



# Educational VET Handbook

**"Towards a sustainable education in the VET system"**

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### **Educational VET Handbook**

*“Education is the main priority for UNESCO because it is an essential human right and it is the basis for building peace and promoting sustainable development”*

This handbook provides VET teachers with guidelines on how to integrate sustainable development in the classroom and their daily lives by giving priority to the knowledge of the 17 Sustainable Development Goals and the commitment that each person can and should have in their environment to provide effective solutions from their perspective. It is a tool to use for VET teachers who want to make their students aware of the SDGs and emphasize issues related to citizenship such as gender equality, education, the reduction of inequalities, climate change, and in general, the contributions that we can make individually to sustainability. This handbook will serve as a tool to support VET teachers in designing innovative educational activities and experimenting with them with the idea of engaging their students on the path to sustainability.

The handbook will be divided into different sections:

- 1) Introduction: Context
- 2) What is Sustainable Development and how is related to education?
- 3) How to address sustainability in VET
- 4) Pedagogical resources on environmental issues.
- 5) Conclusions and further recommendations.

## 1. Introduction: Context

In today's world, we face an array of pressing global environmental concerns that demand our immediate attention and action. These challenges span from the alarming depletion of natural resources to the devastating consequences of deforestation, the relentless march of climate change, and the looming threat of species extinction. The scale and scope of these issues are not just cause for concern; they are a clarion call for concerted efforts to safeguard our planet.

For the past few decades, there has been a growing concern both at the global level as well as at the national level at achieving sustainable development and dealing with everyday environmental problems. Today, we find a continuous depletion of natural resources, deforestation, extinction of many plant and animal species, rise in global temperature, environmental pollution, a shrinking of life-saving ozone layer, etc. In addition, the situation has become quite grave with the COVID-19 pandemic. Sustainable development cannot be achieved solely through technology, political regulation, or financial mechanisms. Humanity needs to change its way of thinking and behaviour. This, in turn, requires the provision of quality education and training for sustainable development at all levels and regardless of social conditions.

It is in this challenging and transformative context that education emerges as a beacon of hope and a catalyst for change. Education, particularly in the capable hands of dedicated teachers, plays a pivotal role in fostering sustainable development and addressing these pressing environmental challenges. Teachers, as key change agents, have the power to shape the future by imparting knowledge, values, and skills to the next generation of citizens who will inherit the Earth.

The numbers speak volumes. According to recent statistics, global temperatures continue to rise at an alarming rate, with dire consequences for ecosystems and human communities. Biodiversity loss is accelerating, and species are disappearing at an unprecedented rate. Deforestation, driven by unsustainable practices, threatens vital ecosystems. The depletion of finite natural resources places added strain on our planet's capacity to support human life.

In this educational context, these statistics take on a different significance. They underscore the urgency of addressing sustainability issues within our educational institutions.



The time for action is now, and education is the linchpin upon which sustainable development hinges.

Education in general and teacher education, in particular, have a special role to play in sustainable development. Teachers' knowledge and understanding of the environment and developmental issues and their level of commitment, attitude and devotion would determine the future of society and its development. Therefore, to achieve an acceptable level of global environmental sustainability, teachers must be empowered with essential knowledge and information.

This handbook aims to equip Vocational Education and Training (VET) teachers with the tools, knowledge, and strategies they need to lead the charge in integrating sustainable development into their classrooms. It is not just a guide but a call to action. Through these pages, we explore the profound connections between education and sustainable development and provide practical insights to help educators navigate these critical issues. Together, we embark on a journey toward a more sustainable future, one lesson at a time.

## 2. What is Sustainable Development and how is related to education

Sustainable Development is an encompassing concept that goes far beyond the traditional view of environmental conservation. It represents a holistic approach to addressing the interconnected challenges facing our world today. Sustainable Development recognizes that our well-being is not solely dependent on preserving our natural environment but also on ensuring social equity and economic prosperity for all.

At its core, Sustainable Development acknowledges that we must strike a balance between meeting the needs of the present without compromising the ability of future generations to meet their own needs. It harmonizes three fundamental dimensions: environmental, social, and economic.

