Bronfenbrenner, 1979).

An inclusive school is a complex system where administration, teachers, students, and families interact. Changes in one area, like national policy, require support from teacher training and resources to succeed (Ainscow & Sandill, 2010). Inclusion, from this perspective, is an emergent quality of the entire system, not just an individual classroom. Socio-constructivist principles emphasize learner agency, especially for diverse learners. Inclusive systems must offer multiple pathways to success. Systems Theory's focus on feedback and adaptability supports responsive educational practices that evolve with stakeholders' needs (Senge et al., 2000).

Teachers are part of a learning system, engaging in dialogue and professional development. Inclusive education demands collaboration between teachers, special educators, families, and students. Florian and Black-Hawkins (2011) advocate for "inclusive pedagogy," designing flexible learning opportunities for all. Systems Theory also addresses resistance in education. Implementing inclusion often faces institutional norms and resource limitations. A systems approach identifies leverage points for significant improvements (Meadows, 2008), emphasizing leadership, policy alignment, and a shared vision for sustainable inclusion.

Informed by socio-constructivism, Systems Theory offers a holistic understanding of fostering inclusive education. It encourages system-wide efforts over isolated interventions, and a shift from deficit models to recognizing co-constructed knowledge and diversity. This perspective provides a theoretical and practical roadmap for inclusion by integrating structural and relational aspects.

4.5 Ecological Systems Theory

Urie Bronfenbrenner's Ecological Systems Theory (1979) offers a framework for understanding how interconnected environmental factors influence child development. It views the environment as nested systems—microsystem, mesosystem, exosystem, macrosystem, and chronosystem—to explain how social and environmental contexts shape educational experiences, particularly in inclusive education.

The microsystem (immediate settings like classrooms and families) needs to be welcoming and supportive of diversity, with teachers fostering inclusion. The mesosystem (interconnections between these settings, e.g., home-school collaboration) is also vital for successful inclusion.

The exosystem (indirect influences such as school boards and policies) can either aid or impede inclusive education. Adequate teacher training and resources are crucial for sustainable inclusion. The macrosystem (broader cultural values and ideologies) heavily influences attitudes towards disability and inclusion. A shift towards valuing diversity and equity is needed for true inclusion, making it a political and cultural concern. The chronosystem (temporal dimension) acknowledges that changes over time (e.g., policy shifts, technology) impact opportunities for learners with disabilities, requiring proactive responses from educators and policymakers

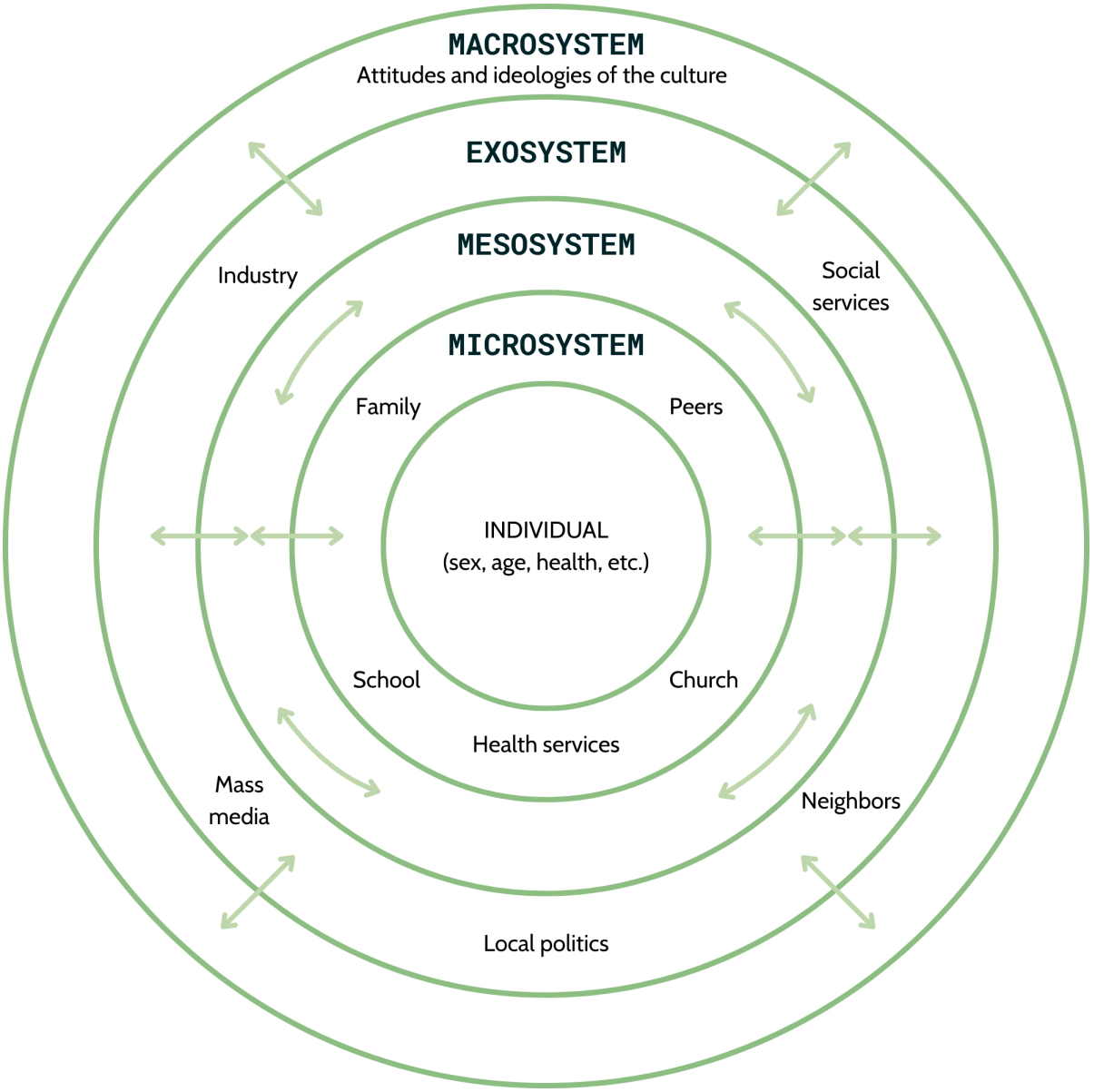


Figure 2. Ecological Systems Theory by Bronfenbrenner. Source: Wikipedia.

Applying this theory to inclusive education highlights the need for systemic coherence and shared responsibility. Effective inclusion requires all system levels to align towards equitable participation. This approach helps identify systemic barriers and promotes ongoing evaluation and reform, recognizing inclusion as a dynamic process.

4.6 Universal Design for Learning

Universal Design for Learning (UDL) centers on three principles: multiple means of engagement (the "why"), representation (the "what"), and action/expression (the "how"). These account for diverse motivations, comprehension, and demonstration of knowledge, allowing educators to address varied needs. Inclusive education requires intentional barrier removal. UDL supports this through proactive design, like consistent captioning, which benefits not only deaf students but also English language learners and others.

UDL challenges traditional views of ability by offering varied engagement and assessment, allowing students to leverage strengths. This reduces stigma and values diversity, aligning with socio-constructivist learning. Emphasizing learner agency, UDL offers choices that foster autonomy and metacognition. This empowers students, especially those who have experienced marginalisation, building confidence and engagement. Effective UDL implementation requires professional development and systemic support from leadership, curriculum developers, and policy. When embedded at all levels, UDL shifts focus from individual remediation to systemic design, reinforcing inclusive education. UDL is a robust framework that supports inclusive education by designing flexible, barrier-free learning environments. It anticipates diversity, promotes equity and access, and guides teachers in creating engaging, inclusive classrooms.

4.7 Crenshaw's Model of Intersectionality

Crenshaw's intersectionality model, developed in 1989, reveals how interlocking systems of oppression, like race and gender, shape experiences of marginalisation. Initially focusing on Black women, it now encompasses class, disability, sexuality, religion, and immigration status. In education, this framework helps address complex inequalities affecting students' access and experiences. While inclusion often targets students with disabilities, intersectionality highlights that students face multiple, overlapping forms of marginalisation. Ignoring these intersecting identities simplifies challenges and limits intervention effectiveness. Thus, intersectionality broadens inclusion beyond single-issue categories. A key contribution of intersectionality is its critique of neutrality in education. Curricula and practices often reflect dominant group experiences, marginalizing others. An intersectional approach challenges these assumptions, advocating for valuing diverse knowledge, voices, and experiences, moving towards equity and justice.

Practically, intersectionality urges educators to recognise how policies and classroom dynamics can disadvantage certain students. For instance, disciplinary practices disproportionately affect students of color, and immigrant students with disabilities face dual exclusion. Without this framework, such students are overlooked. Intersectionality also aligns with inclusive education's emphasis on learner voice. Understanding students' complex identities encourages culturally sustaining pedagogies, diverse content, and open dialogue about power and privilege, benefiting all students through empathy and critical thinking.

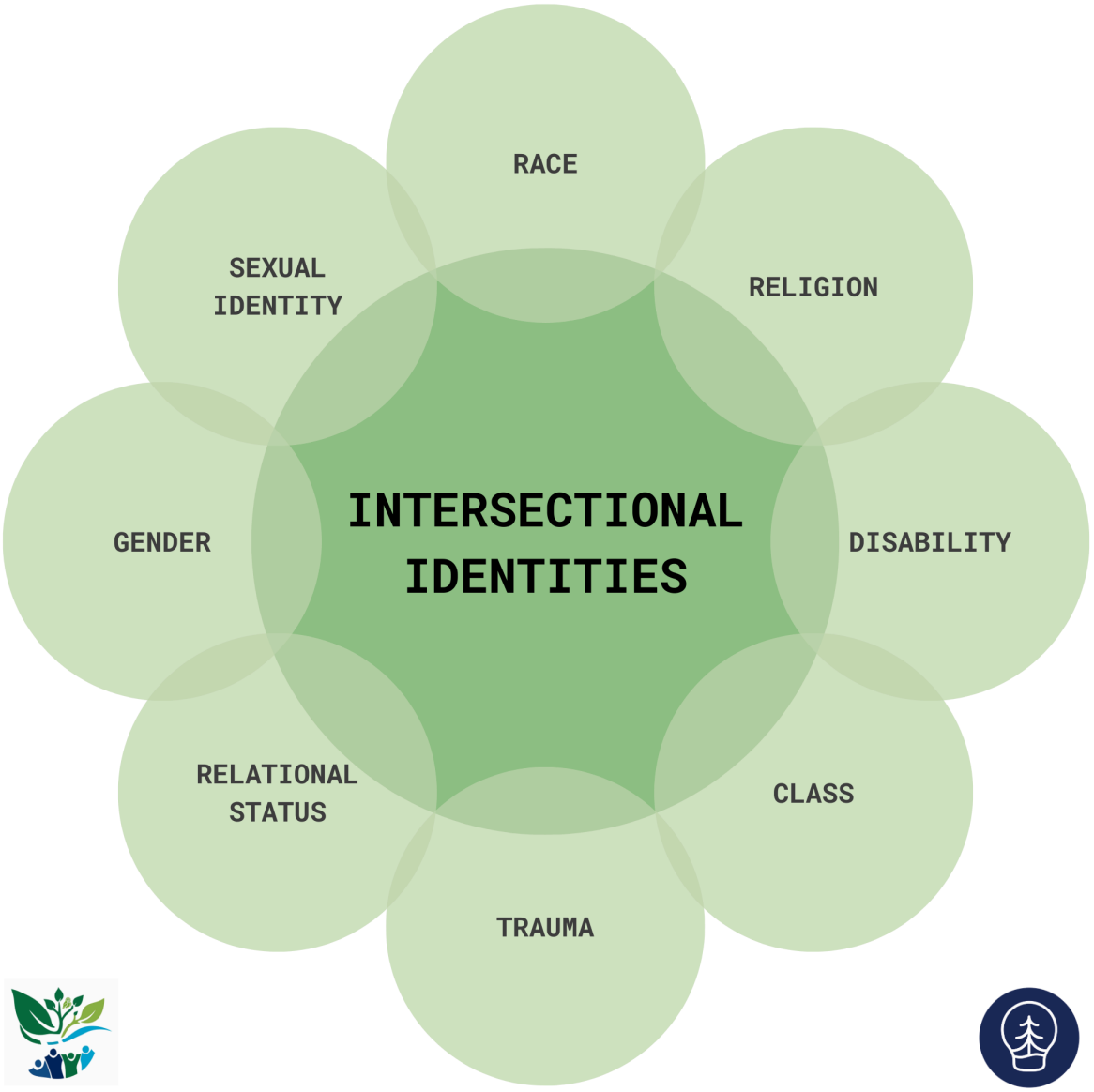


Figure 3: Crenshaw's model of intersectionality. *Source: Hassler (2020) on Medium*

Implementing an intersectional approach requires institutional commitment. Schools must evaluate policies and data practices (e.g., disaggregated data) to reveal inequalities emerging from intersecting identities. This leads to more nuanced and effective interventions, ensuring meaningful participation and achievement for all.

Crenshaw's model strengthens inclusion by highlighting interlocking power systems. It encourages educators to see students as whole individuals within complex social contexts, fostering equitable and responsive learning environments where all students are truly valued and supported.

4.8 Pedagogical models within Education for Sustainable Development and/or Inclusion

Pedagogical Model for Teaching Sustainability in Higher Education: Engaging head, hands and heart: This pedagogical model, developed by Käpylä and Auvinen (2024), emphasizes transformative sustainability learning by deliberately engaging all three dimensions of student experience—**"head"** (cognitive understanding), **"hands"** (psychomotor activity or skill application), and **"heart"** (affective, values-based motivation)—in coherent learning activities designed to foster sustainability competences. The model integrates theories of transformative learning, sustainability leadership, and competency-based education to design curriculum experiences that develop learners' knowledge, identity, and agency. Based on empirical implementation data from a master's-level course (with pre-/post- surveys, n = 25, and qualitative feedback, n = 19), it demonstrates evidence of supporting meaningful shifts in attitudes, capabilities, and motivation toward sustainability goals.

Burns Model of Sustainability Pedagogy centers on an ecological learning design built around five interrelated dimensions: **Content**, which is thematic, systemic, and co-created with learners; **Perspectives**, inviting critical examination of dominant paradigms through diverse lenses; **Process**, emphasizing participatory, experiential, and relational engagement; **Context**, grounding learning in specific, place-based environments; and **Design**, which as an ecological integrative process weaves together the other four to foster transformational learning (Burns, 2013).

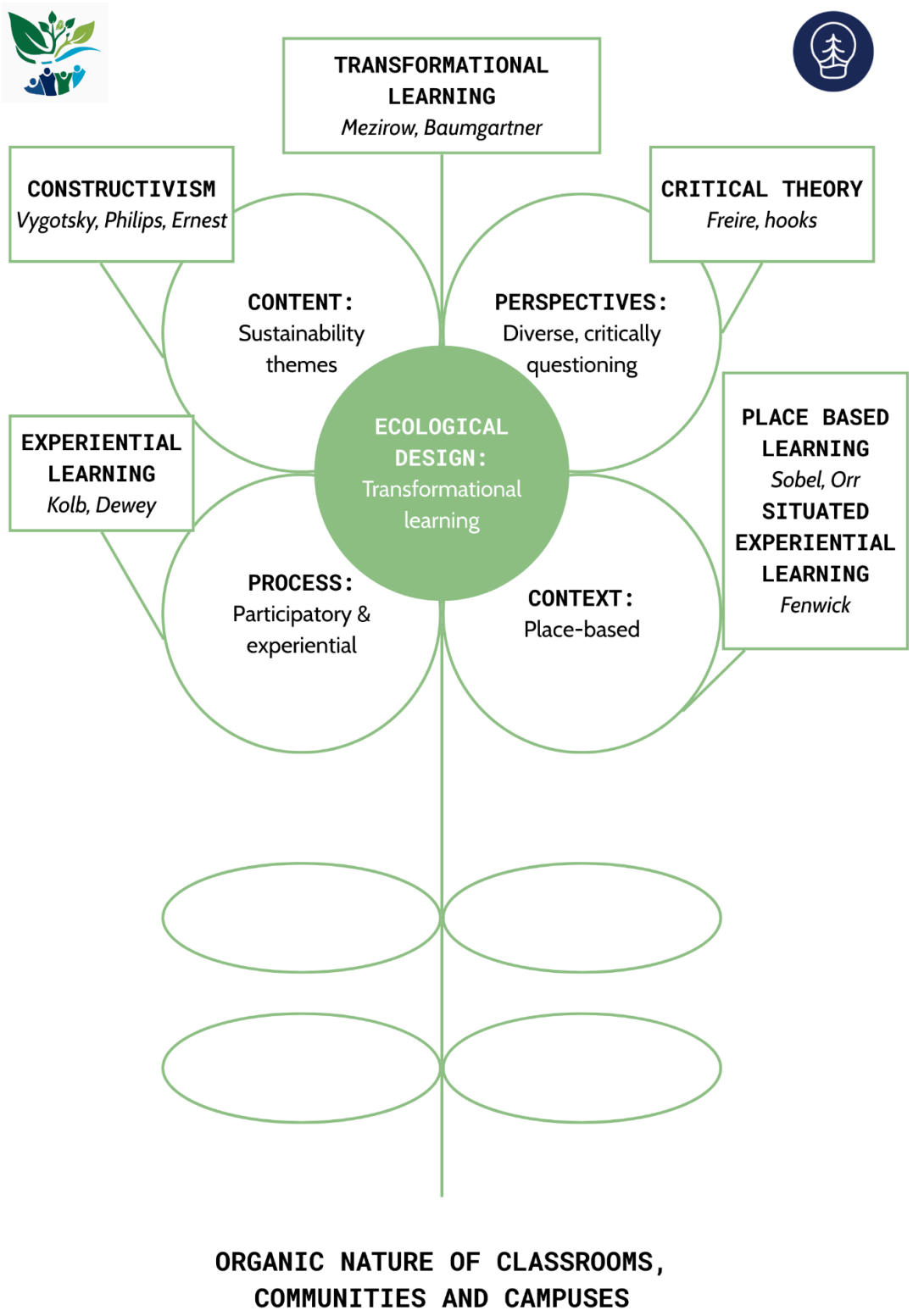


Figure 4: Burns Model for Sustainability Pedagogy. *Source: Heather Burns*

All the models presented above promote holistic, experiential, and transformative learning, connecting knowledge, skills, and values, and aim to develop competences for sustainable behavior and active participation in social and ecological issues.

