

Green Insights

Harmonizing Educational
Practices with GreenComp
Competencies



Co-funded by
the European Union

Project Number:
2024-1-LU01-KA210-VET-000243985



Green Insight: Harmonizing Educational Practices with GreenComp Competencies

Green Horizons: Leading the Way in Environmental Service Learning Erasmus+ Small Scale Partnership

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Document Name	Green Insight: Harmonizing Educational Practices with GreenComp Competencies
Revision	Final
Revision Date	November 2024
Author(s)	Luxembourg Creative Lab and Private profiled secondary school "Educational Technologies" (EduTech)

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1. Introduction

The foundations behind the Green Horizons project revolve around empowering educators with additional skills, enhancing teacher preparation, establishing cross-curricular connections and fostering active student engagement in projects related to climate change. While the overall challenges and facing professionals in both the VET training field and communities attempting to mitigate the effects of climate change are complex and multifold, the Green Horizon project can outline a few specific objectives and outcomes that can be beneficial in both selected priorities.

2. Methodology

2.1 Interview Design and Participant Profiles

The focus-group interviews conducted in Luxembourg and Bulgaria were a crucial component of the Green Horizons project, designed to gather detailed insights into how green competencies are currently being integrated into vocational education and training (VET) curricula, as well as the challenges and opportunities faced by educators. These interviews provided an invaluable opportunity for educators to reflect on their practices, share their experiences, and contribute to the development of the project's Assessment Tool for Sustainability-Based Learning (SBL) initiatives.

In order to ensure a comprehensive and diverse set of perspectives, the selection of participants was carefully planned. The participants were chosen from a variety of disciplines and educational settings to reflect the broad scope of the project, which aims to integrate green competencies across different subject areas and sectors. This diversity allowed the project team to capture a wide range of experiences and challenges related to the teaching of sustainability in vocational education.

Selection Criteria for Participants

The participants were selected based on several key criteria, ensuring that the focus groups would provide meaningful and representative insights into the state of sustainability education in each country. These criteria included:

1. **Experience in Teaching Sustainability-Related Topics:** Priority was given to educators who were already incorporating sustainability or environmental topics into their teaching practices. This ensured that the discussions would be informed by practical experience and would focus on real-world challenges and opportunities.
2. **Representation of Multiple Disciplines:** The focus groups were designed to include educators from a wide range of disciplines, including natural sciences, social sciences, languages, creative industries, entrepreneurship, and more. This interdisciplinary approach was critical, as it allowed the project team to explore how green competencies could be integrated into diverse subject areas and teaching methods.
3. **VET and General Education Instructors:** Participants included both VET instructors and general high school educators to explore the different approaches and challenges faced by these two groups. VET instructors often have a stronger focus on practical, hands-on learning, which is particularly relevant for Sustainability-Based Learning (SBL) initiatives. Including general education teachers helped the project team understand how sustainability concepts could be introduced in more traditional academic settings.
4. **Geographical Representation:** In order to capture regional differences in educational practices, participants were drawn from different regions within Luxembourg and Bulgaria. This provided a broader perspective on how green competencies are being integrated across different geographical and socio-economic contexts.
5. **Gender and Inclusivity Considerations:** The project team made a conscious effort to ensure gender balance within the focus groups. This aligns with the Green Horizons project's commitment to inclusivity and the recognition that diverse perspectives are essential for addressing complex issues like sustainability. Gender balance also ensured that the discussions reflected a variety of teaching styles, classroom dynamics, and student interactions, as these can sometimes differ based on the gender of the educator.

Participant Profiles: Luxembourg Focus Group

The focus-group interview in Luxembourg was moderated by Mr. Tsvetomir Budakov, a project coordinator with extensive experience in education and sustainability. The participants in the Luxembourg focus group were carefully selected to represent a range of disciplines within VET education, with a particular focus on the creative industries. These educators were chosen because of their involvement in fields where sustainability is increasingly becoming a critical concern, such as design, product development, business and entrepreneurship.

The profiles of the Luxembourg participants were as follows:

1. **Graphic Design Instructor:** This educator has over 10 years of experience teaching graphic design at the vocational level. They have recently begun integrating sustainability into their curriculum by encouraging students to consider the environmental impact of their design choices, particularly in terms of material usage and production methods. Their contribution to the focus group centered on the challenges of balancing creative freedom with sustainability goals.
2. **Product Development Specialist:** This participant teaches product design and development, with a focus on sustainable production techniques. They have been working on incorporating eco-friendly materials into the design process and teaching students how to reduce the environmental footprint of the products they create. Their expertise provided valuable insights into the practical challenges of implementing green competencies in a traditionally resource-intensive field.
3. **Entrepreneurship Educator:** Specializing in creative entrepreneurship, this educator is dedicated to teaching students how to develop sustainable business models within the creative industries. Their approach emphasizes the importance of innovation and social responsibility, making them an essential voice in the discussion on green entrepreneurship and the role of education in fostering future leaders in sustainability.
4. **Natural Sciences Teacher:** While primarily focused on biology and environmental science, this educator has been working to integrate systems thinking and sustainability into their lessons. Their participation in the focus group highlighted the need for interdisciplinary collaboration, as they often work with other departments to create cross-curricular projects focused on environmental issues.