**Environmental Dimension:** This dimension focuses on safeguarding the health of our planet by addressing issues like climate change, resource conservation, biodiversity, and pollution control. It underscores the importance of living within the ecological limits of our planet. In Arcos de Valdevez, this responsibility is compounded by the municipality's environmental certifications (PNPG, Rede Natura 2000 and Biosfera): strategic infrastructures have been built (open-air museum and "ecovia") that have gained great economic importance through nature tourism (Soajo and Sistelo, for example).

**Social Dimension:** Sustainable Development is equally concerned with social justice and inclusivity. It calls for an equitable distribution of resources, ensuring that no one is left behind. It seeks to eradicate poverty, reduce inequalities, and promote access to education, healthcare, and decent work for all. In the case of Arcos de Valdevez, the problem lies at three levels: the first is the lack of income and the parents' low level of education, which tends to trap students in a socio-economically disadvantaged and geographically isolated environment in rural and mountainous areas. The second, sometimes directly related to the previous one, has to do with the number of students with learning support and inclusion measures, not only because of cognitive difficulties but also because of a distancing and alienation from school culture. Finally, the third relates to the recent migratory reality in the municipality. With an increasing number of pupils coming from other countries/continents,

with cultural backgrounds that are essentially different from Portugal's, and who tend to ghettoise themselves, it's urgent to take measures to minimise the impact of this.

**Economic Dimension:** Economic sustainability involves responsible resource management, sustainable production and consumption patterns, and fostering economic growth that benefits society as a whole, rather than a privileged few.

Education for Sustainable Development (ESD) is an educational approach that equips individuals of various age groups with the necessary knowledge, abilities, values, and empowerment to tackle interconnected global issues such as climate change, biodiversity loss, unsustainable resource utilization, and inequality. It enables learners to make informed choices and take both personal and collective action to transform society and promote environmental stewardship. ESD is a continuous learning process that spans a lifetime and is deeply embedded within high-quality education. It enhances cognitive, socio-emotional, and behavioural aspects of learning, encompassing not only the content and outcomes of education but also the pedagogical approaches and the learning environment itself.

The objectives of ESD are multifaceted. It aims to empower learners to make informed choices and to take both personal and collective actions that contribute to transforming society and promoting environmental stewardship. ESD is a lifelong learning process deeply embedded within high-quality education. It enhances cognitive, socio-emotional, and behavioural aspects of learning, encompassing not only the content and outcomes of education but also the pedagogical approaches and the learning environment itself.

UNESCO, the Council of the European Union, and other international bodies have provided insightful definitions of ESD:

- UNESCO (2014): "Education for Sustainable Development allows every human being to acquire the knowledge, skills, attitudes, and values necessary to shape a sustainable future. It means including key sustainable development issues in teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and

learning methods that motivate and empower learners to change their behaviour and take action for sustainable development."

- Council of the European Union (2010): "ESD is essential for the achievement of a sustainable society and is therefore desirable at all levels of formal education and training, as well as in non-formal and informal learning."

These definitions underscore the multifaceted nature of ESD and its relevance across various educational contexts. In essence, ESD equips individuals with the knowledge, skills, attitudes, and values necessary to shape a sustainable future. It emphasizes active, participatory learning and encourages learners to become critical thinkers, capable of making informed decisions and taking meaningful action for a sustainable world. By fostering these competencies, ESD plays a vital role in developing informed and committed citizens who are actively engaged in sustainability efforts. Through education, we empower individuals to be the change-makers of a more sustainable and equitable world.

### 3. How to address sustainability in VET

Vocational Education and Training (VET) educators hold a unique position to instill sustainability principles in the next generation of professionals across various fields. Effectively integrating sustainability into VET requires a multi-faceted approach that adapts to diverse learners and industries. Here, we explore various strategies and pedagogical elements to empower VET educators in this important endeavour.