The GreenComp, social justice, and human rights theories highlight the multifaceted nature of inclusive and sustainable education. The Salamanca Statement, Systems Theory, Ecological Systems Theory, Universal Design for Learning (UDL), and Crenshaw's Intersectionality Model provide crucial groundwork for inclusive practices, emphasizing systemic coherence, proactive design, and addressing complex marginalisation. Pedagogical models like "Head, Hands, Heart" and Burns' Sustainability Pedagogy advocate for holistic, experiential, and transformative learning for sustainable behavior. Synthesizing these, the InclusiveFuture Pedagogical Model offers a comprehensive, actionable, and ethically grounded framework, integrating GreenComp's competencies, social justice principles, UDL, and intersectionality. This ensures the fundamentality of sustainability and inclusion in ensuring education for all.

5. Background and Aims

5.1 Rationale

It is no news that we are living in a constant state of flux; the world is going through rapid and continuous change in a way that the rate of change is exponential as we look from the past to the present and then to the future. Interconnected challenges such as shifting climates and social inequalities seem to require immediate attention and yet, are rarely included in traditional pedagogies. Currently prevalent educational ideas and practices across countries, especially in school education, while valuable, often fall short of equipping us with the holistic understanding and the adaptive skills required to navigate these complexities.

This **Inclusive Pedagogical Model for Teaching Learning and Assessment of Sustainability Competences** aims to contribute towards bridging this gap by proposing educational experiences, pedagogical approaches and classroom practices that are firmly rooted in the current planetary and educational realities. Through this pedagogical model, we aim to prepare educators, teachers, school leaders, and students not just to survive but to co-create a more equitable and thriving future.

5.2 Background

This section elaborates on the background work done as a part of the InclusiveFuture project towards the goal of fostering inclusion through sustainable education. As a part of the background research to this pedagogical model, the project partners:

(i) analysed the national core curricula for basic education and upper secondary education (grades 1-12) of partner countries to identify if and how sustainability competences are integrated into the curricula, including prevailing policy provisions and identified gaps

(ii) conducted focus group discussions with school stakeholders, i.e., teachers, school principals, teacher educators, student teachers, and educational researchers in 8 partner

countries to understand first hand from them how they experience the integration of inclusion and sustainability practices in the schools and classrooms and what challenges remain to be addressed

(iii) collected good practices in inclusive and sustainability education from partner countries that are worth highlighting for teachers; and serve as inspiration for the pedagogical approaches, classroom activities, and assessment tools created to support the development and implementation of this model.

Insights from curricular analysis

Hooda and Tuba (2025), along with the InclusiveFuture team, analysed the national core curricula (primary and secondary education) of 8 partner countries, for identifying the existing provisions as well as gaps in the curricula towards enhancing sustainability competences of students. The most important insights from the curricular analysis are summarised below:

"While most EU countries support basic sustainability education, deeper competences like futures literacy are important for transforming anxiety or passivity into resilience and proactive behavior are rarely emphasised. Teaching often centers on simple, low-impact actions like waste sorting (reported by 83.9% of school principals) rather than tackling complex sustainability challenges. Despite limited formal training, many teachers feel confident discussing sustainability, yet transformative, action-oriented teaching methods are still not widely practiced. As a result, just 42.1% of young people feel they've had meaningful learning experiences related to sustainability in school (European Commission. Directorate General for Education, Youth, Sport and Culture., 2024)"

Teacher training, the **assessment of sustainability competences**, and the **practical implementation of interdisciplinary approaches** emerge as recurring areas needing improvement. Many countries report that while teachers acknowledge the importance of sustainability, they often lack the confidence or tangible tools to effectively integrate it into their teaching practices. Additionally, standardised assessment frameworks for sustainability competencies are frequently absent, hindering the ability to track progress and ensure accountability. Balancing formal education requirements with experiential, hands-on learning also remains a widespread challenge, as exam-focused systems and time constraints can impede the practical application of sustainability principles. Hence, there is a need for more **practical, hands-on learning experiences** for both learners and educators, including students, teachers and school principals.

Here is what the report recommends:

Explicit integration of sustainability competences	Integrate sustainability competences explicitly into national and regional curriculum frameworks. Define what these competences mean, how they should be taught, and how they should be assessed. Ensure these definitions align with global frameworks like GreenComp.

Development of practical assessment tools for sustainability competences	Develop standardised national assessment tools specifically designed to evaluate sustainability competencies. These tools should be integrated into existing assessment practices and provide a clear picture of students' development in sustainability-related skills.
Promotion of interdisciplinary collaboration	Encourage interdisciplinary collaboration at all levels of education. Facilitate the development of learning modules and projects that integrate sustainability themes across different subjects, fostering a holistic understanding of complex issues.
Supporting a whole school approach	School leaders must be able to create space for and support teacher autonomy in developing and implementing sustainability education initiatives as well as provide resources, guidance, and flexibility for teachers to innovate and adapt their teaching practices to address sustainability issues.
Integration of sustainability in everyday practice	The contradiction between our daily lives and policies must be highlighted, and students should be able to evaluate from the bottom up, towards the top of the hierarchy. The schools', teachers' and policy focus should shift from meeting external requirements to supporting and rewarding everyday sustainability practices.

Table 5: Key recommendations highlighting the need for the InclusiveFuture Pedagogical model

Insights from focus group studies

Focus group studies (Vesely & Szövérfi, 2025) across eight InclusiveFuture partner countries identified key areas for improving sustainability education in schools. These include:

- Emphasizing values and futures orientation: Grounding education in values like justice and empathy, fostering equitable participation for all students, and addressing attitudinal barriers to individual action.
- Assessment of non-academic outcomes: Developing frameworks to assess teamwork, empathy, and environmental stewardship, beyond traditional academic performance.
- Provision of accessible, free practical tools and resources: Providing easily adaptable, localised, and ready-to-use teaching materials.
- Instructional innovation: Integrating sustainability into subjects, developing standalone courses, encouraging project-based and experiential learning, using real-world data, employing speculative design, and promoting whole-school, cross-disciplinary approaches aligned with GreenComp. Immersion in nature is crucial for fostering ecological understanding and responsibility.

- Addressing multidimensionality of sustainability: Recognizing and integrating ecological, social, economic, and cultural dimensions holistically.
- Professional development in sustainability and inclusion, building teachers' capacities and enhancing teacher confidence: Providing ongoing training in knowledge and pedagogical tools, addressing complex interdisciplinary topics, and fostering intrinsic motivation in teachers through support and autonomy, as per Self-determination theory.
- Scaling and sharing good practices: Establishing mechanisms to identify, validate, and disseminate successful sustainability initiatives.
- Addressing inaccessibility of sustainability content: Ensuring content is accessible to students from diverse linguistic and cultural backgrounds.
- Seeking societal support: Emphasizing the need for active involvement from families, communities, and broader society to create lasting cultural change, as school-based efforts are undermined by societal wastefulness or exclusion.

Insights from good practices from partner countries:

The Good Practices of Sustainability and Inclusive Education report by Vesely et al. (2025), produced within the InclusiveFuture project, brings together 55 examples of sustainability education across diverse European contexts. Many of these cases offer valuable insights into how sustainability competences can be meaningfully developed in schools while promoting inclusion for all learners. The analysis highlights that effective practices already exist at the school and classroom level, but they are often fragmented, resource-dependent, or reliant on individual initiative. Moreover, there are common patterns of what works and where gaps remain, providing a foundation for model design:

1. Varied Pedagogical Approaches as Catalysts for Engagement: The case studies illustrate that active, student-centred approaches—such as living laboratories, phenomenon-based learning, experiential learning, service learning, problem- and project-based learning—consistently foster deeper engagement with sustainability topics. These methods connect classroom learning with real-life contexts, encouraging learners to apply knowledge through hands-on activities, community projects, and collaborative problem-solving. Key take-aways include:

- Learning activities should be authentic and context-linked, enabling students to see the relevance of sustainability in their own lives.
- Collaboration—both among students and between schools and community partners—enhances motivation and skill-building.
- Teacher guidance is crucial for structuring inquiry, supporting reflection, and linking practical experiences to conceptual understanding.

While these approaches are adaptable across different school levels, their implementation can be uneven. Challenges such as high preparation demands, difficulties

in aligning with rigid curricula, and limited access to spaces or materials point to the need for model-supported planning tools, adaptable resources, and examples for diverse school settings.

2. Embedding Sustainability in Everyday Learning: Curriculum-related best practices show that sustainability education works best when it is integrated into regular teaching rather than treated as an add-on or one-off project. Examples like thematic sustainability weeks, cross-curricular projects, or subject-specific adaptations demonstrate that even small-scale interventions can shift school culture when repeated and embedded. Hence, there is a need for:

- Providing modular activities and lesson plans that can be embedded in existing subjects.
- Encouraging interdisciplinary connections, linking environmental, social, cultural, and economic dimensions of sustainability.
- Offering adaptable templates so teachers in different contexts (urban/rural, resource-rich/resource-limited) can implement the model without needing extensive external support.

3. Inclusiveness as a Driver of Participation and Belonging: The good practices report confirms that inclusion is essential for sustainability learning to reach all students. Classroom-level inclusiveness often involves:

- Differentiated instruction that accounts for varied abilities, learning styles, and backgrounds.
- Universal Design for Learning principles, offering multiple means of engagement, representation, and expression.
- Ensuring materials and examples are culturally relevant and accessible to all learners.

Some practices also show the value of student voice and leadership—for example, when students co-design projects or lead sustainability initiatives, participation broadens and the learning community becomes more cohesive.

4. Teacher Capacity and Resource Gaps: Several best practices succeed because of teacher enthusiasm and creativity, but these successes can be difficult to sustain when resources are limited or when teachers lack training in interdisciplinary or participatory methods. The report notes that:

- Many effective approaches rely on teacher-led adaptation of external frameworks or resources.
- Teachers benefit from concrete, ready-to-use materials and examples of good practice from other schools.
- Professional learning opportunities—especially those that include peer exchange—strengthen confidence in applying new pedagogies.

This highlights the importance of (i) providing clear, practical guidance and examples for lesson design, assessment, and adaptation, (ii) including low-resource implementation options so schools with limited infrastructure can still participate fully, and (iii) incorporating a collaborative component where teachers can share experiences and refine practices.

5. Gaps in Sustainability Competences: While many practices foster sustainability values and action, the report shows weaker coverage of two GreenComp areas:

- Embracing complexity (e.g., systems thinking, critical analysis of interconnected challenges).
- Envisioning sustainable futures (e.g., futures literacy, adaptability, exploratory thinking).

This pedagogical model attempts to address these gaps by integrating activities that help students:

- Map interconnections between environmental, social, and economic issues.
- Imagine alternative futures and explore creative solutions.
- Reflect on trade-offs and uncertainties inherent in sustainability challenges.

Findings from the good practices report highlight that this pedagogical model should

(i) Build inclusiveness into every stage of planning and implementation, not as an add-on.

(ii) Provide guidance for adapting activities to different learning needs without excessive workload for teachers.

(iii) Promote student agency, recognising learners as active contributors to sustainability solutions.

5.3 Aim and objectives

The development of the Inclusive Pedagogical Model for Teaching, Learning and Assessment of Sustainability Competences is driven by the need to empower teachers and school leaders to embed sustainability and inclusion meaningfully into everyday school practice. While numerous inspiring initiatives already exist, they are often fragmented, dependent on individual initiative, and lack accessible, adaptable resources. This model seeks to consolidate proven approaches, address identified gaps, and provide a coherent, practical framework that supports educators in translating sustainability principles into tangible classroom and school-level actions.

Aim

To support teachers and school leaders in integrating sustainability and inclusion competences into teaching, learning, and school culture through accessible, inclusive, and

practical pedagogical guidance and tools, with a particular focus on classroom-level application.

Objectives

The Inclusive Pedagogical Model will:

1. **Address pedagogical gaps and needs** identified during background analyses through examining curricula, gathering stakeholders' perspectives, and identifying best practices across 8 countries

2. **Strengthen teacher and school leader capacity** to design, implement, and evaluate learning activities that cultivate sustainability competences in ways that are inclusive of all learners.

3. **Provide adaptable, ready-to-use resources** that can be integrated into existing subjects, activities, and school initiatives without requiring substantial additional workload or resources.

4. **Promote the use of inclusive pedagogical approaches** that ensure participation, representation, and equitable learning opportunities for students from diverse backgrounds and with varied learning needs.

5. **Foster teacher confidence and agency** by offering clear guidance, practical examples, and supportive tools for bringing sustainability values, mindsets, and practices into everyday teaching.

6. **Encourage collaboration and peer learning** among educators through approaches that are adaptable to different school contexts, including those with limited infrastructure or resources.

5.4 Characteristics of the model

The InclusiveFuture Model is designed to be practical, adaptable, and an inclusive tool for teachers and school leaders. The model is designed to be:

Teacher-centred: The model is built with teachers as its primary users. It provides concrete guidance, ready-to-use examples, and adaptable tools that can be implemented without extensive additional preparation.

Embedded in everyday learning: Rather than treating sustainability as a separate topic, the model integrates sustainability into everyday teaching and school culture, using both subject-specific and cross-curricular approaches to embed sustainability values across all disciplines and activities.

Inclusive: The model builds inclusiveness into all activities, using Universal Design for Learning and differentiated instruction to make them accessible, relevant, and adaptable, while promoting a supportive classroom culture for equitable participation.

Flexible and context-responsive: While designed for the EU and partner countries, the model recognises diverse school contexts and offers flexible pathways, with activities that can be adapted by scale, age group, and curriculum.

Competence-driven: The model aligns with established frameworks, especially European GreenComp, addressing gaps such as systems thinking, futures literacy, and navigating complexity.

Collaborative and Community oriented: The model promotes collaboration among teachers, students, and community partners, fostering collective responsibility for sustainability and inclusion through peer learning and shared projects.

Evidence-informed and actionable: Informed by research, stakeholder feedback, and field insights, the model turns theory into practical steps, helping educators apply sustainability values confidently in schools and classrooms.

6. Context and Methodology

The development process of the model builds on existing research, documented practices, and the collaborative expertise of project partners, while ensuring that model is validated by those who will ultimately utilise it. The methodology follows a three-phase process, ensuring that the model is evidence-informed, co-created with stakeholders and refined through iterative feedback.

Phase 1 Research and review

This phase establishes the evidence base for the model by consolidating insights from multiple sources:

- Curricular analysis across partner countries to identify opportunities for embedding sustainability competences and inclusion principles within existing educational frameworks.
- Focus group studies with educators, researchers, and school leaders to capture practical insights, challenges, and needs directly from the field.
- Collation of good practices from the Best Practices of Sustainability Education and Inclusiveness report, identifying effective approaches that can be adapted and integrated into the model.
- Review of existing research, theories, and frameworks within Inclusion and Sustainability Education to ensure that the model aligns with recognised competence structures while addressing current gaps, particularly in systems thinking, futures literacy, and navigating complexity.

This phase resulted in a clear set of values, principles, content and design considerations that guide the next stage.

Phase 2 Designing of the model

The design phase focuses on translating evidence and principles into a practical, user-friendly model. This involves

- Agreeing on underlying values and principles with project partners to ensure shared vision and alignment with the overarching goals of sustainability and inclusiveness.
- Drafting the initial framework of the model, including a proposed structure, content areas, and examples of application at classroom and school levels.
- First partner review workshop of the draft through structured feedback mechanisms, leading into an online partners' workshop. This workshop serves as a platform for brainstorming, refining ideas, and identifying key questions to guide stakeholder consultation.
- Refinement of the draft based on partner input, resulting in a second version of the model that is ready for broader validation.

Phase 3 Validation and testing through stakeholder consultations

To ensure that the model is relevant, practical, adaptable and usable, we conducted:

- Stakeholder consultation through qualitative surveys with more than 130 stakeholders including teachers, school leaders, educational researchers and teacher students. These consultations provide detailed feedback on the usability, clarity, and applicability of the model in different school contexts.
- Iterative refinement of the model based on stakeholder input, producing a third draft that incorporates diverse perspectives and practical recommendations.
- Final partner review to ensure consensus on the content, usability, and alignment with project objectives.
- Finalisation and translation, including translated summaries for wider dissemination.

Phase 1: Research and Review —>	**Phase 2: Design —>**	**Phase 3: Validation and Testing**
Curricular analysis	Agree values and principles	Stakeholder consultation
Focus group studies	Draft initial model	Iterative refinement
Collation of good practices	Partners' review workshop	Final partner review
Review of existing research and frameworks	Refinement to 2nd draft	Finalisation and translation

Table 6: Three-phase development of the InclusiveFuture Pedagogical Model

7. InclusiveFuture Framework

The InclusiveFuture Framework (see Table 7 below) lays the foundation for the InclusiveFuture Pedagogical Model (Section 8). It is based on the GreenComp sustainability competence framework while introducing aspects of inclusion into each competence area. The framework was adapted for teachers and educators in school settings, outlining the general teacher competences in sustainability and inclusion, i.e., what is expected of teachers against each GreenComp competence area.

Competence Area	General Teacher Competence
1. Embodying Sustainability & Inclusion Values	a. **Promoting Equality, Social Justice and Equity:** Teachers actively work to dismantle systemic barriers, challenge biases, and advocate for fair and equitable opportunities for all learners, particularly those from marginalised and vulnerable groups.
	b. **Valuing Sustainability and Inclusion:** Teachers demonstrate a deep personal and professional commitment to the values of sustainability and inclusion, actively integrating these into their pedagogical practices, classroom culture, and interactions with the wider school community.
	c. **Fostering Human-Nature Interdependence:** Teachers cultivate an understanding of the connection between human well-being and the well-being of nature, ecosystems, promoting a sense of ethical responsibility and care for both people and the planet.
2. Embracing Complexity	a. **Systems Thinking in Education:** Teachers apply a systems perspective to understand the complex connections of social, ecological, and economic challenges, recognizing how educational practices influence and are influenced by broader societal systems.
	b. **Critical Reflection on Norms and Practices:** Teachers encourage learners and themselves to critically examine dominant assumptions, power structures, and established norms within education and society that may allow indefinite practices of unsustainability or exclusion.
	c. **Navigating Dilemmas and Trade-offs:** Teachers guide learners to understand that sustainability and inclusion often involve dilemmas (conflicting values and realities) and trade-offs (balancing competing needs). Learners develop critical thinking and ethical decision-making instead of seeking simple answers.
3. Envisioning Sustainable & Inclusive Futures	a. **Futures Thinking and Foresight:** Teachers guide learners in envisioning diverse possible futures towards sustainability and inclusion, fostering critical thinking about long-term consequences and empowering learners to shape positive change.
	b. **Adaptability and Resilience:** Teachers cultivate learners' capacity to adapt to change, navigate uncertainty, and build resilience in the face of environmental and social challenges, promoting critical problem-solving skills.
	c. **Creative Problem-Solving for Transformation:** Teachers encourage learners in addressing systemic challenges by generating creative new solutions that promote sustainability and inclusion.

