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ACT. 2.1: FRAMEWORK FOR ANALYSIS BASED ON GREENCOMP

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Index of acronyms

D	Deliverable
EU	European Union
GA	Grant Agreement
GDPR	General Data Protection Regulation
RRI	Responsible Research and Innovation
STEM	Science, Technology, Engineering, Mathematics
STEAM	Science, Technology, Engineering, Arts, Mathematics
STS	Science, Technology and Society
WP	Work Package

Partnership

Ref.	OID	Legal name	Country	Region	City	Website	Acronyms
P1	E10208640	JYVASKYLAN YLIOPISTO	Finland		Jyvaskyla	http://www.jyu.fi	JYU.FI
P2	E10208740	LIBERA UNIVERSITA DI BOLZANO	Italy		Bolzano	www.unibz.it	UNIBZ.IT
P3	E10208220	UNIVERSITATEA DE VEST DIN TIMISOARA	Romania	Vest	Timisoara	www.uvt.ro	WUT.RO
P4	E10209243	UNIVERZA V LJUBLJANI	Slovenia	Osrednjes lovenska	Ljubljana	http://www.uni-lj.si	UL.SI
P5	E10154029	DRUSTVO ZA OPAZOVANJE IN PROUCEVANJE PTIC SLOVENIJE - DOPPS BIRDLIFE SLOVENIJE ZDRUZENJE	Slovenia		Ljubljana	www.ptice.si	DOPPS.SI
P6	E10359479	Suomen luonto- ja ympäristökoulujen liitto ry	Finland		Tampere	www.luontokoulut.fi	LYKE.FI
P7	E10362474	Parco naturale Adamello Brenta	Italy	Provincia Autonoma di Trento	Strembo	https://www.pnab.it/	PNAB.IT
P8	E10016244	"Milvus Group" Association	Romania	Centru	Tîrgu mureş	www.milvus.ro	MILVUS.RO

History of changes

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1	15.01.2025	First preliminary draft	UL.SI	
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1 Executive Summary

The CREA+BIRD project aims to empower teachers and educators to model, adopt and multiply new modules to promote the European sustainability competence framework GreenComp and the sustainability education of students and future EU citizens. The main objective of WP2 is to collect, analyze and compare transformative and creative teaching practices on sustainability education. The first goal is to develop a framework for analyzing teaching practices based on the GreenComp reported in this deliverable (Act 2.1.). The framework will be used for a collection and analysis of teaching practices at the national level and a comparative analysis of teaching practices in sustainability education at the international level.

Based on the overview presented in the Introduction, we have developed a Theoretical Framework for the Analysis of Teaching Practices (TFATP), which is summarized in Figure 5 on page 18. It is based on four competence areas of the European sustainability competence framework (GreenComp). To achieve these competencies, we emphasized the role of cognitive, affective and psychomotor learning objectives, learning content that emphasizes the SDGs, and scaffolds that provide students with opportunities for transformative learning.

Attached is an outline for a Teaching and Learning Sequence (TLS) for sustainability education to be used for collecting and analyzing teaching practices. These also serve to encourage teachers to co-create and share new pedagogical tools for creative sustainability education, using birds as an inspiring common theme.

2 Introduction

Human behavior is substantially affecting the natural environment which makes environmental problems the most pressing social problems of our time. Human activities have altered Earth's ecosystems to such an extent that our survival is now at risk, and these changes are becoming increasingly difficult to reverse. One of the most important goals of humanity in the 21st century is to construct a sustainable society. According to UNESCO, sustainability is best described as a long-term goal, such as attaining a more sustainable world, while sustainable development refers to the many processes and pathways used to stimulate development, or achieve progress, in sustainable ways. Education is one of the keys for achieving sustainability and one of the targets for a sustainable society (UNESCO, 2015).

The CREA+BIRD project aims at empowering teachers and educators to model, adopt and multiply new modules to foster European sustainability competence framework GreenComp and sustainability education of students and future EU citizens. Particularly, supported by researchers and experts, they are encouraged to establish communities of practice dedicated to the development of new and more creative modules for green competencies in education. The objective of the CREA+BIRD project is to foster teachers to co-create and share new pedagogical tools for creative sustainability education by using birds as an inspiring common theme, thus operationalizing the GreenComp sustainability competence framework. By integrating cultural narratives about birds with natural scientific knowledge, the project enriches the creative processes, enhancing learners' connection with nature. The CREA+BIRD project advances sustainability education through collecting, comparing, and co-creating pedagogical methods. Utilizing collaborative and participatory action research methodologies, the project seeks to empower educators and students, enriching learning experiences, and promoting active involvement with sustainability issues.