- **Diverse Approaches for Integration:** Sustainability can be infused into VET education in numerous ways, depending on the industry and learning context. VET educators can draw from a spectrum of approaches, such as embedding sustainability principles into existing curriculum, developing dedicated sustainability courses, or fostering sustainability as a cross-cutting theme.
- **Embrace Creativity and Adaptability:** It's crucial to understand that there's no one-size-fits-all approach to sustainability integration in VET. Creativity and adaptability are your greatest allies. Assess the unique needs and goals of your students and industry partners, and tailor your approach accordingly.
- **Pedagogical Elements for Sustainability Integration:**
  - **Critical Reflection:** Encourage students to critically examine real-world issues related to sustainability within their chosen fields. Traditional lectures, as well as newer methods like reflective accounts, learning journals, and discussion groups, can facilitate critical reflection.
  - **Systemic Thinking and Analysis:** Challenge students to understand complex sustainability issues by utilizing real-world case studies, critical incidents, and project-based learning. Engage students in exploring how their industry impacts and is impacted by environmental and social factors.
  - **Participatory Learning:** Foster a sense of ownership and engagement by emphasizing group or peer learning. Encourage dialogue, experiential learning, and action research. Collaborate with local community groups and businesses to develop case studies relevant to your VET program.
  - **Thinking Creatively for Future Scenarios:** Cultivate creative thinking by incorporating role-playing exercises, real-world inquiry, and envisioning



future possibilities. Use problem-based learning to challenge students to devise innovative solutions to sustainability challenges within their industries.

- **Collaborative Learning:** Emphasize collaboration among students and with external stakeholders. Invite guest speakers from industry, facilitate work-based learning experiences, and promote interdisciplinary collaboration. Encourage collaborative learning and co-inquiry among students.
- **Concrete Examples of Application:**
  - **Case Studies:** VET educators can integrate sustainability by analyzing real-world case studies relevant to their industry. For instance, in automotive mechanics, explore sustainable practices in vehicle design and maintenance.
  - **Project-Based Learning:** Implement projects that require students to address sustainability challenges. In culinary arts, students could design menus that prioritize locally sourced, sustainable ingredients.
  - **Community Engagement:** Collaborate with local environmental organizations or businesses to provide students with hands-on experiences. In construction trades, students can work on sustainable building projects.

By employing these diverse approaches and pedagogical elements, VET educators can effectively integrate sustainability principles into their teaching. This not only equips students with valuable skills and knowledge but also ensures they are well-prepared to contribute to a more sustainable and responsible workforce in their respective industries.

### 3.1. Application of the SDGs in AEV

A school geared towards vocational education must obviously have its practice geared towards ESD, particularly in terms of building active citizens who are prepared for a fairer society and capable of facing the challenges of the 21st century. In this sense, the structuring documents, namely the Educational Project, EQAVET, the Strategic Plan for International Development, the Action Plan for the Digital Development of the School, and the annual activity plans seek to meet a sustainable development logic, in the shadow of the SDGs. However, these documents will not be scrutinised here, as they are designed for all levels and types of education and not for VET in particular. As far as VET is concerned, the following table shows the lines of action that meet the SDGs.

Strands	Scope	Knowledge/skills and attitudes
Curricular	<ul style="list-style-type: none"> <li>- Integration area subject;</li> <li>- Others (general and technical training).</li> </ul>	<ul style="list-style-type: none"> <li>- Active citizenship;</li> <li>- Rights and Duties;</li> <li>- Democratic participation;</li> <li>- Respect for Diversity;</li> <li>- Justice and Equality;</li> <li>- Environmental responsibility;</li> <li>- Solidarity and Empathy;</li> <li>- Digital literacy;</li> <li>- Information, communication and technology skills;</li> <li>- Conservation knowledge and skills about natural resources;</li> <li>- Business management skills;</li> <li>- Ownership and entitlements;</li> <li>- Quality consciousness and appreciation of quality;</li> <li>- Honesty and integrity;</li> <li>- Economic awareness.</li> </ul>
Transversal curricular	Citizenship and Development DAC (curricular autonomy projects)	
Projects	See attachments	
Partners	<ul style="list-style-type: none"> <li>- University of Minho;</li> <li>- Instituto Politécnico de Viana do Castelo</li> <li>- Instituto Politécnico do Cávado e Ave</li> <li>- Instituto Politécnico de Bragança</li> <li>- Politécnico do Porto</li> <li>- Centro de Engenharia Biológico da Universidade do Minho</li> <li>- Junior Achievement Portugal</li> <li>- Cruz Vermelha de Arcos de Valdevez</li> <li>- Centro de Saúde de Arcos de Valdevez</li> <li>- Escola Segura – Guarda Nacional Republicana</li> <li>- CENFIPE (Centro de Formação e Inovação dos Profissionais de Educação</li> <li>- Santa Casa da Misericórdia de Arcos de Valdevez</li> <li>- Conservatório de Música e de Dança de Arcos de Valdevez</li> <li>- Câmara Municipal de Arcos de Valdevez;</li> <li>- Local business and industries.</li> </ul>	