5. **Design and Fashion Instructor:** Teaching in a field where sustainability is becoming increasingly important, this instructor has begun to focus on reducing waste in the fashion industry and encouraging students to use recycled materials in their projects. Their contribution emphasized the importance of sustainability in the creative industries and the challenges of adapting traditional curriculum to include these concepts.

Participant Profiles: Bulgaria Focus Group

The focus group in Bulgaria was held at the Private Profiled High School Educational Technologies in Sofia. The session involved 12 educators from a wide range of subjects, reflecting the interdisciplinary nature of the Green Horizons project. The diversity of the Bulgarian group provided a comprehensive view of how green competencies are being integrated into different academic and vocational settings, from language classes to entrepreneurship programs. This diversity also highlighted the different challenges faced by educators in more traditional academic subjects versus vocational training.

The profiles of the Bulgarian participants were as follows:

1. **Bulgarian Language Teacher:** With a background in teaching language and literature, this educator has incorporated sustainability into their lessons by focusing on environmental themes in literature. They have also begun teaching students eco-related vocabulary, particularly in the context of reading comprehension exercises. Their participation in the focus group offered insights into how sustainability can be integrated into subjects not traditionally associated with environmental education.
2. **German Language Teacher:** Specializing in foreign language education, this teacher has been exploring ways to integrate green competencies into their curriculum by focusing on environmental topics in reading and writing exercises. They shared challenges related to student engagement, particularly when working with abstract concepts like climate change in a foreign language context.

3. **Natural Sciences Teacher (Physics, Chemistry, Biology):** This educator has extensive experience teaching environmental science and has been a strong advocate for integrating green competencies into the natural sciences curriculum. They have led several school-wide initiatives focused on conservation and biodiversity, and their contribution to the focus group centered on the importance of systems thinking in teaching sustainability.
4. **History and Geography Teacher:** This participant has been incorporating sustainability into their lessons by teaching students about the historical and geographical impact of human activities on the environment. They have developed lesson plans that explore the consequences of industrialization, deforestation, and climate change, providing students with a broader understanding of the global challenges we face.
5. **Entrepreneurship Teacher:** Focusing on Green Entrepreneurship, this educator teaches students how sustainable business practices can be applied in various industries. Their lessons emphasize the importance of ethical decision-making and social responsibility, making them a key contributor to discussions on how to foster entrepreneurial thinking that prioritizes sustainability.
6. **Design and Creative Arts Instructor:** Teaching design and creative arts, this educator has been introducing students to sustainable design principles, particularly in relation to the use of materials and the environmental impact of their artistic choices. Their participation provided valuable insights into the intersection of creativity and sustainability.
7. **Philosophy Teacher:** This participant has taken a philosophical approach to teaching sustainability, encouraging students to reflect on ethical questions related to environmental stewardship and the role of individuals in promoting a more sustainable world. Their contribution emphasized the importance of critical thinking and ethical reasoning in teaching green competencies.
8. **Geography Teacher:** Focused on environmental geography, this educator teaches students about the physical and human geography of environmental issues. Their lessons explore topics such as climate change, resource depletion, and urbanization, providing students with a deeper understanding of the spatial dimensions of sustainability challenges.

Moderation and Facilitation

Both focus groups were moderated by experienced facilitators who ensured that the discussions remained focused and productive. In Luxembourg, Mr. Budakov led the session, guiding the participants through a series of structured questions designed to elicit detailed responses on the integration of green competencies.

In Bulgaria, the focus group was facilitated by a senior project coordinator from the Private Profiled High School Educational Technologies, who ensured that the diverse perspectives of the participants were captured and that all voices were heard.

The moderators played a key role in creating an open and collaborative environment, encouraging participants to share their experiences, challenges, and ideas. By asking follow-up questions and prompting participants to reflect on specific aspects of their teaching practices, the moderators were able to gather in-depth insights that informed the subsequent analysis.

Participant Engagement

One of the strengths of the focus-group approach was the high level of engagement from the participants. Both in Luxembourg and Bulgaria, the educators were eager to share their experiences and contribute to the development of the Assessment Tool. Many participants expressed their appreciation for the opportunity to reflect on their teaching practices and learn from their peers. This collaborative atmosphere not only provided valuable insights for the project but also fostered a sense of community among the educators, who expressed a desire for continued collaboration on sustainability education.

In summary, the focus-group participants in both Luxembourg and Bulgaria were carefully selected to provide a diverse range of perspectives on the integration of green competencies into vocational education. Their experiences and insights have been instrumental in shaping the development of the Green Horizons project's Assessment Tool, ensuring that it meets the needs of educators across different disciplines and regions.

2.2 Data Collection Process

The data collection process was a key component of the focus-group interviews in both Luxembourg and Bulgaria. The primary goal was to capture qualitative insights into how educators are currently integrating green competencies into their curricula and to identify the challenges and opportunities they face in doing so. To ensure that the data collected was comprehensive and reflective of the participants' experiences, the process was carefully structured and facilitated by project coordinators with expertise in educational research and sustainability.

Facilitation of Discussions

In both countries, the focus-group discussions were led by experienced moderators who guided the participants through a series of predetermined questions. These questions were designed to explore specific themes related to sustainability education, such as:

- How green competencies are currently integrated into the curriculum.
- The specific resources and support needed to effectively teach green competencies.
- Challenges encountered when trying to incorporate sustainability into teaching practices.
- Student engagement and responses to sustainability-focused lessons.
- Assessment methods currently in use for evaluating students' understanding of green competencies.