4. Acting for Sustainability & Inclusion	a. **Action and Participation:** Teachers create participatory opportunities for all students to practice making informed choices, take meaningful action on sustainability and inclusion issues in their classrooms, schools and local communities.
	b. **Facilitating Collaborative Action:** Teachers design learning experiences that foster collaboration, teamwork, and collective responsibility among students, enabling them to work together effectively towards shared sustainability and inclusion goals.
	c. **Promoting Participatory Citizenship:** Teachers engage learners in understanding democratic processes and civic engagement related to sustainability and inclusion, encouraging active participation in advocacy, community initiatives, and responsible decision-making.

Table 7: The InclusiveFuture Framework

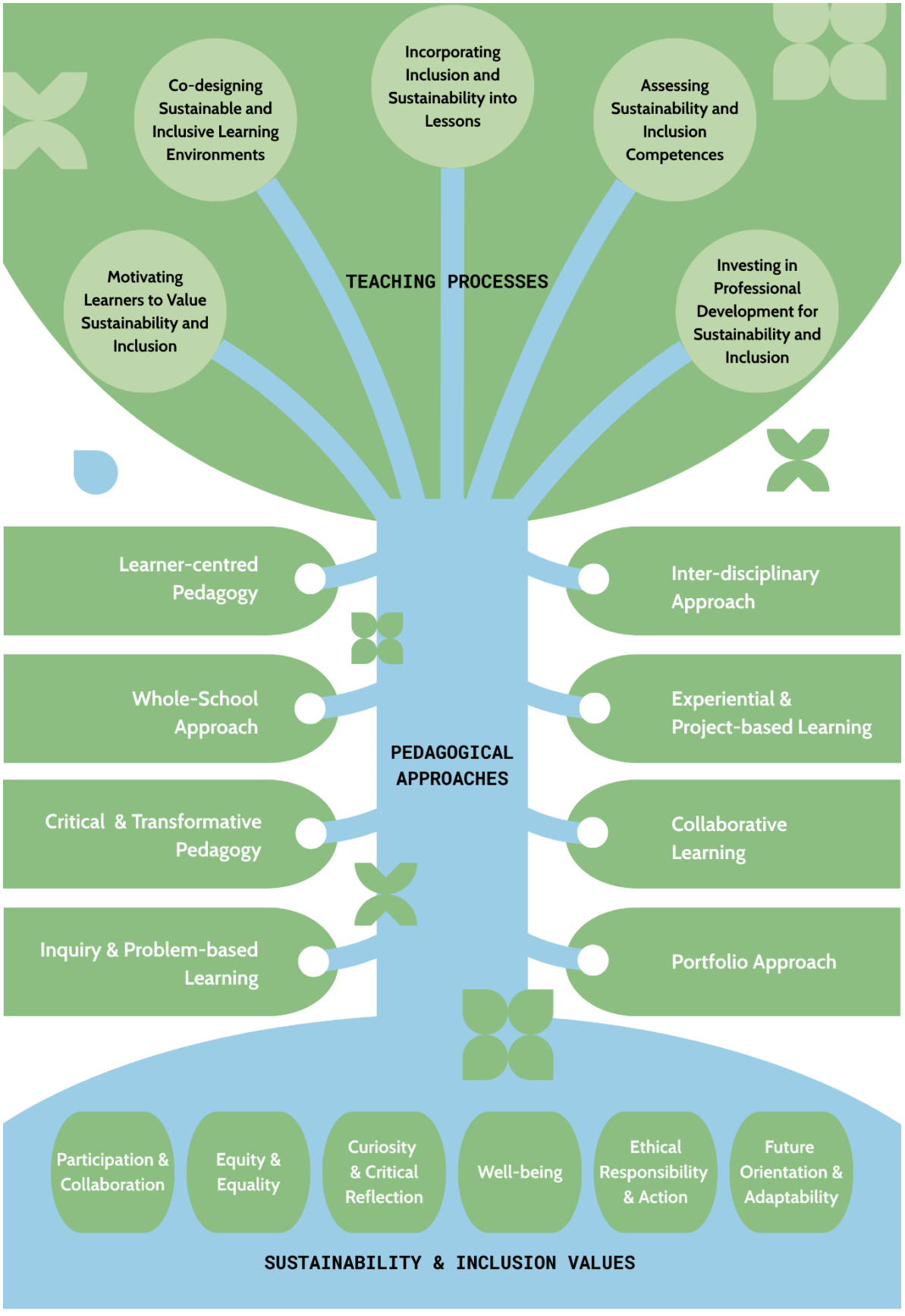
8. InclusiveFuture Pedagogical Model for Teaching, Learning and Assessment of Sustainability Competences

The InclusiveFuture Pedagogical Model provides a holistic framework integrating inclusion and sustainability into daily teaching and learning processes. It comprises the following parts:

1. **Underlying values and principles**: These are the underlying beliefs held by the project consortium as well as project stakeholders—what we consider important as the ethical foundations of sustainability education. These values form the core of the model.
2. **Relevant pedagogical approaches**: Here we collated a list of existing teaching methods and strategies best suited for developing inclusion and sustainability competences in learners. These pedagogical approaches, extracted from a compilation of good practices in inclusive and sustainability education, also follow the core values and support teaching processes and practices of the model.
3. **Desirable teaching processes:** Here, the model becomes more applicable, i.e., it shows the processes involved in effective teaching, learning, and assessment of sustainability competences and how they can be best carried out in schools and classrooms.
4. Each teaching process is then further broken down into corresponding **teaching practices,** each accompanied by practical guidance on their implementation for teachers.

The above mentioned components are interconnected, supporting teachers to design learning experiences that develop key sustainability competences such as critical thinking, collaboration, and ethical responsibility. The components are detailed in the following subsections: 8.1, 8.2, and 8.3.

Figure 1 below illustrates the overall InclusiveFuture Pedagogical model, which builds on the core sustainability and inclusion values, encompasses the various pedagogical approaches relevant to the inclusive development of sustainability competences among learners, and outlines the teaching processes needed to integrate these competences into schools and classrooms.



InclusiveFuture Pedagogical Model

Figure 1. Visual Representation of the InclusiveFuture Pedagogical Model

8.1 Values and Principles

Values are deeply held beliefs that reflect what individuals or societies consider important, such as justice, respect for nature, or well-being (Tilbury & Wortman, 2004). They provide the ethical foundation for sustainability education by shaping learners' attitudes, motivations, and commitments. Principles, by contrast, are general guidelines or rules derived from these values that inform consistent decision-making and action—such as participation, equity, or systems thinking (UNESCO, 2017; Sterling, 2010). While values offer the "why," principles provide the "how" in educational practice. Research highlights that clarifying and embedding both values and principles enhances the relevance, coherence, and transformative potential of sustainability education (Barth et al., 2007; Wals, 2011). In this context, teachers play a key role in translating abstract values into concrete classroom actions through dialogue, reflection, and collaborative learning. Their role is essential in designing learning experiences that are both ethically grounded and practically effective.

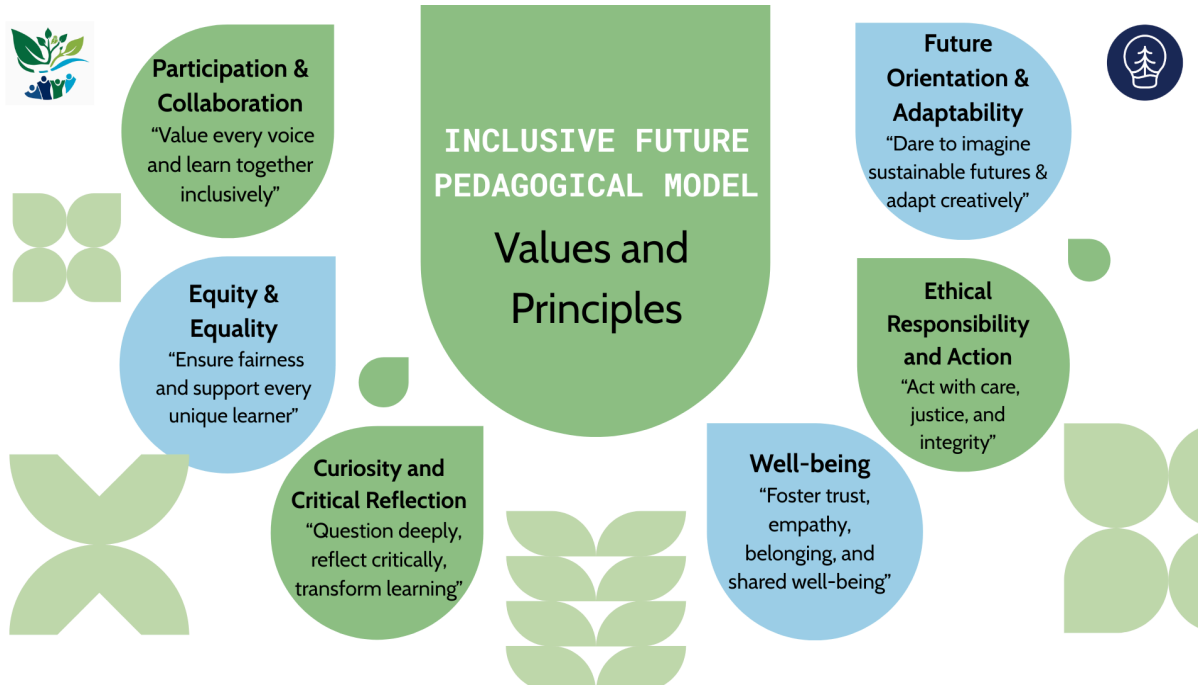


Figure 5: Underlying values and principles of the InclusiveFuture Pedagogical Model

The preparation of this pedagogical model is based on the following underlying values agreed upon by the project consortium. In addition, more than 130 education professionals from 9 countries gave their feedback on what values they find most important. These values are in line with the InclusiveFuture's project's vision of fostering inclusive and sustainable educational practices in schools:

I. **Participation and Collaboration**

Learning is viewed as a social and participatory process. Inclusive sustainability education requires all learners to be actively involved in decision-making, dialogue, and co-construction of knowledge. Collaboration among students, teachers, families, and the broader community enables the sharing of diverse perspectives and fosters collective ownership of learning.

Values of participation and collaboration can be encouraged in a school and classroom setting through modeling by school leaders and teachers as well as creating spaces for students to work together. As teachers and school principals work together, students get to observe and experience a collaborative environment. However, merely modeling and creating spaces might not ensure everyone's participation unless the voices of those often silent or silenced by individual or systemic factors are consciously encouraged. For example, teachers can involve students in designing class projects on community sustainability, ensuring that every voice is heard and valued.

II. Equity and Equality

The model prioritises fairness in access, participation, and outcomes. It seeks to dismantle systemic barriers that hinder the learning and well-being of marginalised groups. Equity requires differentiated support based on learners' needs, while equality ensures that every learner is respected and valued in their uniqueness.

Differentiated learning support for individuals or smaller groups in the classroom based on their learning levels and pace ensures fairness in access and participation. It is also important that students understand and form opinions about the concepts of "equity" and "equality" through explicit open discussions and agree on classroom norms about treating their peers as well as others in the school and society with respect and ensure fairness during everyday tasks within and outside the school. Teachers can also integrate short reflective activities where students identify examples of fairness and inclusion in their daily lives, thinking social equity to environmental justice.

III. Curiosity and Critical Reflection

Learners' natural curiosity can be fostered in the long run through encouragement and rewards by teachers. In addition, learners and educators are encouraged to critically examine dominant assumptions, structures, and practices—both within education and in broader society. Reflection and inquiry serve as tools to question unsustainable and exclusionary norms, fostering a mindset open to transformation and deeper learning.

When learners receive new information, teachers can encourage them to not only understand and apply it in their contexts but also question its validity, differentiating between information, knowledge, and inquiry. Open discussions and debates on a variety of topics can be encouraged in the classroom, where students are encouraged to question assumptions and use a critical lens to analyse new knowledge irrespective of its source. It is important that the topic of discussion or debate is in some ways relevant and meaningful for everyone participating. To encourage critical inquiry, teachers might use

real-world sustainability dilemmas, such as local waste management or energy consumption-as debate topics.

IV. Well-being

Ensuring the well-being of each individual (including non-humans) is at the heart of cultivating inclusive values and practices. It includes physical, mental, and emotional as well as social well-being. At a school level, ensuring the well-being of staff, students, and school leaders makes way for a thriving school community that feels motivated to work towards sustainable changes. Even though each individual has unique needs for their well-being, a collective well-being of the school community contributes significantly to that of individuals. Community building involves cultivating trust, empathy, and a sense of belonging.

Schools and classrooms become spaces where learners feel recognised, supported, and connected to one another and to the world around them. It may be helpful to connect well-being with sustainability, for example through nature-based learning, outdoor classes, or mindfulness activities that increase environmental awareness and empathy.

V. Ethical Responsibility and Action

Education is not value-neutral; it has the power to shape attitudes, decisions, and actions. Ethical responsibility within this model means guiding learners to consider the impact of their choices on others, on ecosystems, and on future generations. It also calls on educators to act with integrity, care, and justice in their professional roles.

Ethical responsibility cannot be directly taught or learnt but can be slowly incorporated in daily activities and lessons where teachers and students together reflect on their own actions and practices and their impact on humans and nature. Responsibility is built on awareness—of one's own and others' needs and actions—and is ensured through conscious choices and decisions on how one leads the different aspects of their lives. Hence, this consciousness about the interconnected nature of humans, their environment, and nature needs to be ingrained through awareness, critical inquiry, and reflection. Teachers could integrate ethical reflection tasks into lessons, asking students to analyse the social or ecological consequences of their daily choices.

VI. Future Orientation and Adaptability

Learners must be equipped with the capacity to imagine sustainable futures, anticipate change, and respond creatively to emerging challenges. This involves scenario planning, foresight, flexible thinking, and resilience in the face of uncertainty. Adaptability requires embracing change not as disruption but as an opportunity to innovate, collaborate, and learn. By practicing future orientation, learners can actively shape the pathways towards just and sustainable societies, rather than passively reacting to crises. Schools play a vital role in preparing learners to thrive in uncertainty by cultivating imagination, courage, and confidence to navigate complexity. Scenario-based learning and vision-building exercises can help students imagine sustainable futures and explore creative solutions to complex global challenges

Principles

The Inclusive Pedagogical Model builds on the core idea of **ensuring participation, fairness, well-being, respect, and responsibility for all humans and nature in the present and the future.** These principles offer teachers clear guidance on how to turn values into classroom practice and align with the UNESCO Education for Sustainable Development framework. These core ideas and the above-listed values are supported and operationalised by the following principles:

I. Fostering inclusive learning by valuing every voice, encouraging active participation, and co-creating knowledge through collaboration, actively encouraging those often silenced by individual or systemic factors. Teachers might use collaborative group work or peer mentoring to ensure active participation from quieter students

II. Upholding fairness by practicing dialogue and reflection while respecting diversity and providing differentiated support so that all learners can flourish. Differentiated tasks or flexible grouping strategies could be described here to show how fairness is practiced in the classroom.

III. Nurturing curiosity and empowering learners to question, reflect on the sources of information, and inquire critically, opening the way to transformative and deep learning. For example, implementing inquiry-based projects where students research sustainability topics in their community.

IV. Nurturing individual and collective well-being (human and beyond) by fostering trust, empathy, and belonging in thriving school communities and offering additional support to those with limited access and opportunities.

V. Cultivating ethical awareness and conscious action, guiding learners to live with care, integrity, and responsibility towards people, ecosystems, and future generations.

VI. Preparing learners to have resilience, imagine sustainable futures, embrace uncertainty, and adapt creatively, transforming challenges into opportunities for renewal. Encouraging students to co-design classroom sustainability rules or school eco-codes can demonstrate ethical awareness in action

8.2 Pedagogical Approaches

This model draws upon a range of interconnected pedagogical approaches, selected based on the characteristics of the approaches (learner-centred, critical, positive, transformative, collaborative, experiential) and their focus (as a continuum from individual learner to teams to classroom to whole school to the wider community). Approaches with different “bases” (phenomenon-based, project-based etc.) that are relevant to fostering inclusion and sustainability competences were drawn from the collection of good practices of inclusive and sustainability education (Vesely et al., 2025). These approaches are not intended to be applied in isolation; rather, they are mutually reinforcing, creating a coherent learning environment that supports sustainability competences, inclusion, and

meaningful engagement. They operationalise key GreenComp areas (e.g., systems thinking, futures literacy, agency) and also integrate sustainability and inclusion competences of educators from the InclusiveFuture framework (section 7). The model recognises that effective sustainability education requires universal design for learning, learner-centred methods, cross-disciplinary integration, authentic real-world connections, and opportunities for active participation and reflection.

1. Learner-Centred Pedagogy as the Foundation

At the heart of the model is learner-centred pedagogy, which positions students as active participants in their own learning. This approach emphasises student voice, choice, and agency, ensuring that learning activities are relevant to students' interests, lived experiences, and aspirations. Learner-centred pedagogy naturally aligns with inclusive principles by recognising and valuing diversity in abilities, backgrounds, and perspectives. It also underpins other approaches promoted in this model such as inquiry-based learning, project-based learning, and experiential learning by encouraging ownership of the learning process and fostering intrinsic motivation.

2. Whole-School Approach for Cultural Integration

The whole-school approach extends learner-centred principles beyond the classroom, embedding sustainability competences into the school's culture, policies, and community relationships. It encourages all members of the school—teachers, students, leaders, and support staff—to engage collaboratively in creating a shared vision for sustainability and inclusion.