#### 4. Pedagogical resources on environmental issues.

To effectively teach environmental topics in the Vocational Education and Training (VET) setting, it's crucial for educators to have access to a rich array of resources that can engage and enlighten their students. Here, we provide a comprehensive list of resources, including books, websites, videos, and educational tools, to empower VET educators in their mission to instil environmental awareness and sustainability principles.

- **Books:**

- Greening Technical and Vocational Education and Training. A practical guide for institutions <https://unevoc.unesco.org/up/gtg.pdf>
- Green skills and lifestyle guidebook <http://unesdoc.unesco.org/images/0024/002456/245646e.pdf>
- "The Ecology of Commerce" by Paul Hawken: This book offers a business perspective on sustainability, making it relevant for VET programs focused on entrepreneurship or business studies.
- "Cradle to Cradle: Remaking the Way We Make Things" by William McDonough and Michael Braungart: A groundbreaking work that reimagines the design and manufacturing processes in a sustainable way.
- "Sustainability in Engineering Design and Construction" by J. K. Yates and Daniel Castro-Lacouture: Ideal for VET programs related to construction and engineering, this book explores sustainable practices in the industry.

- **Websites and Online Platforms:**

- UN Sustainable Development Goals (SDGs) Website: Access resources related to the 17 SDGs, providing a framework for discussions on sustainability in various contexts.
- The Environmental Protection Agency (EPA) Website: Offers a wealth of information on environmental issues, regulations, and resources for educators.
- The World Wildlife Fund (WWF) Education Website: Provides a range of lesson plans, activities, and educational resources on biodiversity and conservation.

- Green Education Foundation: <https://www.greeneducationfoundation.org/>) - Offers a variety of sustainability-focused resources, lesson plans, and tools for educators, including those in VET.
- Sustainable Schools Alliance: <https://www.sustainableschoolsalliance.org/> - Offers resources and tools for schools to promote sustainability in education.
- Global Environmental Education Partnership (GEEP): <https://naaee.org/> While not VET-specific, GEEP provides resources and a network for educators interested in environmental education, which can be adapted for vocational contexts.
- Global Learning for Sustainable Development (Global Learning): <https://www.globaleducation.edu.au/> - An Australian-based platform offering resources and tools for embedding sustainability into education.
- UNESCO Education for Sustainable Development: <https://en.unesco.org/themes/education-sustainable-development> - UNESCO provides resources and information on education for sustainable development.
- **Videos and Documentaries:**
  - "An Inconvenient Truth" (2006): Former Vice President Al Gore's documentary on climate change is a thought-provoking resource for discussions on environmental issues.
  - "Before the Flood" (2016): Narrated by Leonardo DiCaprio, this documentary explores the impacts of climate change worldwide.
  - TED Talks: The TED platform hosts numerous talks by experts on various environmental topics. Consider incorporating relevant TED Talks into your lessons.
  - "A Life on Planet" (2020): narrated by David Attenborough. This documentary is a witness statement through which David Attenborough shares his concern for the current state of the planet due to humanity's impact on nature and his hopes for the future.
  - "Home" (2009): a documentary film by Yann Arthus-Bertrand. It shows the diversity of life on Earth and how humanity is threatening the ecological balance of the planet.