The moderators played a crucial role in creating a supportive and collaborative environment where participants felt comfortable sharing their experiences. This facilitation style encouraged open dialogue, allowing for the emergence of diverse perspectives and in-depth discussions. The moderators also employed probing techniques, asking follow-up questions to clarify or expand upon certain points, which helped capture more nuanced insights.

Recording and Documentation

The discussions were recorded with the consent of the participants to ensure that all details were captured accurately. In addition to audio recordings, note-takers were present at each session to document key points, observations, and any non-verbal cues that might provide additional context to the participants' responses.

This combination of recording methods allowed for a thorough review and analysis of the discussions, ensuring that nothing was overlooked in the transcription process. The audio recordings were transcribed verbatim, with attention paid to preserving the original language and intent of the participants. This transcription process was essential for maintaining the integrity of the data and ensuring that the qualitative insights accurately reflected the participants' experiences and opinions.

Categorization of Responses

Once the discussions were transcribed, the data was systematically categorized according to recurring themes related to green competencies and sustainability education. The initial step in this process involved reading through the transcripts multiple times to identify common topics, concerns, and suggestions raised by the participants. Key themes were then coded, with each code corresponding to a specific area of interest or challenge identified during the discussions.

For example, some of the recurring themes that emerged included:

- **Curriculum Integration:** Educators shared examples of how green competencies were being incorporated into different subjects, such as design, entrepreneurship, and natural sciences.
- **Resource Needs:** Many participants highlighted the lack of adequate resources, such as teaching materials and industry-specific examples, for effectively integrating sustainability into the curriculum.
- **Challenges in Teaching Sustainability:** Educators discussed various obstacles they faced, from student disengagement to the complexity of teaching systems thinking and critical analysis.

- **Effective Teaching Strategies:** Educators shared best practices for engaging students in sustainability topics, including hands-on projects, the use of documentaries, and integrating new green technologies.

These themes were then organized into broader categories, such as "curriculum challenges," "resource needs," and "student engagement." This process of categorization allowed for the identification of key areas where further support and development were needed to enhance the teaching of green competencies.

Mapping Data to GreenComp Framework

After the themes were categorized, the data was mapped to the GreenComp framework, which outlines four core areas of sustainability competencies: Embodying Sustainability Values, Embracing Complexity in Sustainability, Envisioning Sustainable Futures, and Acting for Sustainability. This mapping process involved reviewing the participants' responses and identifying where they aligned with the specific competencies outlined in the framework.

For example:

- Discussions about the integration of eco-friendly materials into design courses were mapped to the "Embodying Sustainability Values" area, as these practices reflect an emphasis on valuing sustainability and promoting nature.
- Responses that highlighted the challenges of teaching systems thinking in natural sciences were mapped to "Embracing Complexity in Sustainability," as this area focuses on helping students understand the interconnectedness of environmental, social, and economic systems.
- Educators' descriptions of student-led projects focused on future sustainability challenges, such as climate change mitigation, were mapped to "Envisioning Sustainable Futures."
- Examples of hands-on, project-based learning initiatives aimed at fostering individual responsibility for sustainability were mapped to "Acting for Sustainability."

This mapping process helped the project team identify where current educational practices were already aligned with the GreenComp competencies and where gaps existed. It also provided a framework for understanding how the Assessment Tool could be structured to support educators in evaluating and enhancing green competencies in their teaching.

2.3 Analytical Approach

The analysis of the focus-group findings was a multi-step process that involved both qualitative and quantitative techniques. The goal of the analysis was to understand how educators in Luxembourg and Bulgaria are currently integrating green competencies into their teaching, to identify common challenges and opportunities, and to map these findings to the GreenComp competencies to ensure alignment with the European Union's sustainability framework.

Content Analysis

The primary method used for analyzing the focus-group data was content analysis, a qualitative research technique that allows for the systematic examination of textual data. Content analysis is particularly well-suited for this type of research because it enables the identification of patterns, themes, and categories within large volumes of qualitative data.

The process of content analysis began with the coding of the focus-group transcripts. As mentioned in the data collection process, recurring themes were identified, and each theme was assigned a specific code. These codes represented different aspects of sustainability education, such as "curriculum integration," "resource needs," and "teaching challenges."

Once the data was coded, the researchers conducted a thematic analysis to explore how these themes were connected and how they related to the GreenComp framework. For example, the theme of "resource needs" was closely linked to the GreenComp competence of "Embodying Sustainability Values," as educators often expressed a need for materials that helped them teach students the value of sustainability and environmental stewardship. Similarly, the theme of "curriculum challenges" was related to the "Embracing Complexity" competence, as educators frequently mentioned the difficulty of teaching complex sustainability topics within existing curricular structures.