This approach connects directly to collaborative learning and service learning by fostering partnerships between the school and the wider community, supporting initiatives that extend learning into real-world contexts. It also provides a supportive structure for implementing positive pedagogy at scale, ensuring that the values of respect, equity, and care permeate the school environment.

3. Critical, Positive Pedagogy and Transformative Learning

The model also draws on principles of critical pedagogy, which encourages learners to question dominant narratives, recognise power structures, and analyse the social, cultural, and political contexts that shape sustainability challenges. In the classroom, this means creating space for dialogue, encouraging multiple perspectives, and connecting local issues to global systems of inequality. Critical pedagogy complements transformative learning by empowering students not only to understand the root causes of environmental and social problems but also to envision and enact alternative futures. It reinforces the model's commitment to inclusion, ensuring that sustainability education addresses both ecological and social dimensions of justice. Positive pedagogy focuses on building students' strengths, fostering well-being, and creating a safe and supportive learning climate. This approach shares strong synergies with transformative pedagogy, which seeks to challenge existing assumptions, inspire critical thinking, and empower learners to take action for change.

When combined, these approaches help students develop the resilience and agency

needed for sustainability challenges. They encourage reflection on values and attitudes, linking emotional engagement to behavioural change. The emphasis on trust, mutual respect, and empowerment also supports portfolio approaches, where students document their learning journey and reflect on personal growth over time.

4. Inquiry-Based and Problem-based Learning

Inquiry-based learning and problem-based learning both engage students in exploring authentic questions and challenges. In sustainability education, these may involve investigating local environmental issues, designing solutions for school-based problems, or exploring global sustainability dilemmas.

These approaches develop critical thinking, systems thinking, and collaborative problem-solving skills, while also providing a bridge to interdisciplinary learning. For teachers, it could help to define success criteria for consistently testing the quality of inquiry.

5. Interdisciplinary and Phenomenon-based Learning for Complexity and Systems Thinking

Phenomenon-based learning—closely related to inquiry and interdisciplinarity—integrates multiple subject areas to explore a single complex theme or phenomenon. For example, a sustainability project on urban gardens could incorporate science (plant biology, ecosystems), mathematics (measuring growth rates), social studies (community benefits), and art (design and promotion). Each interdisciplinary unit can be mapped with GreenComp areas explicitly which would help teachers assess learner outcomes relevant to development of sustainability competences.

Interdisciplinary learning is essential for addressing the complexity of sustainability issues. It encourages students to make connections between disciplines, identify patterns, and consider multiple perspectives. When implemented through living laboratory and service learning approaches, interdisciplinary learning becomes an active, community-engaged process. To integrate an inclusive approach within inter-disciplinarity, teachers could follow the Universal Design Learning principle, providing multiple means of engagement/expression (e.g., visual concepts maps, oral briefings, hands-on demos) to include diverse learners.

6. Experiential and Project-Based Learning

Experiential learning emphasises learning through doing, reflection, and application. In the model, it is often operationalised through project-based learning, where students design, plan, and carry out projects that have tangible outcomes. These may range from designing waste reduction campaigns to restoring local habitats.
The living laboratory approach is a form of experiential learning in which the school or community becomes a site for experimentation, data collection, and innovation. This might involve using the school garden to teach about biodiversity, energy systems, or sustainable food practices.

Experiential and project-based learning strengthen sustainability competences by making abstract concepts concrete and providing repeated opportunities for practice, reflection, and adaptation. It is important to ensure the equity of participation through role rotation, peer-feedback protocols etc. and also to have a realistic timeline and scope of the projects to avoid overburdening students and families.

7. Collaborative Learning

Collaborative learning is embedded across all approaches in the model. Sustainability challenges are inherently collective, requiring cooperation, negotiation, and shared responsibility. Through group work, peer feedback, and co-created projects, students learn to value diverse perspectives and develop interpersonal and communication skills. Teachers could consider assigning the students different roles in classroom discussions and projects, include collaborative values in classroom norms, and use strategies like "think-pair-share."

8. Portfolio Approach

The portfolio approach complements collaborative learning by allowing students to document their individual contributions, reflections, and skill development over time. Portfolios can be physical or digital and may include project artefacts, reflective writing, self-assessments, and peer feedback. They serve as a tool for formative assessment and personal growth tracking, reinforcing the reflective cycles central to transformative and experiential learning. The portfolio works best as a learning and assessment tool when there is a clear skills framework guiding both students and teachers, including the number of check-points in a year (for example, 3 check-points) and an agreement on the norms for privacy protection, clicking and sharing of photographs etc.

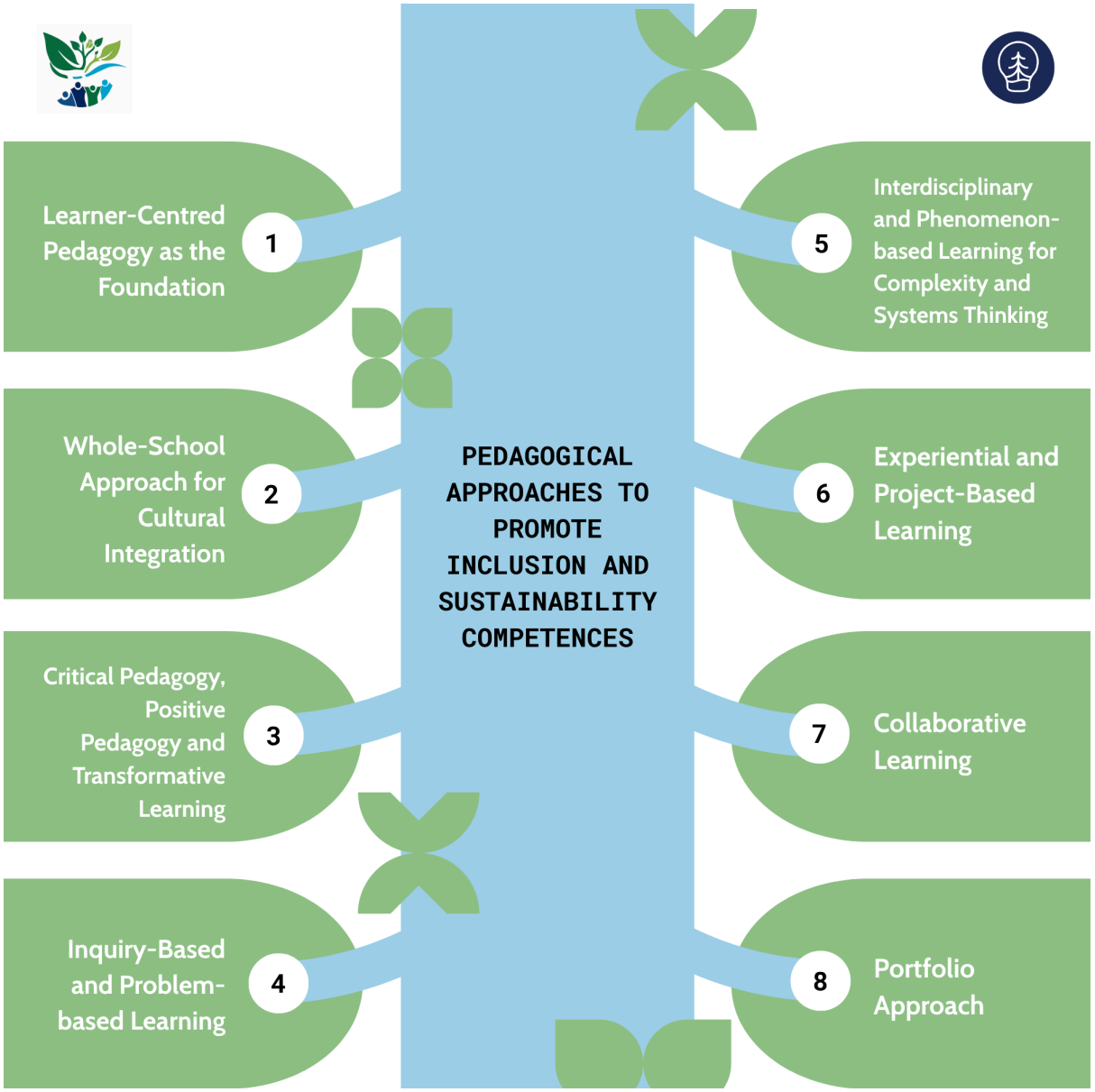


Figure 6: Pedagogical Approaches promoting development of inclusion and sustainability competences

8.3 Teaching Processes and Practices

This section outlines the teaching processes and practices that teachers can follow in order to successfully integrate sustainability competences into schools and classrooms in an inclusive way.

Processes = big steps involved in teaching and learning

Practices = concrete teacher actions

Guidance/resources = ready-to-use support for teachers

The teaching practices are organised into the following processes:

1. Motivating Learners
2. Co-designing Sustainable and Inclusive Learning Environments
3. Incorporating Sustainability and Inclusion into Lessons
4. Assessing Inclusion and Sustainability Competences
5. Investing in Professional Development of Teachers

Table 8 introduces the applicable part of the InclusiveFuture Pedagogical Model. It includes teaching processes and practices, guidance for teachers and available resources.

InclusiveFuture Pedagogical Model for Teaching, Learning, and Assessment of Sustainability Competences		
Teaching processes and practices	**Guidance for Teachers**	**Available Resources**
1. Motivating Learners		
1 a. Understanding and connecting sustainability and inclusion	• Develop a shared language for sustainability with your peers and students, including the different dimensions of sustainability, and how they connect to each other (refer to section 3.1 for definitions and dimensions of sustainability, section 4.1 for the GreenComp framework) • Understand the different approaches to inclusion– • • • diversity, equity, and the capability approach—and also familiarize yourself with the index for inclusion (section 3.2). • Reflect on how you can link inclusion to sustainability, climate and social justice issues (section 3.3)	Knowing Sustainability and Inclusion sheet for teachers (Annex 2.1)

1 b. Valuing sustainability and inclusion	• Regularly think about and write down what is important to you as a teacher and human. What do you value in your professional and personal life? What principles do you want to live by?
	• Try to map your values and principles against those in section 8.1. Make notes for yourself on:
	  ○ How do you relate to the InclusiveFuture values?
	  ○ What do you think about those that you do not relate to?
	  ○ What values would you add or delete after reflecting on the significance of sustainability and inclusion?
		Teacher's Own Values sheet (Annex 2.2 + Self-reflection Questionnaire/index (Annex 2.3)

	• Revisit your notes on personal values and principles a few times during the school year. Add a 10-minute 'values check in' routine (three times per term) to revisit personal values and classroom norms.	
1 c. Modeling values	• Actively plan to integrate your values and principles into your teaching, classroom culture, and the wider school community • For each value, think about how you want to show and model it in your classroom and everyday life at school. • Reflect on which values are more challenging than others to model for the students and why?	Modelling Values sheet (provides examples of how each value/principle can be modeled in the classroom as well as the wider school community (Annex 2.4)
1 d. Finding suitable motivation strategies for different identities and intersectionalities	• Learn about the different intersectionalities of students in your classroom. Create an intersectionality wheel for your learners group (refer to section 4.7 for intersectionality). Ensure voluntary sharing and safeguarding when discussing identity factors; avoid pressuring disclosure. • Notice and write down how each learner's background impacts their motivation to learn and internalize values. • Reflect on how you can use different strategies to motivate different learners. Make notes on what works and what does not, so you as well as other teachers can refer to them.	Building Inclusive Learner Portfolios guidance sheet for teachers (Annex 2.5)
2. Co-designing Sustainable and Inclusive Learning Environments		
2 a. Removing barriers to participation in the school and classroom environment	• Discuss with the school leadership and peers about how the school and classroom environment (physical, social, and digital environment—refer to section 3.5) currently supports or hinders learning and participation of different students	Designing Inclusive Learning Environments sheet for teachers (Annex 2.6)

	• Together with one or more fellow educators, note down what changes you need to bring into your classroom environment and culture to accommodate the diverse needs of students • Co-create a concrete plan. Include: ○ What action do you need to take in order to bring these changes? Whose participation does it require? What are the possible challenges in bringing these changes? • Consider appending a simple checklist (lighting, noise, signage, font size, device access, quiet corners, captioned media) to make barriers visible and fixable	
2 b. Improving sustainability in the school's physical, social and digital environment	• Together with your peers and school leadership, inquire about how the different learning environments (physical, digital, social) (refer to section 3.5 for learning environments) support sustainability in your school and classroom • Identify existing good practices in other classrooms or your own classroom (refer to good practices document on how to collect and organize good practices) • Use WWF's Schools Sustainability Guide to create a plan of action to improve the school's environmental footprint. Pay attention to the different aspects of sustainability in school, for example, food and water consumption, waste generation and recycling, biodiversity, energy, travel, paper, and printing.	WWF's Schools Sustainability guide. InclusiveFuture's Report on Good Practices in Sustainable and Inclusive Education

2 c. Collaborating within and beyond school boundaries for holistic planning	• Consider the different cross-sector co-operations needed to realise the plans, for example:
	  ○ Urban planning department
	  ○ Energy sector
	  ○ Social sector (NGOs, civil society organisations)
	  ○ Technology sector
	• Formalise partnerships through contact points, agreed roles, timeline, and an MoU/lightweight agreement to sustain collaboration.
		See the good practices report and refer to the following practices:
		1. *Young & Old Gardeners*—🇬🇷 Greece
		2. *Well-living in a Sustainable Neighborhood*—🇪🇸 Spain
		3. *Eco-Schools Programme*—🇵🇹 Portugal / 🇷🇴 Romania

		4. *Escoles Verdes*—🇪🇸 Spain
3. Incorporating Inclusion and Sustainability into Lessons		
3 a. Considering complexity while planning lessons	• Think beyond subject boundaries and prescribed curriculum • Identify interconnectedness across concepts and their connections to students' daily lives • Think of how everyday environmental and societal challenges are interlinked and can be framed as sustainability problems • Create a one-page 'systems map' template for students to connect causes, stakeholders, and feedback loops	See the good practices report and refer to the following practices: 1. *Waste Processing and Recycling in Finnish Schools*—🇫🇮 Finland 2. *Brigada #MARVIVO*—🇵🇹 Portugal 3. *The World We Want*—🇪🇸 Spain 4. *Next Stop SDG 2030: A Very Real Path* — 🇪🇸 Spain
3 b. Setting stage for inquiry and critical reflection	• Plan for how you will encourage students to critically reflect on the information and knowledge being presented in the classroom • Encourage students to see different issues as sustainability problems • Practice with your students to differentiate proven and effective sustainability practices from "greenwashing" (sustainability claims without robust evidence)	See MAPPA multifunctional tool for teachers

3 c. Integrating inclusion and sustainability practices into everyday activities	• Normalise sustainable routines in the classroom, including
	  ○ Use of sustainable materials
	  ○ Responsible energy and water consumption
	  ○ Reducing consumption, caring for things and practicing recycling
	• Develop inclusive class norms with the students as in the following examples:
	  ○ Equal and respectful treatment of peers
	  ○ Not making assumptions about racial, gender, regional, sexual, economic or social identities of others
	  ○ Acknowledging vulnerability factors and encouraging the voice of those in vulnerable positions
		See the good practices report and refer to the following practices:
		1. *Compost Bucket Challenge*—🇭🇺 Hungary
		2. *Sowing Seeds in an Eco-sustainable Environment*—🇪🇸 Spain (Balearic Islands)
		3. *Different Together*—🇧🇬 Bulgaria

	○ Understanding, respecting and supporting the different needs of peers arising their background, identity, ability or any other factors ○ Co-create 3-5 class eco-norms with students and monitor them weekly with a simple checklist	
3 d. Promoting student agency and voice	• Structure dialogue, co-decision and peer learning • Elevate traditionally silenced voices • Build belonging and agency • Provide a choice for the medium of expression (oral, written, drawn, digital etc.) and rotate facilitation roles to elevate traditionally quieter voices	*PAL-TIN: Youth Participation Councils for Sustainable and Inclusive Communities*—🇷🇴 Romania *Different Together*—🇧🇬 Bulgaria *Next Stop SDG 2030: A Very Real Path*—🇪🇸 Spain
4. Assessing sustainability and inclusion competences		
4 a. Combining different assessment strategies	• Use formative as well as summative strategies that assess different skills such as verbal expression, writing, creating, etc. (See section 9.1 on assessment strategies.) • Collect a variety of evidence (observations, conversations, products).	See section 9.1 on assessment strategies
4 b. Integrating sustainability & inclusion competences into regular assessments	• Integrate GreenComp and inclusion indicators into the ongoing assessment criteria as well as rubrics (Refer to section 9.2 for example rubrics and tools) • Incorporate sustainability and inclusion competences into student portfolios (see section 9.1 for portfolio assessments)	Student self-assessment survey
4 c. Following up on progress and needs	• Give timely, dialogic, strength-based feedback; • encourage students to self-/peer-assess using varying modalities for accessibility • Review evidence to adjust teaching and grouping strategies and needed support • Document next steps with learners and families	Portfolios documenting action, reflection and progress over time. Guidance on how to use portfolios and other relevant assessment strategies (See section 9.2).

5. Investing in Professional Learning for Developing Sustainability and Inclusion Competences in All Learners		
5 a. Reflecting on own strengths and needs	• Use self-audit against the model to set growth goals • Note down the support you need in your work in order to make your teaching more sustainable and inclusive • Plan for professional learning community meetings (for example, once per month) and peer observations (for example, once per month or any frequency that suits your schedule)	2.1 Teachers Self-Assessment Survey
5 b. Building capacity in using digital tools and resources	• Select accessible, low-barrier tools • Use open resources and data to support inquiry and inclusion • Attend to digital equity (availability of devices for all, connectivity, accessible formats, and consider alternative pathways if needed)	See the good practices report and refer to the following practices: 1. *GreenMaker*—🇭🇺 Hungary 2. *eSustainability Teachers' Lab*—🇪🇸 Spain
5 c. Improving research skills	• Read and apply research-based practices; • collect and interpret classroom data ethically to inform practice	Classroom Action Research-based Instruction: The Sustainable Teacher Professional Development Strategy
5 d. Participating in cross-school exchanges	• Find opportunities to observe and work in different school and classroom settings (including international exchanges) to broaden sustainability perspectives beyond your own school	*Eco-Schools International Programme*—Global (implemented in Portugal, Romania, Spain, etc.)