The project unites experienced educators and environmental organizations from four countries with expertise in bird research. The national associations selected for this project are also networked in many ways with schools and teachers in their respective countries and provide in-service training for teachers. Thus, the project provides important input both for pre-service and in-service teacher education. Methodologically, this project follows the principles of action research, based on the initiatives of teachers in schools in search of innovative teaching methods. The project draws on the solid research expertise of renowned researchers on teacher education and sustainability. Leveraging the collaboration between universities, associations, and schools, it strengthens the links between initial teacher education and in-service training as well as formal and nonformal education. Through these collaborations, the main aim of the project is to contribute to the effectiveness of sustainability education through the development of creative methods and thus contribute to a more sustainable future. The project represents a unique opportunity to support transformative initiatives that inspire sustainable action and pave the way towards a more resilient and equitable future.

The main objective of WP2 is to collect, analyze and compare transformative and creative teaching practices on sustainability education to improve the gaps and opportunities in teaching and learning practices. **The goals of the deliverable 2.1 (Act. 2.1: Framework for analysis based on GreenComp) is to develop a methodology for analyzing teaching practices based on the GreenComp to be implemented in the next phase of the project.**

This will be followed by a collection and analysis of teaching practices at national level and a comparative analysis of teaching practices in sustainability education at international level. WP2 is coordinated by the University of Ljubljana (UL.Sl). All project partners were involved in the development of a method for analyzing teaching practices based on GreenComp.

2.1 Sustainable Development Goals

Sustainable development is generally defined as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (Brundtland & Khalid, 1987). Education for Sustainable Development (ESD) is UNESCO's solution to the pressing challenges our planet faces. ESD equips individuals with the knowledge, skills, values, attitudes, and behaviors necessary to live in harmony with the environment, economy, and society. It motivates people to make informed, responsible decisions that contribute to building a more sustainable and prosperous future for all (https://www.unesco.org/en/sustainable-development/education).

In this sense, the **Sustainable Development Goals** (SDGs) are global goals encouraging all countries and sectors to work in collaboration to eventually achieve sustainability by addressing challenges related to sustainable development. They were adopted in 2015 by all UN member states (https://sdgs.un.org/goals). The SDGs seek to deliver a universal call to eradicate poverty, safeguard the planet, and ensure that by 2030, everyone is on a path toward peace and prosperity. Figure 1 lists the 17 SDGs, which illustrate the broad spectrum of global challenges. The SDGs serve as a universal call to action focused on ending poverty, protecting the planet, and ensuring peace and prosperity for all by 2030 (Meschede, 2020; United Nations, n.d.-a), overcoming the limitations of the previously established Millennium Development Goals and acting as a successor framework (United Nations, n.d.-b; Yiu & Saner, 2014).

Not only have these targets been set, but they are also tracked to assess progress against indicators that are set for each target and updated annually to reflect new EU policy priorities and incorporate indicators from new data sources (Eurostat, 2025). According to Eurostat, significant progress has been made in reducing inequalities (SDG 10), ensuring decent work and economic growth (SDG 8) and reducing poverty (SDG 1) (Eurostat, n.d.).

Figure 1: Sustainable Development Goals (United Nations, n.d.-a)

SDG4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all) plays a crucial role in enabling the achievement of most other SDGs. However, global progress in education has been too slow. In many countries, learning outcomes at the end of lower secondary school are declining, and the improvement in upper secondary completion rates has slowed since 2015 (*Independent Group of Scientists appointed by the Secretary-General*, 2023). Prioritizing progress towards SDG 4 is essential, as it will have a transformative effect on achieving the broader 2030 Agenda (*Bianchi et al*. 2022).

One of the proposed categorizations that helps us to better understand the underlying structure of the SDGs is the 5p categorization. This categorization simplifies the 17 SDGs into five pillars: People, which strive to end poverty, ensuring dignity, health and equality, Planet, which strives towards protecting ecosystems and climate, Prosperity, talking about building inclusive economies, Peace for fostering just societies and finally Partnership to promote global cooperation.

The 5P model is excellent to view the different areas of SDGs, but in June 2016, a new way to visualize those aspects was proposed. It is called *The SDGs wedding cake model (*Figure 2*)*. This framework restructures the 17 goals and emphasizes the hierarchical structure of the categories from bottom to top - **BIOSPHERE, SOCIETY, ECONOMY** and **PARTNERSHIP** and thus gives us a new approach, that puts the biosphere layer as the base, rather than the economy aspect of sustainable development (*The SDGs Wedding Cake*, 2016, Fet et al., 2023).