Mapping to GreenComp Framework

The next step in the analytical approach was to map the focus-group findings to the four core areas of the GreenComp framework (European Commission, 2022, p. 14-15):

1. **Embodying Sustainability Values:** This area focuses on the values and attitudes that underpin sustainable behavior. The analysis revealed that educators in both Luxembourg and Bulgaria were actively working to instill these values in their students. For example, in Luxembourg's creative industries, educators were teaching students to consider the environmental impact of their design choices, which aligns with the GreenComp emphasis on valuing sustainability.
2. **Embracing Complexity in Sustainability:** This area emphasizes the need for systems thinking and critical analysis in addressing sustainability challenges. The analysis showed that while educators were introducing these concepts into their teaching, they often struggled to help students fully grasp the complexity of sustainability issues. This was particularly evident in the natural sciences, where educators in both countries expressed a need for more support in teaching systems thinking.
3. **Envisioning Sustainable Futures:** This area focuses on helping students develop the skills needed to anticipate and prepare for future sustainability challenges. The analysis revealed that educators in both countries were using innovative methods, such as project-based learning and case studies, to engage students in envisioning sustainable futures. For example, students in Bulgaria were working on green entrepreneurship projects that explored sustainable business models for the future.
4. **Acting for Sustainability:** This area emphasizes the importance of taking action on sustainability issues. The analysis showed that educators were using hands-on projects to empower students to take individual and collective action on environmental issues. In Luxembourg, students in creative industries were designing eco-friendly products, while in Bulgaria, students were organizing community-based environmental initiatives.

Quantitative Analysis of Participation

In addition to the qualitative analysis, the research team also conducted a quantitative analysis of participation levels and responses. For example, the researchers measured the frequency with which certain themes, such as "resource needs" and "student engagement," were mentioned during the focus-group discussions. This quantitative data helped to highlight the most pressing issues faced by educators and provided a basis for prioritizing areas of development in the Assessment Tool.

Identification of Gaps and Opportunities

One of the key outcomes of the analytical process was the identification of gaps and opportunities in the current integration of green competencies. For example, while educators were successfully teaching students about the importance of sustainability, many expressed a need for more structured guidance on how to assess student learning in this area. This gap pointed to the need for an Assessment Tool that could help educators evaluate not only students' understanding of sustainability concepts but also their ability to apply these concepts in real-world contexts.

Another gap identified through the analysis was the lack of interdisciplinary collaboration in some schools. While educators in the focus groups were passionate about teaching sustainability, they often worked in isolation, without opportunities to collaborate with colleagues from other subject areas. This gap highlighted the potential for the Assessment Tool to encourage more cross-disciplinary approaches to teaching sustainability, particularly in vocational education settings.

The analysis also revealed several opportunities for expanding the integration of green competencies. For example, educators in both Luxembourg and Bulgaria expressed a desire to involve local businesses and community organizations in their sustainability initiatives. This finding suggests that the Assessment Tool could include components that evaluate the effectiveness of partnerships between schools and external stakeholders, such as environmental NGOs and green entrepreneurs.

The final step in the analytical process was to use the findings from the focus groups to inform the design of the Assessment Tool for Sustainability-Based Learning (SBL) initiatives. The data provided a clear picture of the areas where educators needed the most support, such as curriculum integration, resource development, and student assessment.

3. Findings from Luxembourg and Bulgaria

3.1 General Observations

The focus-group discussions held in Luxembourg and Bulgaria revealed a shared commitment to integrating green competencies into vocational and general education. Both regions demonstrated a clear understanding of the importance of sustainability education and were actively exploring ways to embed these principles into their curricula. However, the discussions also highlighted several unique challenges that each region faces in this endeavor, particularly in terms of resources, student engagement, and curriculum adaptation.

In **Luxembourg**, educators from the creative industries, natural sciences, and entrepreneurship programs were at the forefront of integrating green competencies. The country's strong focus on innovation and design meant that sustainability practices were often incorporated through a hands-on, project-based learning approach. However, while the educators were enthusiastic about teaching sustainability, they expressed concerns about the availability of industry-specific resources. For example, many teachers mentioned the difficulty in finding suitable teaching materials that addressed eco-friendly practices in creative fields like graphic design and fashion. The lack of sustainability-focused resources tailored to these industries was seen as a major barrier to fully integrating green competencies into their teaching.

Additionally, the Luxembourg focus group pointed out challenges related to balancing creative freedom with sustainability. While the educators valued green competencies, they noted that imposing too many restrictions on students' creative processes—such as limiting material choices to only sustainable options—could potentially stifle innovation. This highlighted the need for a more flexible approach to sustainability education that allows students to explore creativity while remaining mindful of environmental impacts.

In **Bulgaria**, educators from a broader range of subjects participated, including languages, natural sciences, philosophy, geography, and entrepreneurship. These educators were generally in the early stages of integrating green competencies into their teaching. The Bulgarian focus group emphasized the importance of interdisciplinary approaches to sustainability education, but they faced significant challenges related to student motivation and the gap between theoretical knowledge and real-world application. For instance, while students were taught about environmental protection and sustainability in the classroom, they often encountered societal practices that contradicted these lessons—such as seeing improper waste management or pollution in their communities. This disconnect between what students learn and what they see in everyday life contributed to a lack of enthusiasm for sustainability topics.

Both focus groups identified the need for greater institutional support in integrating green competencies. While there was administrative encouragement to pursue sustainability education, educators felt that more concrete support—such as access to professional development, updated teaching materials, and opportunities for interdisciplinary collaboration—was necessary to create meaningful change in the curriculum. The focus-group participants also noted that while there were individual efforts to teach sustainability, these initiatives often lacked cohesion. This pointed to the need for a more unified, school-wide or institution-wide strategy for integrating green competencies across different subjects and programs.