Table 8: Teaching processes, practices and resources for sustainability and inclusion competence integration

8.4 Applying the InclusiveFuture Pedagogical Model

This section provides a collection of activities inspired by the best practices collected by the project consortium. The activities serve as examples of how the model can be applied in practice. Each activity is mapped with the relevant GreenComp competences and required pedagogical competence(s), as well as the pedagogical approaches highlighted in the model.

1. Embodying Sustainability and Inclusion Values	
Desired Learning Outcomes for Students/Learners	**School or Classroom Activities** (refer to section 8.4.1 for full activities.)
Value Sustainability and Inclusion: students understand why sustainability and inclusion matter for people and the planet. They reflect on their own values and actions to build a fairer, more sustainable world.	Activity 3 (grades 1-3) Activity 4 (grades 1-3)
Support Fairness and Equity: students identify unfairness in their school or community. They show empathy for others and work to create equal chances for everyone, regardless of background.	Activity 8 (Grades 6-8)
Promote Nature and Interdependence: students see the value of nature and how humans depend on it. They care for the environment, help protect ecosystems, and appreciate diverse life.	Activity 1 (grades 4-6) Activity 2 (grades 1-3)

2. Embracing Complexity	
Desired Learning Outcomes for students	**School or Classroom Activities** (refer to section 7.4 for full activities.)
Systems Thinking: students can identify and describe interconnections between different elements within a system (e.g., how local waste management connects to global climate change) and recognize that actions in one part of a system can have ripple effects on others.	Activity 6 (grades 6-8) Activity 9 (grades 6-8) Activity 13 (grades 9-12)

Critical Thinking: students can evaluate information from various sources, question assumptions, and identify biases (e.g., distinguishing between credible environmental claims and "greenwashing"). They can formulate well-reasoned arguments based on evidence.	Activity 6 (Grades 6-8) Activity 8 (Grades 6-8) Activity 11 (Grades 9-11)
Problem Framing: students can explore and define complex sustainability issues from multiple perspectives, recognizing that problems often have diverse causes and no single, simple solution. They can articulate different viewpoints on an issue and identify key stakeholders	Activity 9 (grades 6-8) Activity 13 (grades 9-12) Activity 15 (Grades 9-12)

3. Envisioning Sustainable and Inclusive Futures	
Desired Learning Outcomes for students	**School or Classroom Activities** (refer to section 7.4 for full activities.)
Promoting Futures Literacy and Adaptability: Teachers equip learners with the skills to anticipate change, envision diverse sustainable futures, and adapt creatively to uncertainty and emerging challenges, fostering resilience and proactive engagement.	Activity 7 (Grades 6-8) Activity 12 (Grades 9-12)
Encouraging Exploratory and Innovative Thinking: Teachers foster a classroom culture that values curiosity, creativity, and approaches that cross subject boundaries to generate novel solutions for sustainability and inclusion challenges, encouraging experimentation and problem-framing.	Activity 7 (Grades 6-8) Activity 12 (Grades 9-12)

4. Acting for Sustainability and Inclusion	
Desired Learning Outcomes for students	**School or Classroom Activities** (refer to section 7.4 for full activities.)

Advocating for Sustainable and Inclusive Practices: students actively participate in discussions and initiatives that promote sustainability and inclusion within the school and wider community, understanding how to voice their perspectives and influence positive change.	Activity 8 (Grades 6-8) Activity 11 (Grades 9-11)
Collaborating for Collective Impact: students engage in collaborative projects and activities, demonstrating teamwork, empathy, and respect for diverse viewpoints when working towards shared sustainability and inclusion goals.	Activity 6 (grades 6-8) Activity 9 (grades 6-8) Activity 10 (Grades 6-8)
Taking Individual and Collective Action: students identify and implement personal and collective actions that contribute to a more sustainable and inclusive world, demonstrating a sense of agency and responsibility for their choices and their impact on others and the environment	Activity 11 (Grades 9-11) Activity 13 (grades 9-12) Activity 15 (Grades 9-12)

8.5 Activities for Primary and Secondary Schools

It may sound overwhelming for a teacher to implement new pedagogical methods into everyday practice. In this chapter we present various activities that use previously mentioned pedagogical approaches for different age groups. Every activity comes with an explanation of its structure, objectives, and required preparation (required materials, etc.) to make these activities as easy to use as possible without adding too much extra work for teachers.

Activities for Primary School

Activity 1 (grades 1-3)
Nature's Super Heroes/Heroines

Greencomp competence/s	**Pedagogical approach/es**
Valuing sustainability Promoting nature	Play-based learning Experiential learning

Aim / Intended Learning Outcome:
Students identify and appreciate simple ways they can help nature and understand their role as "nature's superheroes."

How to prepare:
How many lessons: 1
Hook: "Who wants to be a hero/heroine for nature?" Students may realize through playing that their actions, however small, may have a tremendous impact around them.
Class norms / Let's agree to:

- Listen to our friends' ideas.
- Be kind to everyone and the environment.

Inclusion advice: If some students feel shy, let them participate in small supportive groups or express themselves through drawings instead.

Helpful material:

- Pictures of animals and plants
- Craft supplies (paper, crayons, glue, recycled materials)
- Optional: "Nature's Superhero" capes or masks for imaginative play
- Piano or other instrument if teacher is musically talented individual

Guiding Questions for Lesson:

- "What do you do that helps/saves nature?"
- "What animals or plants do you like, and how can we help them?"
- "What makes you feel like a nature superhero?"

"Who wants to be a nature superhero/heroine?" – Start with a short story, personal experience, or song about helping nature. For example, you can sing the following song to the tune of "If you're happy and you know it..."

If you see a little litter, pick it up—pick *it up!*
If you see a little litter, pick it up—pick *it up!*
Put it in the nearest bin, keep our park all clean and trim,
If you see a little litter, pick it up—pick *it up!*

If the water tap is running, turn it off—turn *it off!*
If the water tap is running, turn it off—turn *it off!*
Save the water every day; don't let any drip away.
If the water tap is running, turn it off—turn *it off!*

If the bedroom lights are on, switch them off—switch *them off!*
If the bedroom lights are on, switch them off—switch *them off!*
Use the sunshine; that's our friend, energy we'll never spend,
If the lights are on, switch them off—switch *them off!*

When you plant a growing seed, pat the ground—pat *the ground!*
When you plant a growing seed, pat the ground—pat *the ground!*
Give it water, give it care; trees clean up our lovely air.
When you plant a seed, then pat the ground—pat *the ground!*

Teachers are encouraged to choose or make up a song in your local language or inspired by the local context
Student Tasks/Homework:

1. Draw or create a "Nature's Superheroine or Superhero" costume and explain how it helps them protect nature.
2. Brainstorm and draw simple actions that help nature (e.g., watering plants, recycling, turning off lights).
3. Share their "superhero/ine" ideas and actions in circle time.

Assessment / Closing Discussion:

- As a class, name different ways we can be nature superheroes.
- Students complete a sentence: "I am a nature superhero because..."
- The teacher observes students' understanding of basic environmental actions.

Activity 2 (grades 1-3)
Nature's Sounds & Sights

Greencomp competence/s	**Pedagogical approach/es**
Valuing sustainability Promoting nature	Sensory exploration Inquiry-based learning

Aim / Intended Learning Outcome:
Students engage their senses to observe and appreciate elements of nature, fostering a sense of connection and wonder.

How to prepare:

Optional: recording about (local) nature sounds

How many lessons: 1 or more

Hook: "What can we hear and see when we are outside?" – Students may find new aspiration from nature by finding new diverse thing from it

Class norms / Let's agree to:
- Use our listening ears and looking eyes in nature.
- Be gentle and respectful of living things.

Inclusion advice:

Some students may feel discomfort from being in a new environment (forest, beach, etc.) or suffer from allergies. Consider these if you are planning to go outside from the traditional classroom. Provide alternatives (e.g., recorded sounds or indoor plants) for students with mobility or allergy concerns.

Helpful material:

- Notebooks and pencils for drawing/jotting observations
- Optional: Sound recording device or phone (for recording nature sounds)
- Optional: Magnifying glasses (for investigating bugs, etc.)

Guiding Questions:
- "What sounds do you hear in nature?"
- "What colors and shapes do you see in plants and animals?"
- "How does nature make you feel when you use your senses?"

Student Tasks/Homework:
1. Go on a "nature scavenger hunt" to find specific colors, textures, or sounds.
2. Draw or write about something they observed using their senses (e.g., "I saw rough tree bark," or "I heard birds singing").
3. Share their favorite sight or sound from nature with a partner or small group.

Assessment / Closing Discussion:
- Class discussion: "What new things did we discover about nature today?"
- Students share one thing they found interesting using their senses.
- The teacher observes students' engagement with sensory exploration and their ability to describe observations. Encourage students to express how different natural sounds made feel.

Activity 3 (grades 4-5)
Exploring Relationship with Nature

Greencomp competence/s	Pedagogical approach/es
Valuing sustainability Promoting nature	Critical Pedagogy Inclusive learning

How to prepare: Print out a (world) map for markings. Prepare guiding questions in advance to help students connect family stories to sustainable habits.

How many lessons: 2

Intended Learning Outcome: Students reflect on their personal and family relationships with nature and sustainability to understand and value diverse perspectives and cultural practices related to the environment.
Hook: "Where are your roots?" – Students mark on a world map where their family or ancestors are from. This creates a visual of the class' diversity and sets the tone for inclusion and diversity.

Classroom Rules:

- treat everyone in equal and respectful ways
- Do not judge or mock your friends' or classmates' culture or traditions
- not make assumptions about anyone's gender, sexuality, nationality, religion, language etc.

Inclusion advice:

There might be children who are not confident in speaking up about their family roots. Try your best to make them feel safe, and do not push them too much.

Helpful materials:

- Drawing paper and colored pencils (drawing family tree)
- Printed world map or classroom map
  Optional: Audio recorder or phone (for students to record short family interviews)

Guiding Questions for Lessons:

- "What does your family do that helps or harms nature?"
- "Are there any stories, habits, or traditions in your family or culture related to the environment?"
  "Has nature ever played a role in your family's stories or memories?"
- **"Can you draw a family tree?" Explain how the family tree works and how you can draw one of your own. How have or families' habits changes over time regarding the environment?**

Student Tasks/Homework:

1. Interview a family member (or remember stories) about environmental practices from home or culture.
2. Create a short "eco-story" (drawing + 3-5 sentence story) representing something they value in nature or sustainability. Share their stories in small groups, noting similarities and differences.
3. If students don't know where their family roots lie, figuring it out can be part of homework, and putting markers on map can be done as part of the second lesson

Assessment / Closing Discussion:

- Reflect as a class: "What did we learn from each other's stories?"
- Students complete a sentence: *"For me, nature means ..."* OR *"I value nature because...."*
- The teacher observes understanding of how students understand their and each other's relationship with nature.

Activity 4 (grades 4-6)
Our Local Environment Story

Greencomp competence/s	**Pedagogical approach/es**
Understanding sustainability Promoting nature	Community-based learning Project-based learning

Aim / Intended Learning Outcome:
Students investigate local environmental issues or initiatives and create a presentation to raise awareness and propose solutions.

How to prepare: Some examples to show possible environmental issues (like a news article) from local news and/or global news

How many lessons: 3-5 (introduction, working on project, presentation)

Hook: "What's happening with nature right here in our neighborhood?" – Discuss current local environmental news or a visible local issue (e.g., litter, a community garden) and student may find new motivation to respect local environment. Encourage students to connect local issues (e.g., waste, green areas) with global environmental themes.

Class norms / Let's agree to:
- Work together as a team.
- Respect different opinions and ideas.
- Be creative and thoughtful in our presentations.

Inclusion advice:

This may be a challenging task for those who are not used to following news or thinking about their surroundings. It's advised to give examples for better understanding before jumping into action. Also, teamwork may require a jump-start from the teacher's side! Pair students with varying skill levels to support collaboration.

Helpful material:
- Access to library resources or internet for research
- Poster board, markers, art supplies for presentations
- Optional: Camera or phone for taking pictures of local environment

Guiding Questions:
- "What are some environmental concerns or positive initiatives in our local area?"
- "How do these issues affect our community and nature?"
- "What can we do to help improve or support our local environment?"

Student Tasks/Homework:
1. In small groups, research a local environmental topic (e.g., local recycling program, park clean-up efforts, water conservation).
2. Create a short presentation (poster, skit, or digital presentation) to share what they learned and suggest solutions or ways to get involved.
3. Present their "Local Environment Story" to the class.

Assessment / Closing Discussion:
- Class discussion: "What did we learn about our local environment, and what can we do to make a difference?"
- Students complete a sentence: "One thing I can do to help my local environment is..."
- The teacher observes students' research skills, collaborative work, and ability to communicate environmental issues and solutions. Ask students to identify one action they can take at home to support their local environment.

Activity 5 (grades 4-6)
Nature's Design Challenge

Greencomp competence/s	**Pedagogical approach/es**
Understanding sustainability Promoting nature	Design Thinking Inquiry-based learning

Aim / Intended Learning Outcome:
Students explore how nature inspires sustainable designs and apply this understanding to create their own nature-inspired solutions to environmental problems.

How to prepare: Find some examples to show how nature handles things that may have inspired humans (beaver's dam as an insulated home, bat´s shout as a sonar etc.)

How many lessons: 2 or more

Hook: "How does nature solve problems?" 'What can humans learn from nature's problem-solving? – Show examples of biomimicry (e.g., velcro inspired by burrs, bullet train inspired by kingfisher beak) and students may find new motivation to respect and research nature's ways for solving problems.

Class norms / Let's agree to:

- Be curious and innovative.
- Learn from nature's wisdom.
- Give constructive feedback.

Inclusion advice:

Being innovative or finding "Nature´s problems" may be difficult for some so give advice and help by giving questions accordingly. Also everyone doesn't feel confident in their craftsmanship so plan some alternative ways for presentation if needed. Offer both creative and analytical options (e.g., drawing vs. short presentation) to ensure inclusivity.

Helpful material:

- Books or websites about biomimicry (nature-inspired design)
- Recycled materials (cardboard, plastic bottles, fabric scraps)
- Art supplies (tape, glue, scissors)

Guiding Questions:

- "What problems does nature solve efficiently?"
- "How can we learn from nature's designs to create sustainable solutions?"
- "What everyday object or problem could be improved by learning from nature?"
- "What is your favorite animal? Why? Does this animal have something that resembles some tool you have at home?"

Student Tasks/Homework:

1. Research an example of biomimicry or identify a natural design that solves a problem.
2. Choose a simple environmental problem (e.g., litter, waste, or energy use).
3. Design and/or create a prototype using recycled materials that is inspired by nature to address the chosen problem.
4. Present their "Nature's Design Solution" to the class, explaining their inspiration and how it works.

Assessment / Closing Discussion:

- Class discussion: "What amazing designs did we see from nature, and how can they help us?"
- Students reflect on the design process and what they learned from nature.
- The teacher observes students' understanding of biomimicry, creativity in design, and connection to sustainable solutions. Encourage links to science and technology subjects to reinforce interdisciplinary learning.

Activity 6 (Grades 6–8)
Community Footprint Investigation

GreenComp competence/s	Pedagogical approach/es
Systems thinking Critical thinking Individual initiative	Inquiry-based learning Project-based learning Collaborative learning

Aim / Intended Learning Outcome

Students analyze everyday choices in school and community (waste, energy, food) to understand interconnections and propose practical improvements.

How to prepare: Find an educative video clip about environmental footprint
Find out if your school has any data about water/energy usage, etc.
How many lessons: 2 (group work, presentation)
Hook: "Pose the question, "How big is our school's footprint?" Show a short video of environmental impacts of daily life to show students that a unit as small as a school (compared to the global scale) can also have a big impact on nature."

Class norms / Let's agree to

- Respect different viewpoints.
- Support each other in group investigations.
  Use evidence to back up claims.

Inclusion advice:

Working in groups doesn't come naturally for everyone, so teachers may have to give jump-starts to get things running smoothly. Assign specific roles (e.g., data collector, reporter) to ensure everyone participates.

Helpful material

- Energy/waste audit sheet
- Posters or digital tools for presentation
- Optional: Calculators or online footprint tool

Guiding Questions

- Where does our school use most resources (energy, water, food)?
- What patterns do we notice?
- What small actions could make the biggest difference?

Student Tasks

- Collect data on school waste, water, or energy.
- Map out resource flows (inputs and outputs).
- Suggest 2–3 feasible changes.

Assessment / Closing Discussion

Groups present findings. Class votes on 1–2 actions that they believe to be most doable. The teacher observes the quality of evidence use and collaboration.

Activity 7 (Grades 6–8)
Future Schools Design Challenge

GreenComp competence/s	Pedagogical approach/es
Futures literacy Exploratory Thinking Adaptability	Transformative pedagogy Design Thinking Phenomenon-based learning

Aim / Intended Learning Outcome

Students imagine and prototype sustainable schools of the future, integrating creative, social, and environmental dimensions

How to prepare:

How many lessons: 2 (group work, presentation)

Hook: *"If you were to design a school for 2050, what would it look like?"* Share inspiring futuristic eco-school designs. A lighter approach to sustainability and the future may inspire students to look positively into the future.

Class norms / Let's agree to

- Dream big; no idea is too wild.
- Build on each other's ideas.
  Be open to change and feedback

Inclusion advice:

Working in groups doesn't come naturally for everyone, so the teacher may have to give a jump-start to get things running smoothly. Stagefright may also be an obstacle for some students, so making a presentation informal and easy-to-approach is advised. Encourage students to consider accessibility and inclusion in their future school design.

Helpful material

- Drawing/3D modeling tools
- Recycled craft materials
- Chart paper for design boards

Guiding Questions

- What will energy, food, and learning look like in 2050?
- How do we balance technology with nature?
- What challenges might future schools face?

Student Tasks

- Brainstorm visions for a future school.
- Build or draw design boards or models.
- Present prototypes with rationale.

Assessment / Closing Discussion

Peer feedback: What is inspiring? What is feasible? Reflection on how envisioning futures helps us act today. "How designing future schools changes your understanding of today's environmental responsibilities?" Students comment on others' designs. The teacher observes the level of engagement and authenticity of ideas.

Activity 8 (Grades 6–8)
Fairness Debate: Who Owns the Earth's Resources

GreenComp competence/s	Pedagogical approach/es
Supporting Fairness Political Agency Critical Thinking	Collaborative pedagogy Positive pedagogy Debate-based learning

Aim / Intended Learning Outcome

Students reflect on equity in access to resources, justice for future generations, and their role in demanding fairness.