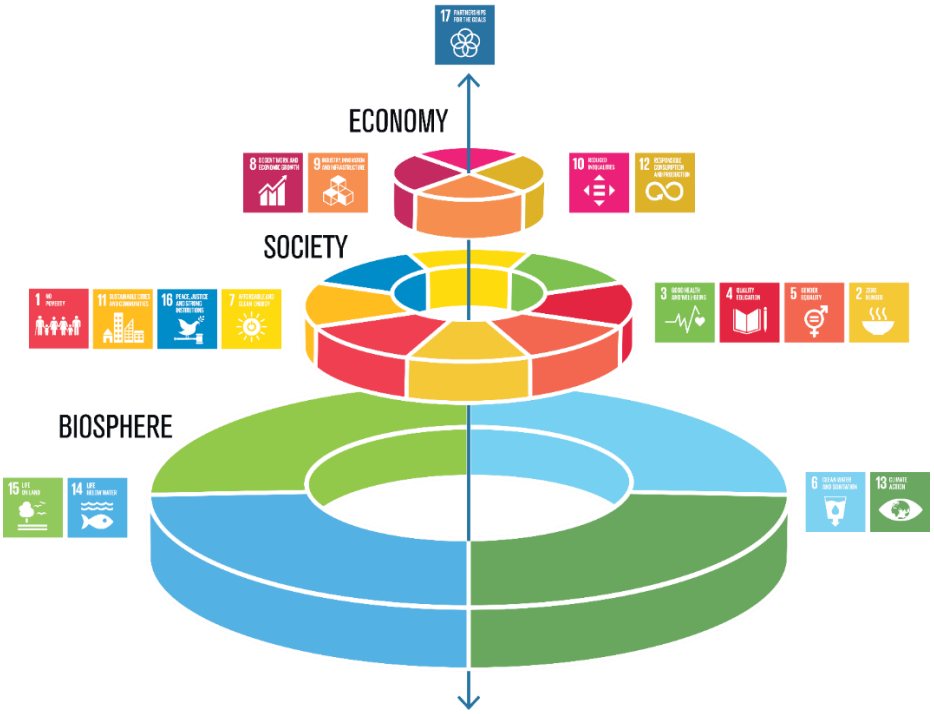

Figure 2: The illustration of the SDGs wedding cake is free to use under the Creative Commons license CC BY-ND 3.0

The biosphere layer includes 4 goals:

- 6. clean water and sanitation,
- 13. climate action.
- 14. life below water and
- 15. life on land.

The society layer includes 8 goals:

- no poverty,
- zero hunger,
- good health and well-being,
- quality education,
- gender equality,
- affordable and clean energy,
- 11. sustainable cities and communities,
- 16. peace, justice and strong institutions.

The topmost layer combines 4 goals:

- 8. Decent work and economic growth,
- 9. Industry, innovation and infrastructure,
- 10. Reduced inequalities,
- 12. Responsible consumption and production.

And finally, the cherry on top of the wedding cake is the 17th goal, partnerships, which acts as the cross-cutting element, which acts as a glue to keep all the other layers together.

Including SDGs in education has been shown as a good method to promote sustainable practices in various fields, like in an architecture curriculum (Bertone et al., 2024), AMR education (Nowbuth & Parmar, 2024) and dental education (Cugati, 2024) and as SDG 4 aims to *"ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"*, Education for Sustainable Development (ESD) aligns with this goal by equipping learners with the knowledge, skills, and values needed to contribute to a sustainable future.

2.2 European sustainability competence framework GreenComp

To support the progress towards SDG4, the European Commission published the European sustainability competence framework GreenComp (Figure 3), which defines what sustainability is as a competence and how it can be developed through the educational system. It also provides a common reference basis for dialogue, exchange of practices and peer learning among educators involved in lifelong learning across the EU. Moreover, it helps make the competences portable and promote mobility in the EU for a full participation in European society (*Bianchi et al*. 2022).