The insights gathered from the educators in Luxembourg and Bulgaria played a crucial role in shaping the development of the Green Horizons Assessment Tool. By highlighting specific needs—such as more resources, professional development opportunities, and strategies to better engage students—the focus groups provided a clear direction for how the tool could support educators in evaluating and improving sustainability practices in their teaching.

3.2 Key Insights on Green Competencies

Both focus groups expressed a strong desire for a **unified strategy** to integrate green competencies across various subjects and disciplines. One of the main insights from these discussions was that sustainability education is most effective when it is embedded across the curriculum rather than treated as a standalone topic. For example, participants in both countries recognized that green competencies should be taught not only in science and geography but also in subjects like literature, entrepreneurship, and the creative arts. This interdisciplinary approach allows students to see the relevance of sustainability in a wide range of contexts, fostering a deeper understanding of its importance in both their personal and professional lives.

Specific examples of how **green competencies** are being integrated into the curriculum varied between the two regions. In **Luxembourg**, educators from the creative industries provided examples of how students are learning about the environmental impact of their design choices. For instance, in graphic design courses, students are encouraged to consider the sustainability of the materials they use and to explore eco-friendly alternatives. This practical approach not only teaches students about sustainability but also helps them develop a mindset that prioritizes environmental responsibility in their future careers. Similarly, in product development courses, students are tasked with designing products that minimize waste and reduce environmental impact throughout their life cycles.

In **Bulgaria**, educators shared examples from a wider range of subjects. For instance, in **language classes**, students are introduced to eco-related vocabulary and engage in reading comprehension exercises that focus on environmental topics. This approach helps students develop language skills while simultaneously raising their awareness of global environmental issues. In **entrepreneurship classes**, there was a specific focus on "Green Entrepreneurship," where students learned about sustainable business models and how to apply eco-friendly practices in business settings. These examples highlight the adaptability of green competencies to different subject areas and show that sustainability can be taught through a variety of lenses.

A key theme that emerged from both focus groups was the importance of **real-world applications** of green competencies. Educators in both regions emphasized that students are more engaged when they can see the tangible impact of their learning. For example, in Luxembourg, students in the creative industries participated in hands-on projects where they designed eco-friendly products or worked with recycled materials. This type of project-based learning allowed students to apply sustainability principles in a practical, meaningful way, which not only enhanced their understanding of the concepts but also increased their motivation to learn.

In **Bulgaria**, similar real-world applications were seen in environmental conservation projects. Students worked on initiatives related to biodiversity protection, waste management, and energy conservation, often partnering with local organizations or community groups. These projects provided students with the opportunity to see the impact of their efforts on their communities, reinforcing the idea that individual actions can contribute to broader environmental goals.

Despite these successes, educators in both Luxembourg and Bulgaria identified several challenges that hinder the effective integration of green competencies. One major challenge was the **lack of cohesive resources** that are specifically tailored to teaching sustainability in different subject areas. While some general materials on sustainability are available, many educators felt that these resources were too broad and did not adequately address the specific needs of their students or the contexts in which they were teaching. For example, creative industry educators in Luxembourg mentioned that traditional design textbooks often fail to cover eco-friendly practices or sustainable production methods, leaving teachers to develop their own materials or modify existing ones.

Another challenge was **student engagement**, particularly in Bulgaria. While students were generally receptive to sustainability topics, many educators noted that students struggled to see the relevance of these issues in their daily lives. This was especially true in urban areas where environmental issues like pollution and waste management were visible but not always addressed in meaningful ways. Educators felt that there needed to be a stronger connection between what students were learning in the classroom and what they were experiencing in their communities. This points to the need for more experiential learning opportunities that take students outside the classroom and into real-world settings where they can observe and engage with sustainability challenges firsthand.

The educators also highlighted the need for more **professional development opportunities** to help them effectively teach green competencies. In both regions, participants expressed a desire for training programs that would equip them with the knowledge and skills needed to integrate sustainability into their teaching. This included not only content-specific training (e.g., learning about new green technologies or sustainable business practices) but also pedagogical training on how to engage students in critical thinking about sustainability and encourage behavior change.

These insights underscore the importance of developing a structured, comprehensive approach to integrating green competencies into education. The educators' feedback helped to shape the design of the Green Horizons Assessment Tool, ensuring that it addresses the specific challenges they face and provides practical support for teaching sustainability. By incorporating real-world applications, interdisciplinary approaches, and professional development, the tool aims to support educators in fostering the next generation of environmentally conscious citizens and professionals.

4. Mapping Findings to GreenComp Competencies

The findings from the focus-group discussions in Luxembourg and Bulgaria were mapped against the **GreenComp - European Sustainability Competence Framework** to assess how educators are currently integrating sustainability competencies into their teaching practices. The GreenComp framework outlines four key areas of competence: **Embodying Sustainability Values, Embracing Complexity in Sustainability, Envisioning Sustainable Futures, and Acting for Sustainability**. Below is an analysis of how these competencies were addressed in the focus groups and how they could be further integrated into the curricula at the **Luxembourg Creative Lab** and the **Private Profiled High School Educational Technologies** through Service-Based Learning (SBL) initiatives.

4.1 Embodying Sustainability Values

GreenComp Competence:

- **Valuing Sustainability:** Recognizing the intrinsic value of the natural environment and promoting sustainability in everyday practices.
- **Supporting Fairness:** Emphasizing the need for equity and social justice in sustainability efforts.
- **Promoting Nature:** Fostering a deeper connection with the natural world and encouraging practices that protect ecosystems and biodiversity.