How to prepare:
Find case studies and news considering nature's resources and their distribution among human population (globally)
Make debate rolecards (government, factory owner, local farmer, etc.) and scenarios where the teacher works as debate's host (for example "The Steel Makers Corporation wants to build a new factory close to the town's lake").

How many lessons: 2 (informative part and practicing & debate)

Hook: 'Is it fair that some countries use more of the Earth's resources than others?' Use visuals to prompt critical reflection..

Class norms / Let's agree to

- Listen actively and respectfully; don't interrupt.
- Critique ideas, not people.
- Use facts and empathy.

Inclusion Advice

It is natural that in groups some are more confident than others at speaking (formally) so try to observe and encourage that everyone can give their opinion considering debate, even if shy students themselves prefer to be silent during debate. Provide pre-written argument cards for students who struggle with spontaneous speaking.

Helpful material

- Case studies (water rights, climate refugees, land use)
- Debate cards with roles (government, community, NGO, youth)

Guiding Questions

- What does fairness mean in sustainability?
- Whose voices should be heard in decision-making?
- What responsibilities do we carry as citizens?

- What are the interests of the group/individual you are presenting in debate? Why?
- What are the interests of the other group(s) in the debate? Is there a way for compromise between their and our interest?

Student Tasks/Homework

- Prepare arguments for/against resource-sharing scenarios.
- Participate in a structured debate.
- Write a reflection on their position and what they learned (after the debate).

Assessment / Closing Discussion

Ask if anyone thinks differently in comparison to how they thought in the beginning of the activity. Ask questions about debate as a conversation and debate as a topic: what students learned about argumentation, what were strong/weak ways to prove your point and how much the debate they did sounded compared to real-life politics.

Activity 9 (Grades 6–8)
Problem-Solvers Lab: Tackling Wicked Problems

GreenComp competence/s	**Pedagogical approach/es**
Problem framing Systems and critical thinking Collective action	Inquiry-based learning Problem-based learning Collaborative learning

Aim / Intended Learning Outcome

Students learn to frame complex sustainability challenges (plastic waste, climate change, fast fashion) and explore multi-actor solutions.

How to prepare: Prepare a shortlist of locally relevant sustainability challenges for students to choose from.

How many lessons: 2 - 4

Hook: Pose: *"Why can't we just ban plastic tomorrow?"* Encourage students to think beyond surface answers and showcase that streamlining problems is often impossible, encouraging students toward empathy, logical problem solving and innovative thinking. Prompt students to identify who benefits and who is burdened by different solutions.

Class norms / Let's agree to

- Every voice counts.
- Complex problems don't have simple answers.
- Be creative and collaborative.

Inclusion Advice

Working in groups doesn't come naturally for everyone, so teachers may have to give jump-starts to get things running smoothly. Stagefright may also be an obstacle for some students, so making a presentation informal and easy-to-approach is advised. Offer sentence ideas and a 'roles menu' (facilitator, mapper, evidence-finder, presenter) to support participation.

Helpful material

- News articles, videos on sustainability challenges
- Sticky notes and chart paper for mapping systems
- Optional: Materials for prototyping ideas

Guiding Questions

- Who is involved in this issue?
- What makes it difficult to solve?
- What actions can be taken at the school/community level?
- What unintended consequences might occur?

Student Tasks

- Map the problem and its stakeholders.
- Propose realistic small-scale solutions.
- Present their "problem and solution map" to the class.

Assessment / Closing Discussion

Reflect: "What did we learn about tackling big problems?" The teacher notes the ability to frame, connect systems, and propose actions.

Activity 10 (Grades 6–8)
Nature Guardians Project

GreenComp competence/s	Pedagogical approach/es
Promoting nature Collective action Individual initiative	Service learning Experiential learning Living laboratory approach

Aim / Intended Learning Outcome

Students actively restore, learn, and/or protect a local natural area while learning respect and responsibility for ecosystems
Students plan, implement, and document at least one intervention with before/after evidence.

How to prepare: Find a place to plant seeds, whether inside or outside. Confirm permissions for outdoor work, risk assessment, tool safety, and local biodiversity guidance.

How many lessons: Long-term project

Hook: Take students outdoors: *"What living things around us need care?"* Introduce a local biodiversity issue and help students realize that they can be part of living together with nature without making dramatic changes into their everyday life.

Class norms / Let's agree to

- Care for living things.
- Leave places better than we found them.
- Optional: Work together as a team (this can be individual project)

Inclusion Advice

This activity requires patience since seeing things grow takes time. Try to figure out ways to motivate impatient students along the way and another perspective for those who may get motivated from seeing the bigger picture and/or causality. Provide diverse roles (data logger, photographer, planter, communicator) to match interests/abilities.

Helpful material

- Gardening/cleanup tools
- Native plant seeds
- Journals for reflection
- Simple data sheets; consent forms for documentation

Guiding Questions

- How do humans impact this natural space?
- What can we do to help?
- How does caring for nature make us feel?
- Which SDGs does our project support (e.g., SDG 15 Life on Land)?

Student Tasks/Homework

- Observe the current state of local green space.
- Plan and carry out an improvement action (planting, cleaning, building habitats)
- Document process and outcomes
- Upload a weekly photo + 2 sentence observation to a shared portfolio

Assessment / Closing Discussion

Students share journals/photos about their plant and growing project. The class discusses how their planned actions connect to bigger sustainability goals.

Activity 11 (Grades 9–12)
Climate Policy Hackathon

GreenComp competence/s	Pedagogical approach/es
Political agency Collective action Critical thinking	Problem-based learning Debate pedagogy Collaborative learning

Aim / Intended Learning Outcome

Students explore how climate policies are made, practice advocacy, and develop proposals for fair and effective action.

How to prepare:
Find case studies, news, and/or videos considering climate policymaking.
Make debate rolecards (government, factory owner, nature activist, etc.) and scenario where teacher works as debate's host (for example, issues about building new wind power plant)

How many lessons: 2-3 (informative part and practicing & debate). Extra lesson for that case that students bring their own hypothetical issues to debate)

Hook: "Imagine you're at a global climate summit. What solutions will you fight for? Who will you represent?" Students learn political decision-making firsthand, which hopefully gives them necessary skills and motivation to be politically active in their future lives. Assign quick stakeholder lenses (youth, municipality, small business, NGO) for initial brainstorming.

Class norms / Let's agree to

- Respect different roles and viewpoints.
- Ground arguments in facts and empathy.
- Everyone has the right to speak.
- Use timed rounds and a speaking tracker to ensure all voices are heard.

Inclusion Advice

It is natural that in groups some are more confident than others at speaking (formally) so try to observe and encourage that everyone can give their opinion considering debate, even if shy students themselves prefer to be silent during debate

Helpful material

- Climate policy summaries (EU Green Deal, Paris Agreement)
- Role cards (youth activists, government, business, NGOs)
- Whiteboards or digital collaboration tools

Guiding Questions

- Whose voices dominate policy spaces?
- What trade-offs exist in climate policy?
- How can young people influence decisions?

Student Tasks/Homework

- Role-play a policy negotiation in groups.
- Draft short position papers and proposals.
- Present "climate action package" as a summary of their recommendations.

Assessment / Closing Discussion
Debrief on fairness, agency, and compromises in real policymaking. The teacher evaluates depth of reasoning and collaboration.

Activity 12 (Grades 9–12)
Envisioning 2050: Futures Literacy Workshop

GreenComp competence/s	**Pedagogical approach/es**
Futures literacy Agency, Collective Action Exploratory thinking Adaptability	Transformative pedagogy Scenario building Phenomenon-based learning

Aim / Intended Learning Outcome

Students practice imagining alternative sustainable futures and reflecting on their role in shaping them.

How to prepare:

How many lessons: 2-3 (group work, presentation)

Hook: "Fast forward to the year 2050. What does your city or community look like?" Share (hopefully) inspiring futuristic eco-society designs. A lighter approach to sustainability and the future may inspire students to look positively into the future.

Class norms / Let's agree to

- Be creative; suspend disbelief.
- Respect all visions of the future.
- Focus on possibilities in addition to problems (advised to highlight this approach)

Inclusion advice:

Working in groups doesn't come naturally for everyone, so the teacher may have to give a jump-start to get things running smoothly. Stagefright may also be an obstacle for some students, so making a presentation informal and easy-to-approach is advised. Offer options (timeline, storyboard, audio pitch, poster) to support different strengths.

Helpful material

- Future scenario prompts (climate, technology, society)
- Large paper or digital boards for timeline creation
- Markers, sticky notes

Guiding Questions

- What will food, transport, and energy systems look like?
- What role do citizens play in sustainable futures?
- How do our choices today shape these futures?
- Who benefits and who might be left out in each future?

Student Tasks

- Work in groups to create timelines for possible futures.
- Present one optimistic and one challenging scenario.
- Reflect on key turning points and what actions are needed now.
- List 3 actions we can take this year to move toward the preferred future.

Assessment / Closing Discussion

Class discussion: Which futures feel most reasonable? Which do we want to work toward? Assess on reasonability, inclusivity, and actionability (3 levels).

Activity 13 (Grades 9–12)
Sustainability Start-Up Challenge

GreenComp competence/s	Pedagogical approach/es
Individual initiative Systems thinking Problem framing	Project-based learning Entrepreneurial pedagogy Experiential learning

Aim / Intended Learning Outcome

Students design start-up ideas that tackle local sustainability challenges, applying innovation and entrepreneurial skills.

How to prepare:
Decide if this activity is done individually, in pairs, or in small groups, and plan the timetable and focus accordingly. Usually group work takes more time. Find some stories to show real-life examples. Provide a simple Business Model Canvas + Impact Canvas.

How many lessons: 2-4
Hook: "What if you could launch a company tomorrow that solves a sustainability problem?" Students get a chance to put their wildest ideas into action, encouraging innovative thinking and agency that they can try to change the world if they so wish. Optional: Invite a local social entrepreneur (live or recorded) for a 5-minute spark.

Class norms / Let's agree to
- Encourage risk-taking and creativity.
- Value every contribution.
- Let's try to see failures as stepping stones.
- Adopt 'Yes-and' feedback; critique ideas, not people.

Inclusion advice:
Working in groups doesn't come naturally for everyone, so the teacher may have to give a jump-start to get things running smoothly. Stage fright and fear of presenting their own ideas may also be an obstacle for some students, so making a presentation informal and easy-to-approach is advised.

Helpful material
- Optional: Business model canvas templates
- Access to local case studies or entrepreneurs
- Pitch presentation tools

Guiding Questions
- What sustainability issues need urgent solutions locally?
- Who would benefit, and who might resist?
- How do you test whether an idea is feasible?
- How would you fund your project? Who are you selling your idea to?

Student Tasks/Homework
- Identify a local sustainability problem.
- Develop a business model and prototype.
- Pitch the idea in a "Shark Tank"-style format.

Assessment / Closing Discussion
Peer and teacher feedback on feasibility, creativity, and sustainability impact. Reflection on the role of entrepreneurship in change.

Activity 14 (Grades 9–12)
Justice & Sustainability: Case Study Dialogues

GreenComp competence/s	Pedagogical approach/es
Supporting fairness Valuing sustainability Promoting nature	Critical pedagogy Positive pedagogy Inquiry-based learning

Aim / Intended Learning Outcome

Students investigate real-world sustainability justice dilemmas, connecting ethics, equity, and ecology

How to prepare: Find some stories, news articles, etc., as examples to show real-life examples (globally) and distribute for case studying. Select 3-4 diverse cases (global/local, different sectors) and a neutral summary sheet per case.

How many lessons: 2-3

Hook: "Whose justice is at stake when we talk about sustainability?" Students will realize that there are many "truths and rights," and being fair isn't easy—and so it is an individual responsibility to be as fair as possible.

Class norms / Let's agree to

- Engage with empathy.
- Listen to marginalised voices.
- Disagree respectfully.

Inclusion advice:

Working in groups doesn't come naturally for everyone, so the teacher may have to give a jump-start to get things running smoothly. Also, when discussing ethics, it may hit too close to home in some cases, so choose real-life examples carefully. Set opt-out and anonymised reflection options for sensitive topics.

Helpful material

- Case studies (e.g., fast fashion, indigenous land rights, renewable energy conflicts)
- Ethical dilemma cards
- Reflection journals

Guiding Questions

- Who benefits from current systems?
- Who bears the costs?
- How can solutions be made fairer?
- What power dynamics are present and how do they shape outcomes?

Student Tasks/Homework

- Research the assigned case study.
- Discuss ethical dilemmas in groups.
- Share recommendations for fairer solutions.
- Produce a 'Fairness Recommendation' with one principle, two actions, and one risk to monitor.

Assessment / Closing Discussion

Closing Circle: What does fairness in sustainability mean? Review each other's reflection journals.

Activity 15 (Grades 9–12)
School as a Living Laboratory

GreenComp competence/s	**Pedagogical approach/es**
Collective action Embracing complexity (systems thinking, problem framing) Acting for sustainability (initiative + agency)	Living laboratory approach Experiential learning Whole-school approach

Aim / Intended Learning Outcome

Students co-lead sustainability experiments in their school (e.g., reducing plastic use, monitoring biodiversity, testing renewable energy prototypes).

How to prepare: Discuss with the headmaster & other school faculty members about this school-wide project. Find out if your school has any data about water/energy usage. Form a student-staff 'Lab Team', define roles, timelines, and data governance (privacy, consent, storage)

How many lessons: Long-term project

Hook: "What if our school became a sustainability laboratory for the whole community?" Showcase solidarity and possibilities school-wide by observing the school environment and noticing how collaborative effort can change local systems

Class norms / Let's agree to

- Treat the school as our shared experiment space.
- Be respectful of results and processes.
- Collaborate openly with peers and staff.
-

Inclusion advice:

It is difficult to motivate long-term commitment for the whole school. This may require extra work from people inside and outside the school which requires lots of communication between stakeholders - which in case may unintentionally suppress some voices. Ensure representation from different year groups and needs; rotate leadership roles.

Helpful material

- Monitoring tools (thermometers, biodiversity apps, energy meters)
- Access to school facilities for experiments
- Simple dashboards (paper or digital) for weekly metrics (e.g., kWh, waste weight, biodiversity counts.)

Guiding Questions

- What systems in school can we make more sustainable?
- How do small interventions affect bigger patterns?
- How can we involve the whole school community?
- Which interventions are scalable or shareable with other schools?

Student Tasks

- Identify one local sustainability issue within the school or its surrounding community.
- Design and implement an intervention.
- Collect and analyze data, and share results publicly.

Assessment / Closing Discussion

Students present findings in 1-page 'living lab reports' (baseline, actions, results, next steps). Reflection on how small changes connect to systemic sustainability.

9. Assessment of inclusive sustainability competences

Assessing sustainability competencies effectively necessitates a nuanced approach that extends beyond traditional summative evaluations. The "assessment of learning" dimension, while important for determining what students have learned, should be complemented by "assessment for learning" and "assessment as learning" (Wiek et al., 2011; Sterling, 2013).

“Assessment for learning” involves ongoing feedback and diagnostic tools that guide instruction and help teachers differentiate support, ensuring all learners, especially those from marginalised groups, can progress. This aligns with the model's emphasis on equity and differentiated support, reflecting the dynamic and individualised nature of learning advocated by socio-constructivist principles and Universal Design for Learning (UDL) (Rose & Meyer, 2002).

Furthermore, **"assessment as learning"** empowers students to become active agents in their own learning journey. Through self-assessment, peer feedback, and reflective portfolios, learners can monitor their development of sustainability competencies, critically analyse their understanding, and take ownership of their growth (Boud & Falchikov, 2007). This resonates with the model's commitment to fostering learner agency, critical reflection, and self-regulation. By incorporating these multiple assessment dimensions, the assessment framework of the InclusiveFuture Pedagogical Model aims to provide a holistic picture of student progress in sustainability, moving beyond mere knowledge acquisition to encompass values, skills, and the capacity for transformative action.

9.1 Different Approaches

Assessing sustainability competences in an inclusive way requires educators to combine diverse and flexible approaches. **The aim is to capture a holistic understanding of a learner's knowledge, skills, values, and attitudes in relation to sustainability', while accommodating varied learning styles and needs.** This section outlines several relevant assessment methods and discusses their benefits and potential challenges for teachers.

1. Formative Assessment and Feedback

Formative assessment involves ongoing monitoring of student learning to provide timely, specific feedback that can be used to improve teaching and learning. It allows teachers to identify students' understanding and misconceptions about sustainability concepts and values in real-time, providing opportunities for immediate adjustment of instruction. This iterative process supports all learners, especially those who may need additional scaffolding or differentiated support. It also aligns with the emphasis on process-oriented learning in sustainability education, focusing on growth over a fixed outcome.

Formative assessments require teachers to have strong observational skills and the ability to provide constructive, actionable feedback. It can be time-intensive, especially in large classes with diverse needs, as it needs a mindshift from solely grading to supporting continuous improvement. Unlike summative assessments, which focus on measuring final outcomes, formative assessments empower teachers to actively shape learning as it happens.

2. Project-Based and Experiential Learning Assessments

Project-based and experiential learning are central to the model. Assessment within these approaches focuses on the process and products of real-world engagement. These methods allow students to demonstrate sustainability competences (e.g., systems thinking, collaborative action, creative problem-solving) through tangible outputs like presentations, models, campaigns, or community initiatives. They are inherently inclusive as they offer multiple pathways for students to engage with content and express their understanding, catering to diverse strengths and learning styles. They also provide authentic contexts for assessing complex competences that cannot be captured by traditional tests.

However, designing clear rubrics that capture the multidimensionality of sustainability competences can be complex. In addition, ensuring equitable group participation and assessing individual contributions within collaborative projects can also be difficult. Resources (time, materials, community partnerships) for implementing these projects might be a barrier in spaces with limited availability and might need teachers to be creative and find locally available alternatives to standard resources.

3. Portfolio Assessment

The portfolio approach allows students to showcase progress over time and encourages reflection on their own learning journey. It can also work as a practical "to-do list" for teachers and students alike, regardless of the types of assessment involved. Portfolios offer a comprehensive picture of a student's progress, integrating diverse forms of evidence (e.g., reflective essays, photographs of projects, research findings, peer feedback, self-assessments). This method aligns with inclusive principles by valuing multiple means of expression and acknowledging individual learning paths. It fosters student agency and self-reflection, key aspects of transformative learning.