AREA	COMPETENCE	DESCRIPTOR
1 Embodying sustainability values	1.1 *Valuing sustainability*	To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values
	1.2 *Supporting fairness*	To support equity and justice for current and future generations and learn from previous generations for sustainability.
	1.3 *Promoting nature*	To acknowledge that humans are part of nature; and to respect the needs and rights of other species and of nature itself in order to restore and regenerate healthy and resilient ecosystems.
2 Embracing complexity in sustainability	2.1 *Systems thinking*	To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.
	2.2 *Critical thinking*	To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions
	2.3 *Problem framing*	To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.
3 Envisioning sustainable futures	3.1 *Futures literacy*	To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future.
	3.2 *Adaptability*	To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk.
	3.3 *Exploratory thinking*	To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.
4 Acting for sustainability	4.1 *Political agency*	To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.
	4.2 *Collective action*	To act for change in collaboration with others
	4.3 *Individual initiative*	To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

Figure 3: GreenComp framework with descriptors

The framework defines sustainability as “a way to prioritize the needs of all life forms, ensuring that human activities do not exceed the limits of the planet’s resources”. The development of sustainability competencies in learners of all ages demands a shift in educational approaches, moving beyond the passive absorption of knowledge to overcome cognitive dissonance. In this context, GreenComp is not a rigid set of rules for educators and trainers to follow, but

rather a flexible and adaptable framework for learning programs that cultivate sustainability as a core competence. The framework identifies 4 interrelated competence areas, and for each indicates 3 key-competences, to be intended as non-hierarchical and equally important. The resulting set of 12 competences constitutes building blocks of what Sustainability as a competence entails.

2.3 Transformative learning in the light of sustainability education

Education for sustainable development or environmental education are teaching us how to implement behavior change, however, it is often difficult to articulate clearly what we teach or learn in environmental education focusing on behavior change. It can be equally challenging to describe the behaviors we are ultimately seeking (Heimlich and Ardoin, 2008). Current ways of thinking, perceiving and doing need to be changed in response to critical systemic conditions of uncertainty, complexity and unsustainability (Sterling, 2010). Orr (2004) points out that there is no compelling link between educational success and sustainable behaviors. Because of these arguments, educators interested in sustainability and social justice have looked to learning theory in recent years to find possible ways forward. Various learning theories can be considered when implementing sustainability education. The way we frame learning influences the teaching approach we choose (Fischer et al., 2023).

In sustainability education, there is growing interest in using transformative learning methods to deconstruct, transgress and change societal assumptions and expectations that have led to global systemic dysfunctions (Bengtsson, 2019). **Transformative learning** theories build on the constructivist understanding of learning and extend it critically. Constructivist learning theories assume that human sensory functions, perceptions and memory actively construct realities for the purpose of successful action and do not depict objective reality (Jickling and Wals, 2008). The theory acknowledges the role that experience, and reflection have in the learning process, but explains that people construct their own understanding from those experiences (Brooks and Brooks, 1993).

The goal of revealing and changing structures of meaning is central to theorists of transformative learning. In this perspective, learning is understood as a process of becoming aware of the social and cultural conditioning that leads people to adopt certain worldviews, with the goal of challenging and changing them. Transformative learning was not originally associated with the grand challenges of social change and sustainability but emerged from the work of adult educator Mezirow (1978). Mezirow (2000) suggests that transformative learning "refers to transforming a problematic frame of reference to make it more dependable ... by generating opinions and interactions that are more justified. We become critically reflective of those beliefs that become problematic" (Mezirow, 2000, p.20). Freire's (1970) concept of conscientization extended this critical approach beyond the sphere of personal or individual transformation to influence ideas for social change.

Sterling (2010) explains that transformative learning is learning that touches deeper levels of knowing and meaning and thereby affects our more immediate and concrete levels of knowing, perception and action. He claims that this is true at the level of both individual knowing and collective or cultural knowing. Sterling distinguishes three orders of learning and change that accompany the increase in learning capacity. First-order learning and change means doing 'more of the same, i.e. changing within boundaries and without examining or changing the assumptions or values that underline one's actions or thinking (cognition or learning). Second-order learning or change refers to a significant change in thinking or in what you are doing because of examining assumptions and values and is about understanding of the inner or subjective world (meta-cognition or meta-learning). In this type of learning, meaning is recognized and negotiated between the participants. Most learning promoted in formal schooling is of the first order, which is essentially about 'information transfer (learning about things) and does not normally challenge the learner's assumptions or beliefs. This type of learning keeps things stable in the face of change and is an obstacle to deeper change needed for sustainable education. Sterling therefore emphasized the importance of third-order learning or change, which could be called epistemic learning and involves a shift in epistemology or the operational way of knowing and thinking that shapes people's perceptions and interactions with the world and helps them to be open to and embrace other views and possibilities. Sterling also described the three orders of learning or change as 'doing things better, doing better things' or 'seeing differently' (Sterling, 2010).