In both Luxembourg and Bulgaria, educators emphasized the importance of fostering sustainability values in their students. These values were reflected in different ways depending on the educational context. In **Luxembourg Creative Lab (LCL)**, VET programs in the creative industries focused on promoting **Valuing Sustainability** by teaching students to use eco-friendly materials and adopt sustainable production methods. For example, students in graphic design and product development courses were encouraged to select sustainable materials and minimize waste in their projects. This approach helps students internalize the value of sustainability by directly applying it to their work.

In **Private Profiled High School Educational Technologies** in Bulgaria, the integration of sustainability values was more interdisciplinary, with themes of fairness and environmental protection woven into subjects such as languages, science, and entrepreneurship. For instance, in language classes, students explored eco-related vocabulary and engaged in discussions about global environmental issues, promoting a deeper understanding of **Promoting Nature**. In entrepreneurship classes, students learned about **Supporting Fairness** by exploring how sustainable business models can contribute to both environmental and social justice.

Service-Based Learning Integration: Both institutions could enhance the embodiment of sustainability values through **Service-Based Learning (SBL)** initiatives. For example, LCL could implement projects where students work with local businesses to redesign their products or packaging using sustainable materials, thereby reinforcing the principle of **Valuing Sustainability** through real-world applications. At PPHSET, students could collaborate with local environmental organizations to create awareness campaigns on biodiversity conservation, thus promoting **Supporting Fairness** and **Promoting Nature** by addressing both environmental and social issues.

4.2 Embracing Complexity in Sustainability

GreenComp Competence:

- **Systems Thinking:** Understanding the interconnectedness of environmental, social, and economic systems.
- **Critical Thinking:** The ability to question assumptions, analyze information, and solve complex sustainability issues.
- **Problem Framing:** Identifying and framing sustainability challenges in a way that allows for effective solutions.

Educators in both regions acknowledged the need to improve how they teach systems thinking and critical analysis of sustainability issues. In **Luxembourg**, educators from the creative industries expressed a desire for more support and resources to help students understand the environmental impact of the entire product life cycle. This aligns with the **Systems Thinking** competence, which requires students to grasp the complexity of sustainability by recognizing how different stages of production—such as material sourcing, manufacturing, and disposal—are interconnected.

In **Bulgaria**, teachers from subjects like natural sciences and geography emphasized the importance of helping students develop **Critical Thinking** skills when addressing environmental challenges. They noted that while students were taught about environmental issues like pollution and climate change, they often struggled to analyze the underlying causes and propose viable solutions. This points to the need for more targeted strategies for teaching **Problem Framing**, where students learn to define sustainability challenges in a way that leads to actionable responses.

Service-Based Learning Integration: To strengthen the competence of **Embracing Complexity**, both LCL and PPHSET could implement SBL projects that require students to analyze complex environmental systems and propose solutions. At LCL, students could engage in a project to redesign an entire product lifecycle, from sourcing raw materials to end-of-life disposal, integrating **Systems Thinking** into every stage of the process. In Bulgaria, students could work on community-based environmental projects, such as urban gardening or waste management initiatives, which would allow them to practice **Problem Framing** by identifying local environmental challenges and developing strategies to address them.

4.3 Envisioning Sustainable Futures

GreenComp Competence:

- **Futures Literacy:** The ability to anticipate future sustainability challenges and opportunities.
- **Adaptability:** The capacity to adjust and evolve in response to emerging sustainability issues.
- **Exploratory Thinking:** Encouraging innovation and creative solutions for sustainability.

In both regions, educators highlighted the need for more resources and training to help students envision sustainable futures. In **Bulgaria**, students responded positively to activities that introduced innovative green technologies, such as renewable energy sources and eco-friendly building materials. This aligns with the **Futures Literacy** competence, which encourages students to think ahead and consider how technological advancements can contribute to a more sustainable world.

In **Luxembourg**, creative VET programs encouraged students to explore sustainability through **Exploratory Thinking**. For instance, students in product design courses were tasked with developing eco-friendly products, pushing them to think creatively about how to reduce environmental impact. This approach not only fosters innovation but also helps students develop the **Adaptability** competence by learning to adjust their designs in response to changing environmental constraints and market demands.

Service-Based Learning Integration: To further enhance **Envisioning Sustainable Futures**, LCL could implement SBL projects that focus on developing innovative, sustainable solutions for real-world problems. For example, students could work with local startups to create prototypes for sustainable products, allowing them to apply **Futures Literacy** and **Exploratory Thinking** in a practical context. At Private Profiled High School Educational Technologies, students could participate in projects that explore the use of green technologies in their local community, such as installing solar panels or building energy-efficient structures, thereby promoting **Adaptability** as they learn to navigate the technical and social challenges associated with implementing new technologies.

4.4 Acting for Sustainability

GreenComp Competence:

- **Political Agency:** Empowering individuals to influence policies and advocate for sustainability at the local and global levels.
- **Collective Action:** Encouraging collaboration and teamwork in addressing sustainability challenges.
- **Individual Initiative:** Fostering personal responsibility and proactive behavior in promoting sustainability.