Portfolios can also be time-consuming for both students and teachers to create, review, and assess. Developing consistent criteria for evaluation across varied portfolio contents can be challenging. Ensuring accessibility for all students, particularly those with specific learning needs, requires careful planning and flexible format options.

4. Observation and Anecdotal Records

Teachers can systematically observe students' participation, interactions, and problem-solving approaches during sustainability-focused activities.

This method provides insights into students' values, attitudes, and collaborative skills, which are crucial for sustainability but difficult to assess through formal tests. It can capture spontaneous expressions of empathy, critical thinking, or leadership. It is a highly inclusive method as it assesses students in authentic learning contexts, reducing reliance on written or oral performance that may disadvantage some learners.

As each individual's interpretation of observation is different, subjectivity can be a concern for fairness of assessment, requiring clear criteria and consistent observation. Teachers need to develop effective systems for recording and interpreting observations to ensure accuracy and fairness. At the same time, it is almost impossible to observe all students equally in dynamic classroom environments.

5. Self and Peer Assessment

Students can be guided to assess their own learning and that of their peers based on defined criteria related to sustainability competences. This fosters metacognition and critical reflection, empowering students to take ownership of their learning and understand the assessment criteria. It aligns with the model's emphasis on learner agency and collaborative learning. For inclusion, it promotes a supportive classroom culture where students learn from each other and develop empathy and communication skills.

Students need explicit training in providing constructive feedback and using assessment criteria effectively. There can be issues of bias or uneven participation, which teachers need to manage through clear guidelines and facilitation. In addition, teachers must be clear how much (or little) this form of assessment affects the overall grade, since students may give dishonest assessments just to get better grades which defeats the purpose of self and peer assessment.

6. Dialogue and Discussion-Based Assessment

Structured discussions, debates, and Socratic seminars can be used to assess students' ability to articulate understanding, engage in critical thinking, and navigate complex sustainability dilemmas. These methods effectively reveal students' conceptual understanding, critical reflection skills, and capacity for navigating dilemmas and trade-offs. They provide opportunities for students to explore diverse perspectives and challenge assumptions, directly linking to critical pedagogy and interdisciplinary learning. Oral participation can be more inclusive for students who struggle with written expression.

Teachers need to ensure equitable participation from all students, especially those who are shy or less confident in speaking and might prefer other ways of expression. Assessing the depth and quality of contributions objectively requires clear rubrics and careful moderation by the teacher.

7. Rubrics and Checklists

While not an assessment method in themselves, rubrics and checklists are essential tools that can be used across all the above approaches. They provide clear criteria for evaluating complex sustainability competences, making assessment transparent and fair for both teachers and students. They help articulate what quality looks like in terms of knowledge, skills, and values, and can be designed to be inclusive by offering multiple indicators of success.

Developing effective rubrics that capture the nuances of sustainability competences without being overly prescriptive can be challenging. They need to be flexible enough to allow for diverse expressions of learning while maintaining consistency. Assessing sustainability competences in an inclusive manner requires a multifaceted approach, integrating ongoing formative assessment with authentic, performance-based tasks. Teachers must be equipped with the skills to design and implement these diverse methods, supported by flexible tools that empower all learners to demonstrate their growth and contribution to a sustainable and inclusive future.

8. Universal Design for Learning as Assessment Strategy

This section explicitly connects the principles from Chapter 4, particularly Universal Design for Learning (UDL) and Intersectionality, to the practice of assessment. The goal is to ensure that the assessment process itself is fair, accessible, and empowering for all learners.

Applying UDL to Assessment: Universal Design for Learning encourages providing multiple means of action and expression. This means allowing students to demonstrate their knowledge and skills in ways that best suit their strengths and needs, rather than relying on a single, standardized format.

Learning Objective	Traditional Assessment	UDL-Aligned Options (Multiple Means of Action & Expression)
UDL-Aligned Options (Multiple Means of Action & Expression)	Write a 500-word essay.	• Create a concept map or infographic. • Record a short podcast or video documentary. • Build a physical or digital model. • Give an oral presentation.
Student analyses the ethical trade-offs in a climate justice case study.	Take a multiple-choice test.	• Participate in a structured debate. • Write a reflective journal entry from a specific stakeholder's perspective. • Create a short comic strip or storyboard illustrating the dilemma. • Develop a proposal for a fair solution.

Table 9: Applying UDL to Assessment

9. Culturally Responsive Assessment

An inclusive assessment approach also requires teachers to reflect on how cultural and experiential backgrounds might influence student performance. It involves designing tasks that are relevant and accessible to students from diverse cultural, linguistic, and socioeconomic backgrounds.

Prompts for Teacher Reflection:

- Does this assessment task assume prior knowledge or experiences (e.g., travel, access to technology) that may not be universal for all my students?
- Are the materials, examples, and contexts used in the assessment relevant and respectful to the diverse cultural backgrounds of my students?
- Could the assessment format (e.g., timed writing, formal presentation) inadvertently create barriers for students who are English language learners or have different communication styles?
- Have I provided opportunities for students to connect the assessment to their own identities, communities, and lived experiences?

9.2 Example Tools and Metrics

This section explores practical approaches and tools for assessing sustainability and inclusion competences in primary and secondary school settings. The approaches are built on the assumption that effective assessment captures the holistic development of learners, encompassing their knowledge, skills, values, and capacity for action. It serves not only to evaluate progress but also to inform pedagogical practices and provide meaningful feedback to students, parents, and school communities.

Assessment tools such as rubrics, portfolio and student questionnaires presented in this section are illustrative and can be adapted and modified for individual classroom and school context.

For Primary Teachers

Sustainability Skills Rubric (Grades 2-4)

How to use this rubric:
- Teachers can use it for observation and feedback.
- Students can self-assess by circling, coloring, or using smiley faces.
- It can be repeated at the beginning, middle, and end of a project (or a school year) to show growth.

1. Caring for People and Nature				
Skill	**Beginning**	**Developing**	**Confident**	**Additional Notes**
I take care of nature (plants, animals, places)	I need reminders to be gentle with nature.	I sometimes remember to care for nature.	I often look after nature without being asked.	
I think about fairness (sharing, caring for others, fairness in the world)	I don't always notice if something is unfair.	I sometimes notice and ask questions.	I notice fairness and try to make things fair.	

2. Thinking About Problems				
Skill	**Beginning**	**Developing**	**Confident**	**Additional Notes**
I can see how things are connected (e.g., food, water, people, animals)	I don't see many connections yet.	I sometimes notice how things link together.	I can explain how things are connected.	
I can think about problems	I don't know how to start.	I can describe a problem but need help to understand it.	I can explain problems and suggest first ideas.	

3. Thinking About the Future				
Skill	**Beginning**	**Developing**	**Confident**	**Additional Notes**
I can imagine the future	I don't think about the future much.	I can imagine one or two things in the future.	I can imagine many ideas about how the future could be.	
I can change and try new things	It is difficult to do things differently.	I can try something new with help.	I can adapt to changes and try new things easily.	

4. Taking Action				
Skill	**Beginning**	**Developing**	**Confident**	**Example/Notes**
I can work with others	I sometimes find it hard to work with a group.	I can work with others if the teacher helps.	I can share, listen, and work well with others.	
I can take action (small steps at home or school)	I need help to take action.	I sometimes take action when asked.	I often take action myself and share ideas with others	

Follow up: Teacher and/or student reflection

One thing I did really well: _____

One thing I want to grow in: _____

My next step will be: _____

Student self-assessment survey (grades 1-5)

Like the previous one, this survey could be used for long-term self-assessment (for example, at the beginning, middle and end of school-year). This way teachers and students themselves can see changes and development in their actions and thinking. Remember though that if this survey is used as part of grade assessment at the end of the school-year, students may answer a bit dishonestly just to get better grades. Teachers should explain that the meaning of this survey isn´t just to be another test but also to help students realize how their actions and thinking have changed from the time of first assessment to the most recent one.

For each statement below, think about how true it feels for you. Then draw or circle the face that best shows your answer:

😀 Yes!

🙂 A little

😐 Not sure

😕 Not really

😞 No

Statement	Your Answer
I try to take care of the Earth and the environment by doing something helpful (for example picking up rubbish).	
I try to be nice and kind to others, even if they do not behave like me	
I like learning about nature and how people and animals can live peacefully together.	
Everyone in my class gets to share their ideas and be part of our activities.	
I understand how for example not having spiders would have an effect on the ecosystem and would result in the spread of some other insects.	
I ask questions when I don't understand something or think it might be wrong.	

I try to understand problems by thinking about what different people might feel or need.	
Everyone gets to speak and be listened to when we talk about hard problems.	
It is easy for me to think about how the world will be better in the future!	
I can change my ideas or plans when things don't go the way I thought.	
I enjoy coming up with fun and new ideas to solve problems.	
Different students can imagine the future in their own ways, and that's okay.	
I think it's important to speak up when something is unfair or hurts others or nature.	
I like working with others to help people.	
like working with others to help the planet.	
I believe I can do small things that help make the world better.	
In our class, we all help in ways that fit who we are and what we're good at.	

For lower secondary teachers

Portfolio Assessment Template (Grades 6-8)

Portfolio is meant to showcase students ability and development in said subject, in this case sustainability. It can be as simple as a digital or physical folder or as complex as a student's self-made webpage. The assessments included in the portfolio are defined by the teacher, though variety is encouraged.

For a teacher it is a great way to collect, remind and assess all required projects or assessments piece by piece, since sometimes students (and teachers) may forget the existence of singular assessment. It also gives some leeway for individual choices for students to pick the most fitting types for their work. For example, a student who suffers

from paralyzing stagefright may find a solution from videomaking instead of showing live-presentation in front of the whole class.

The next document gives an example of what a portfolio may include, from "the frontpage" to the final reflection after all assignments are done. There are various self-assessment and self-reflection examples for students, and they are meant to be used as long-term tools for students to realize their development with said subject. For example, some midway self-assessment could be used twice during school-year before the final reflection. Be careful to not put too much self-reflection between assessments. Though it is an important way for students to realize their development, overuse may transform self-reflection into mindless chore, which defeats the purpose of self-reflection.

My Portfolio Journey

Student Name: _____
Grade: _____
Portfolio Period: _____ to _____

Portfolios help you reflect on your learning journey in sustainability—how your thinking, actions, and sense of responsibility evolve over time. Add your best work, photos, reflections, and evidence here

So far this portfolio shows my skills in:

- [ ] Systems Thinking
- [ ] Futures Literacy
- [ ] Collective Action
- [ ] Critical Thinking
- [ ] Political Agency
- [ ] Individual Initiative
- [ ] Other: _____

My Work

1. Title of my Work: _____

2. Type of Presentation: _____

(for example: photo, poster, written reflection, digital presentation, video)

3. Purpose or Context: _____

4. In this I demonstrated my abilities considering: :

- [ ] Systems Thinking
- [ ] Futures Literacy
- [ ] Collective Action

- [ ] Critical Thinking
- [ ] Political Agency
- [ ] Individual Initiative
- [ ] Other: _____

5. Reflection (2–5 sentences):

- What did you learn from this activity?

- What surprised you?

- How did working on this help you grow?

Self-Assessment Rubric

Competence	Emerging	Developing	Proficient	Advanced
Systems Thinking	☐	☐	☐	☐
Futures Literacy	☐	☐	☐	☐
Collective Action	☐	☐	☐	☐
Critical Thinking	☐	☐	☐	☐
Political Agency	☐	☐	☐	☐
Individual Initiative	☐	☐	☐	☐

Student Reflection:

For one competence you rated as Proficient or Advanced:

"I feel confident in _____ because _____."

For one competence you wish to develop further:

"I want to improve in _____ by _____."

Peer Feedback (Optional)

Artifact reviewed: _____

What worked well: _____

What could be even better: _____

I learned that: _____

Section E: Final Reflection & Next Steps

Looking back over this portfolio, what are you most proud of?

_____

Which sustainability skill do you want to grow next?

_____

What is a new action or challenge you'll take on in the future?

_____

Secondary School Student Survey

This works with the same framework as previously mentioned Student self-assessment survey for grades 1-5. Through long-term usage the students may notice development in their thinking. For example this survey could be done three times during school-year (at the beginning, middle and the end). If this survey is used as part of grade assessment at the end of the school-year, students may answer a bit dishonestly just to get better grades, so teachers may need to balance the "weight" of this survey between outer motivation ("I want better grades!") and meaningful self-reflection ("If this survey doesn´t affect anything, I have no reason to do it seriously").

Please read each statement and reflect on how true it feels for you. Use the following scale and write the number that fits best in the blank:

- 1 = Not at all
- 2 = Slightly
- 3 = Moderately
- 4 = Very
- 5 = Fully

Statement	Your Answer
I think about how my actions affect the planet and future generations.	
I care about fairness and respect for people of all backgrounds.	
I understand how people and nature are connected and why it matters.	
Sustainability education at my school includes voices and experiences from different cultures and groups.	
I see how different things—like climate, economy, and society—are connected.	
I question information and try to understand what's really true.	
I try to understand sustainability problems by looking at them from different people's points of view.	
Everyone at my school has the chance to take part in conversations about sustainability challenges.	
I enjoy thinking about how we can create better futures for everyone.	
I can adjust to changes and uncertainty when working on sustainability challenges.	
I like exploring creative and new ideas to solve sustainability issues.	

My school encourages different perspectives when imagining sustainable futures.	
I understand how decisions and policies can affect sustainability.	
I like working with others to make a positive impact in my school or community.	
I feel like I can take action and contribute to sustainability in meaningful ways.	
My school helps each student find their own way to be involved in sustainability efforts.	

10. Conclusion

The InclusiveFuture Pedagogical Model for Teaching, Learning, and Assessment of Sustainability Competences represents a major advancement in embedding sustainability and inclusion into mainstream education, a significant step towards integrating critical global challenges at the school level. Building upon established theories like Systems Theory, Ecological Systems Theory, Universal Design for Learning (UDL), and Crenshaw's Model of Intersectionality, the model offers a holistic and coherent framework for fostering sustainability and inclusion in schools.

The InclusiveFuture Pedagogical Model moves beyond fragmented approaches to sustainability and inclusion, offering a coherent and integrated framework that can be applied across diverse educational contexts:

- **Shift from Reactive to Proactive Inclusion:** By integrating UDL principles and a focus on anticipating variability, the model encourages educators to design learning environments that are inherently inclusive, rather than relying on reactive accommodations. This aligns with the understanding that diversity is the norm, not an exception.
- **Empowerment of Learners:** The emphasis on learner-centred pedagogy, student agency, and critical reflection transforms students from passive recipients of knowledge into active co-creators of sustainable and equitable futures (aligning with SDG4.7). This cultivates not only knowledge but also the identity and agency necessary for transformative action.
- **Interdisciplinary and Systems Thinking:** By promoting interdisciplinary and phenomenon-based learning, the model fosters systems thinking in line with the GreenComp framework, enabling students to understand the interconnections among environmental, social, and economic systems.
- **Holistic Teacher Development:** By outlining specific pedagogical competences and emphasising continuous professional learning, the model provides a clear roadmap for teachers to develop the skills and confidence needed to implement inclusive sustainability education effectively.
- **Strengthening School Culture:** Through a whole-school approach that values participation, collaboration, and well-being, the model supports whole-institution transformation where sustainability and inclusion are embedded across all aspects of school life.

Future Considerations and Limitations

While the InclusiveFuture Pedagogical Model provides a robust framework, its successful implementation and long-term impact will depend on several factors:

- **Policy Alignment and Support:** For the model to be scaled effectively, European, national and regional education policies should align with its principles, providing

necessary resources, curriculum flexibility, and assessment frameworks that value comprehensive sustainability and inclusion competences.

- **Ongoing Professional Development:** Continuous and collaborative professional development programs are crucial to ensure that teachers continuously enhance their skills and confidence. This should include opportunities for peer learning and the sharing of good practices.
- **Contextual Adaptation:** While the model is flexible, ongoing research and culturally responsive adaptation will be vital to maintain its relevance across diverse educational contexts and evolving sustainability challenges.
- **Measuring Impact:** Developing mixed-method evaluation tools to measure the model's impact on learning, behaviour, and school culture will be essential. This should include portfolio evidence and longitudinal data to capture holistic competence development.

The InclusiveFuture Pedagogical Model offers a timely and comprehensive response to the global need for education systems that prepare learners for a complex and uncertain future. Grounded in theory and practical guidance, it enables educators to cultivate ethically responsible, critically reflective, and action-oriented learners. Its implementation supports the objectives of the European Education Area 2030, ensuring that education empowers all learners to contribute to a just, inclusive, and sustainable world.

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Annexes (optional)

Annex 1. About the InclusiveFuture Project

The InclusiveFuture project, funded by the European Union, aims to support the integration of sustainability competences into the educational process which will lead to a more inclusive environment for teachers and learners and will empower the transition of schools towards sustainable and **inclusive practices.**
Recognizing the imperative for nurturing sustainability competences from a young age, this project concentrates on Topic 4: School education, with a focus on Priority 9: Building sustainability competences. Aligned with this priority, the project's objectives are intricately connected to the priorities of the European Education Area (EEA):

1. Facilitating Inclusive education: The project endeavours to offer avenues for the development of sustainability competences among primary and secondary school students, including those from vulnerable groups and rural areas such as migrants, refugees, and ethnic minorities. It aims to establish frameworks for nurturing such competences among these groups.

2. Advocating education for sustainable development (ESD): Inspired by the Council Recommendation on Learning for the Green Transition and Sustainable Development and the European Sustainability Competence Framework, the project aims to develop comprehensive educational curricula tailored to various age groups and educational levels. These curricula will integrate concepts of sustainability, environmental conservation, and green technologies, aligning with the European Sustainability Competence Framework. Additionally, the project will provide training programs for educators to enhance their capacity in delivering ESD effectively.

The transnational cooperation facilitated by this project will contribute to the European Skills Agenda by fostering innovative policy approaches that have the potential to enhance education and training systems across Europe. The overarching objective of the project is to influence policy in school education by developing innovative approaches to integrating sustainable competences in schools across Europe. The project aims to integrate sustainability competences into school curricula, directly addressing the Erasmus+ priority of promoting education for sustainable development. By developing comprehensive curriculum models and providing professional development for teachers, the project ensures that students acquire critical sustainability competences. This is in line with the objectives of the GreenComp, which emphasizes the importance of equipping learners with the skills needed to address environmental challenges and promote sustainable lifestyles.