2.4 STE(A)M education

Scientific literacy refers to the knowledge and understanding of scientific concepts and processes to make personal decisions, participate in civic and cultural affairs, and enter science and technology careers (McComas, 2014). The scientifically literate person can engage in solving scientific problems even though he or she may not have and apply the scientific (experimental, technical) skills of the researcher (Swartz et al., 1998). Therefore, promoting and improving scientific literacy through STEAM education is of vital importance in our socio-economic landscape. STEAM education is a term which combines education in the fields of Science, Technology, Engineering, Arts and Mathematics.

Science is the study of the natural world, combining biology, chemistry and physics and is thought of and taught in two parts: 1. A body of knowledge, humanity has accumulated through 2. Scientific method. **Technology**, while not a discipline by itself, combines the knowledge, processes and devices that go in creating and operating technological artifacts. **Engineering** is, like science, thought of in two ways - as a body of knowledge and a process for solving problems - design under constraint. **Mathematics** is the study of patterns, and relationships among quantities, numbers and space. Mathematics does not deal in physical evidence, but rather in arguments based in logic and foundational assumptions (Honey, 1987). The reason for combining these subjects is they should not be taught separately (Khine, 2019) but should rather be thought of as a single overarching concept in which scientists, engineers

and mathematicians work (McComas, 2014). These subjects, of course, follow different approaches to teaching, which should be considered when designing learning activities (English, 2016).

The foundation of STEAM education is built on constructivism and inquiry-based learning (IBL) (Hong et al., 2020). IBL simulates real research using scientific methods. Inquiry helps students understand scientific concepts, the nature of science, to develop independence about the natural world (Llewellyn, 2013). It is an approach to learning that promotes real-world learning through exploration and questioning (Krnel, 2010). There are 4 levels of integration, according to some authors (English, 2016; Vasquez, 2013): *Disciplinary*, where skills and concepts are learned separately, *Multidisciplinary*, where the skills and concepts are still learned separately, but follow a common theme, *Interdisciplinary*, where concepts and skills, that are closely linked, are learned by combining two or more disciplines and *Transdisciplinary*, where knowledge and skills learned from two or more disciplines, are applied to real world problems.

The STEM education concept does not originally include **Arts** but has been included in certain situations to encourage creative thinking, a vital concept in STEM education (Clements & Sarama, 2021). Creative thinking is defined by PISA as the ability to generate, evaluate and improve ideas to produce original and effective solutions, advance knowledge and create impactful expressions of imagination (New PISA Results on Creative Thinking, 2024). Creativity is the central engine of human development in various fields, from solving everyday problems to art, business and science (Juriševič, 2018). It is also one of the most important prerequisites for a successful career in science (Loehle, 1990).

2.5 Learning objectives

Learning goals or objectives are short statements that describe what students should be able to do by the end of the lesson, provide a common understanding of the topics covered, help teachers plan and assess learning activities, allow administrators to monitor student progress, and make it easier for students to review important content. Bloom's Taxonomy, developed by Benjamin Bloom in 1956, serves as a framework for categorizing educational goals or objectives. Its primary objective is to encourage higher forms of thinking in education, such as analyzing and evaluating rather than just remembering facts (Bloom, 1956). The original taxonomy consists of six levels of cognitive processes which represent a hierarchy of thinking skills that educators can target in their instruction. The taxonomy was revised by Anderson and Krathwohl in 2001. The revision not only updated the terminology to emphasize the active nature of learning, but also the need for higher-order thinking skills in modern educational contexts. Bloom's taxonomy divides educational objectives into three primary domains: cognitive, affective and psychomotor.

The **cognitive domain** consists of six hierarchical levels that reflect the progression of mental abilities and knowledge acquisition. It begins with Remembering, which involves recalling facts and basic concepts, and advances to Understanding of information. The next level, Applying, focuses on the ability to use knowledge in new and varied

situations. This is followed by Analyzing, which involves breaking down information into its components to understand its structure. The next level is Evaluating, which is the ability to make judgments based on criteria and standards, and leads to the highest level, Creating, in which the individual can synthesize information and develop new ideas or products (Anderson & Krathwohl, 2001).