Participants in both countries emphasized the importance of empowering students to take action on sustainability issues. In **Luxembourg**, hands-on projects such as eco-friendly product design and entrepreneurship initiatives were identified as effective methods for engaging students in **Individual Initiative**. These projects allowed students to take ownership of their learning by creating tangible solutions to sustainability problems. However, educators also noted the need for a more structured assessment tool to evaluate the long-term impact of these initiatives on student behavior and community outcomes.

In **Bulgaria**, the emphasis was placed on **Collective Action**, with students participating in group projects that focused on environmental conservation and community engagement. For example, students organized local campaigns to promote recycling and waste reduction, which required them to collaborate with their peers, local businesses, and government agencies. These initiatives fostered a sense of collective responsibility and demonstrated the power of teamwork in addressing sustainability challenges.

Service-Based Learning Integration: To further develop the competence of **Acting for Sustainability**, both LCL and Private Profiled High School Educational Technologies could implement SBL initiatives that focus on empowering students to take political and social action. At LCL, students could collaborate with local policymakers to develop sustainability guidelines for the creative industries, thereby exercising the **Political Agency**. In Bulgaria, Private Profiled High School Educational Technologies students could partner with environmental NGOs to launch community-based sustainability projects, such as organizing tree-planting events or advocating for stricter environmental regulations, thereby promoting **Collective Action**. Both institutions could also encourage **Individual Initiative** by allowing students to lead their own sustainability projects, giving them the freedom to identify and address specific environmental challenges in their communities.

5. Conclusions and Recommendations

5.1 Summary of Key Gaps and Strengths

The findings from the focus-group interviews in Luxembourg and Bulgaria highlighted both strengths and gaps in the current efforts to integrate green competencies into vocational and general education. While there has been notable progress, particularly in the use of hands-on projects and interdisciplinary approaches, significant challenges remain in terms of resource availability, institutional support, and the lack of robust assessment tools, especially within the **Cultural and Creative Sector (CCS)**.

Key Strengths Identified:

- **Hands-on, Project-Based Learning:** One of the most significant strengths identified was the use of hands-on projects, particularly in the creative industries in Luxembourg and Bulgaria. These projects have proven effective in engaging students and allowing them to apply sustainability principles in real-world contexts. For example, in Luxembourg, students in product design courses were tasked with developing eco-friendly products, while in Bulgaria, students worked on community-based environmental projects.
- **Interdisciplinary Approaches:** Another strength was the emphasis on interdisciplinary teaching. Educators from various subjects—ranging from science and entrepreneurship to literature and design—integrated sustainability into their curricula, helping students see how sustainability relates to different fields of study. This holistic approach fosters a broader understanding of sustainability's role in addressing complex environmental challenges.

Key Gaps Identified:

- **Lack of Industry-Specific Resources:** One of the most frequently mentioned gaps was the lack of industry-specific teaching materials that address sustainability within the Cultural and Creative Sector (CCS). While some general resources on sustainability are available, they often do not address the unique needs of creative fields such as graphic design, fashion, and media production. This lack of tailored resources hinders educators' ability to provide relevant, meaningful instruction on sustainability in these industries.
- **Insufficient Assessment Tools:** Both focus groups emphasized the absence of a structured, standardized tool for evaluating the integration and effectiveness of sustainability initiatives. Educators often relied on informal or subjective methods to assess students' understanding of sustainability, making it difficult to gauge the long-term impact of these lessons on student behavior and the broader community.
- **Institutional Support:** While educators expressed enthusiasm for integrating green competencies, they felt that more support was needed from their institutions. This includes access to professional development opportunities, updated teaching materials, and the establishment of school-wide or institutional sustainability goals to ensure cohesion across different departments and disciplines.

5.2 Strategic Recommendations for Educators

To address the gaps identified in the focus groups and build on the strengths, several strategic recommendations emerged. These recommendations are designed to help educators in the **Cultural and Creative Sector (CCS)** and other disciplines effectively teach sustainability and integrate green competencies into their curricula.

1. **Develop Collaborative, Interdisciplinary Strategies:** Educators should focus on creating collaborative strategies that bring together different disciplines to teach sustainability in a more cohesive manner. For example, design and entrepreneurship courses could collaborate on projects that promote sustainable business models and eco-friendly product design. These interdisciplinary approaches will help students see how sustainability affects various aspects of the economy, society, and the environment.

2. **Create Industry-Specific Resources for the CCS:** To address the lack of tailored resources, it is essential to develop teaching materials that are specific to the **Cultural and Creative Sector (CCS)**. These resources should include case studies, best practices, and examples of how sustainability can be integrated into creative industries like graphic design, fashion, and media production. Educators should collaborate with industry experts to ensure that these resources are practical, relevant, and aligned with current industry standards.
3. **Enhance Professional Development Opportunities:** Institutions should invest in professional development programs that equip educators with the knowledge and skills needed to teach sustainability effectively. These programs could focus on industry-specific sustainability practices, interdisciplinary collaboration, and innovative teaching strategies that foster critical thinking and problem-solving in students.
4. **Institutionalize Sustainability Goals:** Schools and vocational institutions should establish formal sustainability goals that guide curriculum development and teaching practices. By setting institution-wide sustainability objectives, educators will have a clearer framework for integrating green competencies into their lessons, and students will benefit from a more consistent approach to sustainability education.
5. **Develop a Robust Assessment Tool:** A core recommendation is the development of a comprehensive **Assessment Tool** that evaluates the effectiveness of sustainability initiatives, particularly within the **Cultural and Creative Sector (CCS)**. This tool should be based on specific criteria that reflect both the practical and theoretical aspects of sustainability education. Below are five specific criteria, based on focus group findings, that should form the foundation of this tool.