1.2.1 Participating countries and organisations

Data was collected from the eight listed countries through the following partner organisations of the InclusiveFuture project (see fig.1):

1. **Bulgaria**
    a. The Center for Educational Integration of Children and Students from Ethnic Minorities (CEICSEM) in Bulgaria is a government-supported institution focused on promoting equal educational opportunities for children from ethnic minority backgrounds. It works to integrate students into the education system, support bilingual education, and foster intercultural dialogue. The centre develops policies, funds projects, and collaborates with NGOs and schools to reduce educational disparities.

    b. Law and Psychology (LP), a non-profit organisation based in Bulgaria. The main activities of the organisation are focused on enhancing the development of skills and competences of youth and vulnerable groups; organizing training, conferences and seminars; supporting Law and Psychology students during their internship, as well as conducting research in the field of Bulgarian, European and international legislation.

2. **Finland**
    a. Glocal Minta OY (GM), is a globally connected SME located in Jyväskylä, Finland, at the heart of education development, with its focus on sustainability and global citizenship education (www.finnminta.com/en). GM fosters dialogue and development both in Finland and globally. It specializes in education for sustainable development, planetary well-being education, action competence for well-being, phenomenon-based and interdisciplinary learning. Its expertise extends to educational research and innovation, framework development, and collaborative, comparative research processes, driving meaningful advancements in education worldwide. Its initiatives, such as sustainability theme weeks and Finn Minta Forum teacher training events, provide practical and experiential learning and dissemination opportunities.

3. **Greece**
    a. Big Bang School (BBS), an innovative primary school established in 2019 on the border of Thessaloniki and Halkidiki, was founded by visionary educators to provide a holistic learning experience for students from across Greece on three core principles: improvement of consciousness, development of life skills, and teaching through differentiated learning. In an environment that nurtures curiosity, personal growth, and a deep

appreciation for knowledge and nature, the students at BBS are empowered to shape the future. Through educational field trips, interactive workshops, artistic activities,and collaborative projects, students cultivate their talents, develop critical thinking skills,and enhance their social engagement. BBS fosters a strong connection with nature, creating a dynamic learning environment that encourages collaboration, discovery, and personal development–shaping responsible, innovative, and creative individuals. Embracing the principles of multilingualism from an early age, we explore the interaction of languages and cultures in the human brain, equipping students with valuable linguistic and intercultural skills. The school's vision is to create a transformative learning environment for every student, preparing them for the future and helping them become the best versions of themselves.

4. **Hungary**
    a. Regional Centre for Information and Scientific Development (RCISD), an innovative, women-lead SME, holds extensive experience in fostering inclusive educational practices and combating inequalities through international cooperation. RCISD excels in projects like the Hungarian Researchers' Night and Inclusion4Schools, promoting interdisciplinary collaboration and inclusivity in education. Through initiatives like STEAMCRAFT, they engage students in experiential learning, while projects like BIOLOC and CELEBio highlight sustainable development. Integrating RCISD's expertise into sustainability education ensures inclusivity and innovative learning.

    b. Obuda University (OE) is a key player in Hungarian higher education and a leading practice-oriented institution, where 11,000 students pursue their studies. According to the latest, 2024 Times Higher Education report, OU is the highest ranked technical university in Hungary. It offers competitive knowledge in the fields of mechanical engineering, mechatronic engineering, computer science, applied mathematics, economics, geoinformatics, architecture, marketing and teacher training in 7 faculties, 2 education centres, 16 BA/BSc (8 in English), and 14 MA/MSc (7 in English) programs. OU runs 3 doctoral schools. OU is an actor in multiple international organisations and bilateral and international programmes (currently over 20 EU financed scientific projects).

5. **Portugal**
    a. Instituto Superior Técnico /Lisbon University Técnico Lisboa is Portugal's leading school of Engineering, Science, Technology, and Architecture, recognised for academic excellence, research impact, and strong international partnerships. With over 11,000 students from 60+ nationalities, Técnico fosters innovation, entrepreneurship, and cutting-edge research to address global challenges. The school actively

participates in international academic networks (CLUSTER, TIME, CESAER) and collaborates with top universities such as MIT, CMU, UT-Austin, and EPFL through double degree and joint PhD programs. Técnico is committed to expanding its global presence through strategic partnerships, interdisciplinary research, and knowledge transfer, making it a key player in international projects.

6. **Romania**
    a. Focus Eco Center is a non-profit organisation based in Tg. Mures, Romania, and is mainly active in the Central Transylvania region. The main goal of the organisation is to collect and distribute quality information on key environmental issues, such as climate change or biodiversity loss, and to promote valuable, scientifically proven information on solutions. Focus believes that school teachers and educators are the right people who can influence the future of generations to come, so our main target groups are schools, but also works with other groups such as policy makers. It develops pilot projects especially in the field of water management and offers its experiences for implementation by larger systems.
7. **Spain**
    a. Open Europe is a non-profit organisation based in Reus, Spain, dedicated to promoting European mobility, lifelong learning, and educational innovation. It provides training, career guidance, and access to European programs for students and educators. Open Europe specializes in fostering inclusion, sustainability, and digital skills, creating educational platforms and innovative learning resources to support professional development and social integration.
    b. Escola Pia de Catalunya (EPC) is an institution with a network of 23 schools. The studies go from kindergarten to higher education. We have VET studies in 13 of the 22 schools, in different fields: Administration, IT, Sport, Health care, Childhood, Marketing, forestry, hospitality etc. EPC has 20.000 students, 2.900 teachers, and one foundation (Camins). EPC has more than 400 years of experience in education in Catalunya. Since then, and up until today, the Escola Pia de Catalunya has continued to evolve, adapting to new times without ever losing the purpose of promoting education as a driving force for social transformation.
8. **Türkiye**
    a. Konya Provincial National Education Directorate (Konya IL MEM) is a state institution responsible for the planning and coordination of educational and training activities in preschool, primary, secondary, and adult education throughout Konya. The province encompasses 31 districts, hosting a total of 2,913 schools, 36,439 teachers, and 543,379 students. Konya IL MEM acts as an umbrella organisation, uniting this extensive educational network.

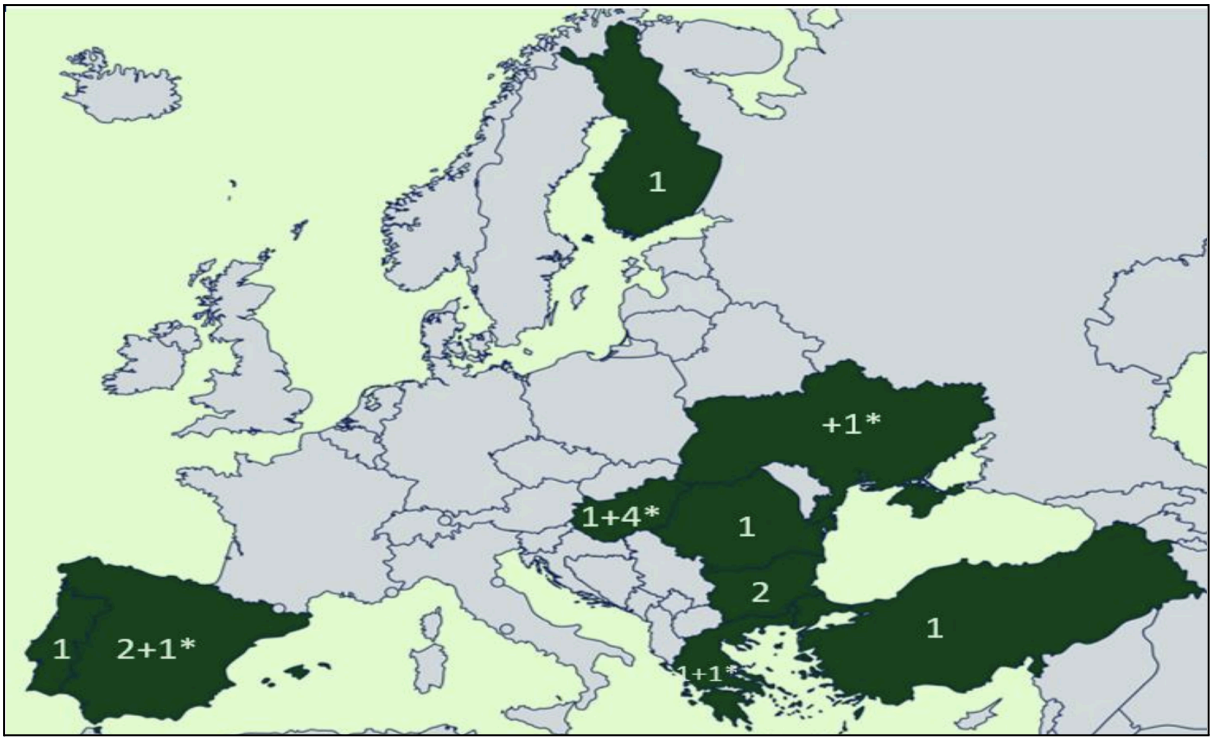

Figure 1: Participating countries and number of partner organizations (*associated partners) represented on a map.

The listed countries, despite their individual governments' strong commitment to the SDG4 goals, to a varied extent, continue to face multiple geographical, social and economic challenges, i.e., problems that can be categorised as sustainability issues, catering to the different dimensions of sustainability. Country-specific contexts with respect to education for sustainable development are explained below:

In **Bulgaria,** education for environmental sustainability is gaining interest, but its integration into the curriculum remains a challenge. Although environmental issues are covered in several subjects, there are still inconsistencies in the implementation and depth of coverage. Teachers often lack adequate training and resources to teach these topics effectively. Only 15% of teachers report having received training in environmental education (Ministry of Education and Science, 2020).

Spain is highly vulnerable to climate change, especially in the Mediterranean region, a recognised climate change "hotspot". Rising temperatures and extreme weather events such as droughts and unpredictable rainfall patterns threaten key resources such as water and soil, which are crucial for agriculture, livestock, forestry and tourism (IPCC, 2021). The Spanish education system reflects these national priorities, with sustainability topics increasingly being integrated into the curriculum. However, it remains difficult to integrate these topics at all levels of education and in all regions. The Spanish Circular Economy Strategy (EEEC) aims to move from a linear to a circular economy and promote

the reuse, recycling and repair of products by 2030 (Ministry of Ecological Transition, 2020).

Hungary is facing major environmental challenges, particularly in relation to water management and pollution. Despite efforts to address these issues, Hungary ranks 23rd out of 27 EU countries in the 2021 Environmental Performance Index (EPI, 2021). The current curriculum needs to be updated to enable comprehensive sustainability education. Teacher training programmes that focus on sustainability are crucial, as only 20% of Hungarian teachers say they are confident in teaching environmental topics (OECD, 2020).

Romania, rich in biodiversity, faces environmental threats from industrial activities. In the Environmental Performance Index 2021 (EPI, 2021), the country ranks 26th out of 27 EU countries. Despite some progress, significant reforms are needed to integrate sustainability into the education system. Only 10% of teachers feel adequately prepared to teach environmental sustainability (Ministry of Education, 2020).

Finland is a global leader in education, ranking 3rd in the Environmental Performance Index 2021 (EPI, 2021). The country has a robust foundation in environmental education, with 95% of schools incorporating sustainability into their curricula (Finnish National Agency for Education, 2020). Teacher training programs and professional development opportunities focusing on sustainability are essential for maintaining and enhancing this leadership position. By promoting interactive and learner-centred teaching methods, Finland continues to set a benchmark for integrating sustainability competencies across all levels of education and subjects, fostering a deep understanding of environmental issues among students. However, increasing migration and diversity in Finnish schools have brought about rising inequalities, both in general and specifically in education. As the student population becomes more diverse, disparities in educational outcomes and access to resources have emerged. Addressing these inequalities is crucial for ensuring that all students, regardless of their background, benefit equally from Finland's educational advancements and sustainability initiatives.

Greece faces severe environmental challenges due to climate change, with a projected 30% decrease in water availability by 2050 (European Environment Agency, 2021). The integration of comprehensive sustainability education into the curriculum is essential to meet these challenges. Education and training programmes for teachers that focus on sustainability are crucial. Only 25% of Greek teachers feel prepared to teach these topics (Ministry of Education and Religious Affairs, 2020).

Portugal has made significant progress in the field of education, but faces the challenge of integrating sustainability into the education system. Although Portugal scores well on various sustainability metrics, only 15% of teachers feel adequately prepared to teach environmental sustainability (Ministry of Education, 2020). The country ranks 17th out of 27 EU countries in the 2021 Environmental Performance Index (EPI, 2021), indicating room for improvement.

Türkiye faces significant environmental degradation and urbanisation issues, ranking 56th out of 180 countries in the 2021 Environmental Performance Index (EPI, 2021). Environmental challenges such as deforestation, water pollution, and waste management are compounded by rapid urbanisation. Integrating environmental sustainability into the curriculum is essential to address these challenges effectively. However, only 30% of Turkish teachers report feeling confident in teaching environmental topics (OECD, 2020).

Annex 2. Teacher Resources

2.1 Teachers Self-Assessment Survey

This self-assessment survey helps teachers reflect on and develop their own practice. We encourage teachers to complete the questionnaire, discuss their responses with colleagues, and share ideas that emerge from critical reflection. Educational leaders are invited to facilitate collective reflection, strengthening both individual practice and collaboration across the school. This tool also introduces the core areas of the InclusiveFuture Framework, which builds on GreenComp with added principles of inclusion.

Category	**Statement**	**Response** (1 = Not at all, 2 = Slightly, 3 = Moderately, 4 = Very, 5 = Fully)
Embodying Sustainability and Inclusion Values	I teach in ways that promote fairness, respect, and equal opportunities for all learners.	
	I challenge bias, discrimination, and stereotypes in my classroom to create a learning environment where everyone feels valued.	
	I adapt my teaching to meet the needs of diverse learners.	
	I show commitment to sustainability and inclusion in my classroom practice.	
Embracing Complexity in Sustainability	I teach by using real-world examples to show how different systems (e.g., environment, economy, society) are linked.	
	I teach students to question sustainability, climate change related information and analyse information critically.	
	I encourage learners to question assumptions and explore dilemmas where there may be no single right answer.	

	I reflect on my own teaching to understand how it influences wider systems.	
Envisioning Sustainable and Inclusive Futures	I help students imagine different future scenarios.	
	I support students in handling change and uncertainty when discussing sustainability challenges.	
	I support students in designing ideas for positive transformation for sustainability and inclusion.	
	I encourage reflection on how sustainability affects different people and places (i.e. vulnerable groups).	
Acting for Sustainability and Inclusion	I provide opportunities for learners to take meaningful action in real contexts.	
	I help students understand how individual and collective actions can have an effect in the near and far future.	
	I give students opportunities to take the lead on sustainability-related actions.	
	I promote inclusive collaboration and shared responsibility in group activities.	

Annex 2.2 Co-creating Assessment Criteria with Learners

To fully embody the value of "Participation and Collaboration," the assessment process itself can become a collaborative act. Co-creating rubrics or success criteria with students is a powerful practice that enhances learner agency, deepens their understanding of the learning goals, and makes assessment more transparent and meaningful.

When students are involved in defining what "quality" looks like, they take greater ownership of their work. The process of discussing and defining criteria helps them internalize the learning objectives at a much deeper level than simply being handed a pre-made rubric. This practice shifts the classroom culture from one of compliance to one of shared purpose.

Guidance on the Co-creation Process:

1. **Start with the Learning Goals:** The teacher begins by clearly presenting the non-negotiable learning objectives and competences for the project (e.g., "In this project, we need to demonstrate our understanding of systems thinking and propose a solution to a local environmental problem.").

2. **Brainstorm "What Does Success Look Like?":** Ask students, "What would a great project look like, sound like, and feel like?" or "If someone did a fantastic job on this, what would we see?" Chart all student ideas without judgment.
3. **Group and Label the Criteria:** As a class, look for patterns in the brainstormed list and group similar ideas together. Work with students to create a label or name for each category (e.g., "Clear Explanation," "Creative Solution," "Teamwork"). These become the criteria for the rubric.
4. **Define the Levels of Quality:** For each criterion, discuss what different levels of performance would look like. Start by defining the highest level ("Proficient" or "Exemplary"). Then, work backward to describe what "Developing" or "Beginning" work would look like. The teacher can guide this process to ensure the descriptions are specific, observable, and aligned with the learning goals.
5. **Use and Refine:** Use the co-created rubric for self, peer, and teacher assessment. After the project, reflect with the class on the process: Was the rubric fair? Was it clear? What would we change for next time?

Annex 2.3 A Guide to Providing Formative Feedback

Assessment is most effective when it is part of a continuous learning cycle. High-quality formative feedback is strength-based, actionable, and dialogic—it fosters a growth mindset and empowers students to improve, rather than simply delivering a judgment.

Protocols for Structuring Feedback Conversations:

- **"What Worked Well? What Would Be Even Better If?" (W.W.W./W.W.B.E.I.?):** A simple and positive framing for peer or teacher feedback. The person giving feedback must first identify specific strengths before offering a concrete suggestion for improvement.
- **Praise-Question-Polish:**
    1. **Praise:** Start with a genuine and specific compliment about the work.
    2. **Question:** Ask a thoughtful question to prompt the student to think more deeply about their work (e.g., "I wonder what would happen if you considered the perspective of...?").
    3. **Polish:** Offer a concrete suggestion for revision.

Sentence Starters for Written Comments:

- To highlight strengths: "I noticed you did an excellent job of..." or "Your analysis of ___ was particularly insightful because..."
- To encourage deeper thinking: "A question I have about your conclusion is..." or "To take this to the next level, consider exploring the connection between ___ and ___."
- To provide actionable advice: "One specific area for revision is..." or "Try strengthening your argument by adding evidence related to..."

Strategies for a Continuous Feedback Loop:

1. **Self-Assessment First:** Before submitting a major project, have students assess their own work using the rubric. This helps them internalise the criteria.
2. **Structured Peer Feedback:** Guide students to use a protocol (like W.W.W./W.W.B.E.I.?) to provide feedback to a partner. This makes feedback more focused and helpful.
3. **Teacher Feedback for Revision:** Provide your feedback after students have had a chance to self-reflect and learn from a peer. Focus your comments on guiding their next steps for revision.