In addition to the cognitive domain, the **affective domain** addresses emotional aspects of learning, which are crucial for personal development and social interactions. The affective domain concerns the way in which learners respond emotionally to information and experiences. It consists of five levels: Receiving, Responding, Valuing, Organizing, and Characterizing. Receiving is the initial awareness of value, while Responding involves active participation and engagement in the learning process. Valuing is the value the individual places on certain ideas, behaviors or values. Organizing means integrating these values into a coherent system. Finally, Characterizing reflects how values influence one's behavior and personality (Krathwohl, 2002). The importance of emotional engagement in learning cannot be understated; it has a profound impact on motivation and the practical application of knowledge in the real world (Krathwohl, 2002). Educators recognize that fostering emotional connections enhances learning outcomes and contributes to the development of well-rounded individuals.

The **psychomotor domain** concerns physical skills and the development of motor abilities, which can also be categorized into levels. The first level is perception, the ability to use sensory cues to guide motor activity. This is followed by a set, which reflects the readiness to act, encompassing mental, physical, and emotional aspects. Guided response is the next level, marking the early stages of learning a complex skill through imitation and trial and error. Mechanisms follow, where individuals gain some proficiency in performing a skill. The level of complex overt response represents skillful performance of a complex movement pattern. Adaptation, the next designation, indicates the ability to modify skills to meet new situational demands, while the highest level, origination, involves creating new movement patterns tailored to specific situations. This domain is particularly crucial in areas requiring physical expertise, such as sports, performing arts, and technical training (Simpson, 1972).

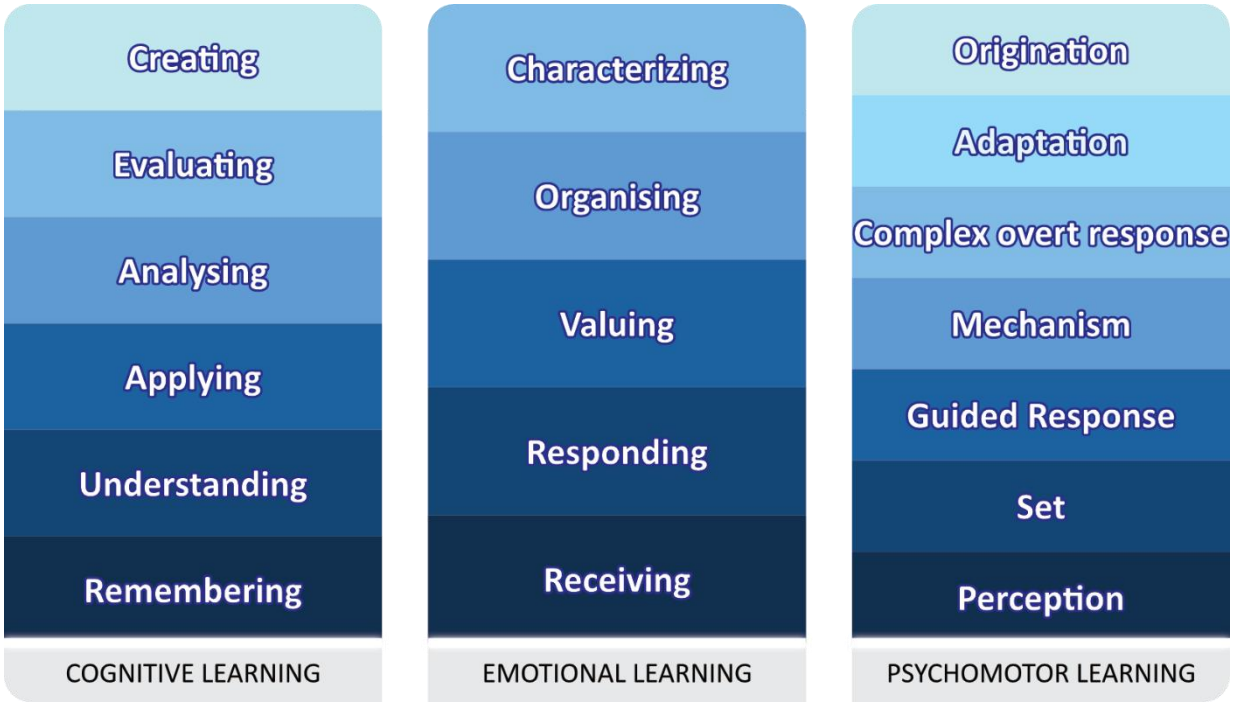

Figure 4: The three domains of Blooms' taxonomy

Bloom's Taxonomy continues to serve as an essential framework in education, influencing curriculum development and assessment practices. Because it focuses on various domains, it can effectively support the implementation of the SDGs in curricula by providing a structured approach to the development of critical thinking, problem-solving skills and values necessary to enable individuals to make informed decisions and act responsibly for environmental integrity, economic viability and a just society (UNESCO, 2014).