Five Specific Criteria for Evaluating Sustainability Initiatives within the Cultural and Creative Sector (CCS)

Based on the findings from the focus-group interviews, five key criteria emerged as essential for evaluating the success and effectiveness of sustainability initiatives within the **Cultural and Creative Sector (CCS)**. These criteria will serve as the core of the Green Horizons **Assessment Tool**, ensuring alignment with the **GreenComp competencies** and providing educators with a structured approach to evaluating teaching strategies, student outcomes, and the overall impact of their initiatives.

1. Relevance to Industry Practices (GreenComp: Valuing Sustainability, Systems Thinking)

This criterion evaluates how well the sustainability initiative aligns with current practices and trends within the **Cultural and Creative Sector**. It assesses whether the project or lesson is directly applicable to the industry and whether it encourages students to consider sustainability within the specific context of their future careers. For example, a project in a graphic design course might focus on reducing waste through innovative packaging design, or a fashion design course could emphasize the use of recycled materials.

Key Questions:

- **How much do you think the project helps you understand real-world sustainability challenges in the Cultural and Creative Sector?**
(1 - Poor, 5 - Excellent)
- **How well do you think the project's activities and materials will help you use sustainability concepts in your future career?**
(1 - Poor, 5 - Excellent)

2. Feasibility and Practical Application (GreenComp: Problem Framing, Exploratory Thinking)

This criterion evaluates the practicality of implementing the sustainability initiative. It considers whether the initiative is feasible within the constraints of the classroom or educational environment and whether it equips students with practical skills they can apply in real-world situations. For example, a feasible initiative might involve students working with local businesses to redesign products or services to be more sustainable, ensuring that the skills they develop are transferable to the workplace.

Key Questions:

- **How practical do you think the project is to implement within your classroom or learning environment, considering resources and time?**
(1 - Poor, 5 - Excellent)
- **To what extent does the project provide you with hands-on skills and experiences that you can use in real-world situations or future workplaces?**
(1 - Poor, 5 - Excellent)

3. Community and Environmental Impact (GreenComp: Political Agency, Collective Action)

This criterion assesses the broader impact of the sustainability initiative on both the local community and the environment. It evaluates whether the project fosters collective action, promotes social responsibility, and leads to tangible benefits for the environment or the community. For example, a project that involves creating a public awareness campaign on recycling or reducing plastic use in the community would score highly on this criterion.

Key Questions:

- **To what extent does the project inspire you to take collective action and contribute to positive change in your community or the environment?**
(1 - Poor, 5 - Excellent)
- **How well does the project encourage collaboration with external groups, such as local businesses or community organizations, to promote social and environmental responsibility?**
(1 - Poor, 5 - Excellent)

4. Creativity and Innovation (GreenComp: Exploratory Thinking, Futures Literacy)

This criterion evaluates the extent to which the sustainability initiative fosters creativity and encourages students to think innovatively about sustainability solutions. In the **Cultural and Creative Sector**, this is particularly important, as students are often tasked with designing new products or services that push the boundaries of traditional practices. Projects that encourage students to experiment with new materials, technologies, or business models to reduce environmental impact will be assessed based on how effectively they stimulate innovation.

Key Questions:

- **How much does the project encourage you to think creatively and come up with new ideas for sustainability solutions?**
(1 - Poor, 5 - Excellent)
- **To what extent does the project motivate you to explore and experiment with new materials, technologies, or approaches to create more sustainable outcomes?**
(1 - Poor, 5 - Excellent)

5. Behavior Change and Long-Term Impact (GreenComp: Individual Initiative, Critical Thinking)

This criterion assesses whether the sustainability initiative leads to long-term behavior change among students. It evaluates how well the initiative fosters a deep understanding of sustainability issues and whether students are likely to continue applying these principles in their future careers and personal lives. This could include measuring shifts in students' attitudes toward sustainability or tracking their participation in future sustainability-related projects.

Key Questions:

- **To what extent has the project influenced your attitudes and mindset toward sustainability and your willingness to integrate sustainable practices into your future career or personal life?**
(1 - Poor, 5 - Excellent)

- **How well does the project help you develop critical thinking skills that support long-term behavior change and a deeper understanding of sustainability issues?**
(1 - Poor, 5 - Excellent)

Concluding Remarks

The **Assessment Tool** based on these five criteria will provide educators with a structured, comprehensive way to evaluate the effectiveness of sustainability initiatives, particularly within the **Cultural and Creative Sector (CCS)**. By focusing on relevance, feasibility, community impact, creativity, and long-term behavior change, the tool will help ensure that students not only learn about sustainability but also develop the skills, values, and attitudes necessary to apply these principles throughout their lives and careers. This tool will be instrumental in bridging the gaps identified during the focus groups and supporting educators as they work to integrate green competencies into their teaching.



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Anefore asbl. Neither the European Union nor the granting authority can be held responsible for them.

Project Number: 2024-1-LU01-KA210-VET-000243985

Image: Infographic which illustrates the five categories

Credit: Green Horizons consortium

References

European Commission. (2022). *GreenComp: The European sustainability competence framework*. Publications Office of the European Union. <https://doi.org/10.2766/13291>