3 Methodology

As mentioned in the introduction, the goal of deliverable 2.1 is to develop a methodology for analyzing teaching practices based on GreenComp, which will be implemented in the next phase of the project. Based on the overview, we have developed a Theoretical Framework for the Analysis of Teaching Practices (TFATP), which is summarized in Figure 5. It is based on four competence areas of the European sustainability competence framework (**GreenComp**). To achieve these competencies, we emphasized the role of cognitive, effective and psychomotor **learning objectives** based on Blooms taxonomy. We also highlighted the importance of **learning content**, emphasizing SDGs, hierarchical structure and nested systems of the categories - biosphere, society, economy and partnership. Finally, we highlight **scaffolds** that provide students with opportunities for transformative learning, emphasizing the role of STEAM education. Scaffolds are potential educational strategies that can facilitate the implementation of teaching practices to be evaluated and developed as part of the CREA+BIRD project.

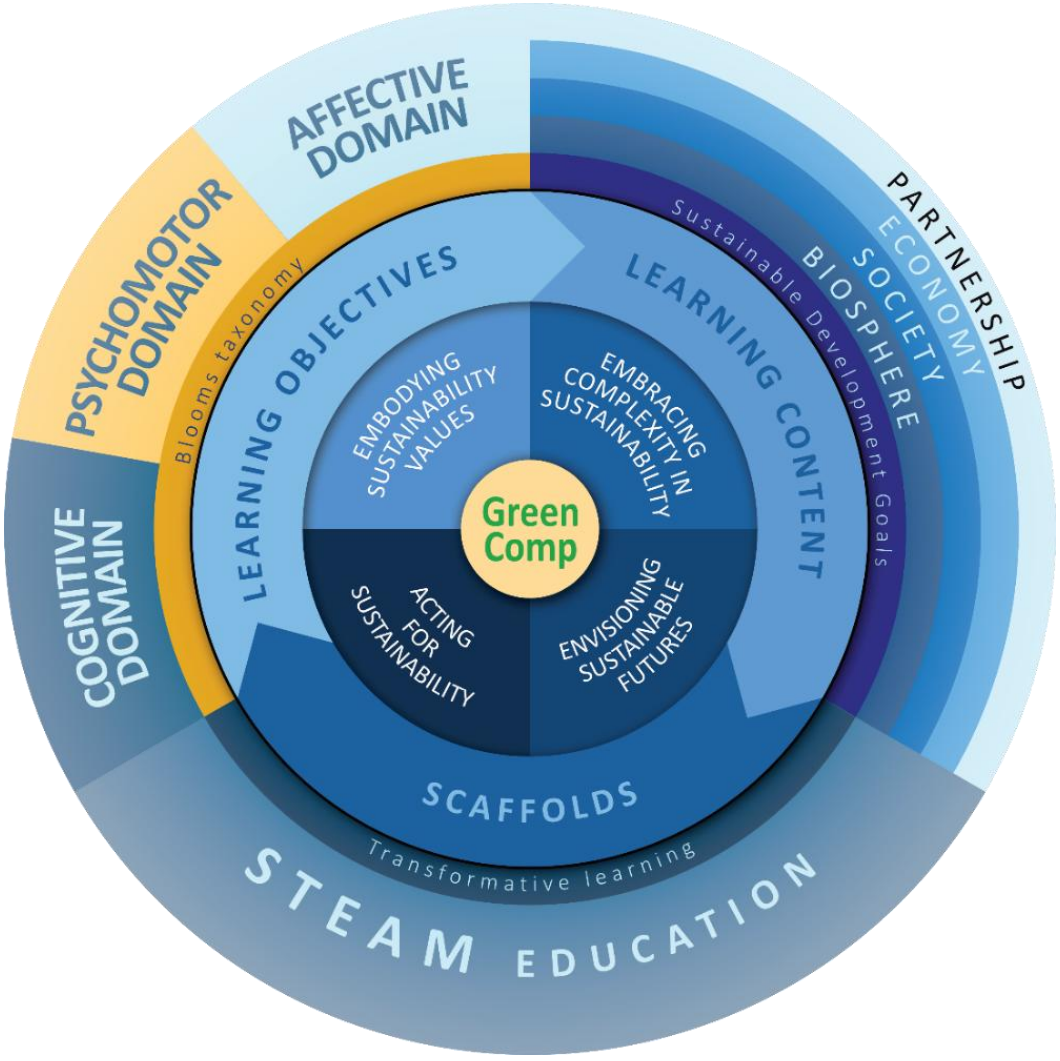

Figure 5: CREA+BIRD methodology theoretical framework

Please find attached a draft template for a Teaching and Learning Sequence (TLS) for sustainability education to be used for the collection and analysis of teaching practices at the national level and for a comparative analysis of teaching practices in sustainability education at the international level. The template will also serve to encourage teachers to co-create and share new pedagogical tools for creative sustainability education, using birds as an inspiring common theme.

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5 Appendix

5.1 Template on Teaching and Learning Sequence (TLS) for Sustainability Education

Heading		
Title		
Author(s)		
Name of the school/institution		
Country	• Finland • Italy • Romania • Slovenia	
Date		
Tags		
Group size	• Small (less than 6) • Medium (6 – 30) • Large (30-60) • Extra large (>60)	
Level	• Primary (elementary) (usually 6-11 years old) • Lower Secondary (usually 12-14 years old) • Upper Secondary (usually 15-18 years old) • Teacher Education	Primary (elementary) … one (primary) teacher teach a group of students all or majority of school subjects.
Duration	• Single Session (1) • Multiple Sessions (up to 5 or one week) • Longer Period (duration several weeks or months)	
Key topics	*Up to 5 keywords*	
Teaching and Learning Sequence (TLS) description		
Aims/objectives	What is intended to be achieved?	
Incentives	*Why did the authors come up with the example?*	
Description of key steps in the TLS	*Describing the steps of TLS*	
Assessment	*How students receive feedback or are evaluated?* *How teacher receive feedback*	
Resources and materials needed	*List of materials and resources*	
In-depth exploration of the TLS	*Detailed explanation of the TLS including figures that help illustrate the example.*	

Links to other resources	*Web links and list of documents attached.*	
Evaluation		
GreenComp framework	1. Embodying sustainability values, including the competences	1.1. valuing sustainability 1.2. supporting fairness 1.3. promoting nature
	2. Embracing complexity in sustainability, including the competences	2.1. systems thinking 2.2. critical thinking 2.3. problem framing
	3. Envisioning sustainable futures, including the competences	3.1. futures literacy 3.2. adaptability 3.3. exploratory thinking
	4. Acting for sustainability, including the competences	4.1. political agency 4.2. collective action 4.3. individual initiative
Sustainable Development Goals (The SDGs wedding cake, Stockholm Resilience Centre, 2016)	Biosphere	6. Clean water and sanitation 13. Climate action 14. Life below water 15. Life on land
	Society	1. No poverty 2. Zero hunger 3. Good health and well-being 4. Quality Education 5. Gender equality 7. Affordable and clean energy 11. Sustainable cities and economies 16. Peace, justice and strong institutions
	Economy	8. Decent work and economic growth 9. Industry, innovation and infrastructure 10. Reduced inequalities 12. Responsible consumption and production
	Partnership	17. Partnership for the goals
STEAM education	Science	
	Technology and Engineering	
	Art	… the expression or application of human creative activity (painting, music, dancing, writing…), producing works to be appreciated primarily for their **beauty or emotional power**.
	Mathematics	
	Other:	
	Bloom et al. (1956), Krathwohl (2002) Cognitive learning … is focused on intellectual skills such as critical thinking, problem solving, and creating a knowledge base. The cognitive hierarchy extends from simple memorization designed to build the knowledge of learners, to creating something new based on previously-learned information.	1. Remembering 2. Understanding 3. Applying 4. Analyzing 5. Evaluating 6. Creating
	Emotional (affective) learning … focuses on the attitudes, values, interests, and appreciation of learners. The hierarchy associated with it begins with receiving and listening to	1. Receiving 2. Responding 3. Valuing 4. Organizing 5. Characterizing

	information, and extends to characterization or internalizing values and acting upon them. It focuses on helping learners understand what their own values are and how they have developed. Students become mor involved, committed and internally motivated.	(internalization)
	Psychomotor learning	1. **Perception** - Sensory cues guide motor activity. 2. **Set** - Mental, physical, and emotional dispositions that make one respond in a certain way to a situation. 3. **Guided Response** - First attempts at a physical skill. Trial and error coupled with practice lead to better performance. 4. **Mechanism** - The intermediate stage in learning a physical skill. Responses are habitual with a medium level of assurance and proficiency. 5. **Complex Overt Response** - Complex movements are possible with a minimum of wasted effort and a high level of assurance they will be successful. 6. **Adaptation** - Movements can be modified for special situations. 7. **Origination** - New movements can be created for special situations.

Information to be filled in by teachers for each example shown by green shaded first column