- **Educational Tools:**

- **Sustainability Assessment Tools:** Tools like the "Sustainability Compass" can help students and professionals assess the environmental and social impacts of decisions in various fields.
- **Online Simulations:** Platforms like "Fishbanks" provide interactive simulations to teach concepts related to resource management and sustainability.
- **Online Environmental Footprint Calculators:** Tools like the "Ecological Footprint Calculator" allow students to estimate their personal ecological impact.
- **En-ROADS Climate Interactive:** A simulation tool that helps users understand the impact of different climate policies and actions on global temperature.
- **Fate of the World:** A simulation game that challenges players to address global sustainability issues, such as climate change, overpopulation, and resource depletion.
- **Cool Choices:** An interactive online platform that engages employees or students in sustainability challenges and encourages sustainable behaviours.
- **i-Tree:** A suite of tools that allows communities to assess and manage their urban forests, promoting sustainable urban planning.
- **Citizen Science Projects:** Platforms like Zooniverse allow students and citizens to participate in real scientific research projects related to sustainability.
- **Incorporating Resources into Lessons and Activities:**
  - **Book-Based Assignments:** Assign relevant readings from the suggested books and follow up with group discussions or essay assignments.
  - **Website Exploration:** Encourage students to explore the recommended websites and present findings on specific environmental topics.
  - **Video Analysis:** Use documentaries or TED Talks as the basis for critical discussions and analysis in the classroom.

- **Hands-On Activities:** For educational tools and simulations, incorporate hands-on activities that allow students to interact with the concepts being taught.
- **Staying Up-to-Date:**
  - Emphasize the importance of staying current with environmental issues and educational resources. Encourage educators to regularly visit trusted websites, attend environmental workshops, and subscribe to relevant newsletters or journals.

By leveraging these diverse resources and integrating them creatively into your VET lessons and activities, you can enrich the educational experience, foster environmental consciousness, and empower students to be proactive in addressing sustainability challenges within their respective fields. Remember, the world of sustainability is ever-evolving, and staying informed is a key step in preparing the next generation of responsible professionals.

## 5. Conclusions and further recommendations.

As we reach the conclusion of this handbook, it's essential to revisit the core messages and takeaways that underscore the profound connection between education and sustainability. We've explored how VET educators can play a pivotal role in shaping a more sustainable future through their classrooms and actions. Let's recap the key points and offer actionable recommendations for VET educators to continue their journey towards sustainability.

- Key Takeaways:
  - Education is the catalyst for change: We've reaffirmed that education is not merely a means to impart knowledge but a transformative force that empowers individuals to become informed and committed agents of sustainable change.
  - Sustainability is holistic: Sustainability encompasses environmental, social, and economic dimensions, and addressing these aspects in VET education prepares students to navigate complex global challenges.
  - There's no one-size-fits-all approach: The integration of sustainability into VET programs requires creativity and adaptability. Educators should tailor their methods to suit their students, industry contexts, and local needs.
  - Pedagogical elements matter: Critical reflection, systemic thinking, participatory learning, creative thinking for future scenarios, and collaborative learning are the key pedagogical elements that can effectively infuse sustainability into VET education.
  - Resources abound: A wealth of books, websites, videos, and educational tools is available to assist VET educators in teaching environmental topics effectively. These resources offer valuable insights and diverse approaches to sustainability education.
- Further Recommendations:
  - Continual Professional Development: Stay committed to your professional growth in the realm of sustainability education. Consider attending training courses, workshops, and conferences focused on sustainability in education. These opportunities can expand your knowledge and pedagogical skills.
  - Collaboration is Key: Collaboration with colleagues is a powerful means of enhancing your teaching practices. Create networks or working groups with

fellow VET educators to share ideas, experiences, and best practices. Collaborative projects can enrich your approach to sustainability education.

- **Stay Informed:** Given the dynamic nature of sustainability, it's vital to stay informed about the latest developments in environmental issues and educational resources. Continuously update your knowledge and adapt your teaching materials accordingly.
- **Practical Engagement:**
  - Throughout this handbook, we've encouraged practical engagement. Consider incorporating exercises and assignments within each section to actively engage course participants. These activities might involve crafting sustainability-focused lesson plans, engaging in group discussions on real-world sustainability challenges, or analyzing case studies relevant to VET scenarios.
- **Bibliography or Reference List:**
  - To further guide educators in their research and reading, a bibliography or reference list has been included at the end of this handbook. Use it as a roadmap for exploring deeper into specific topics related to sustainability in VET education.

In closing, remember that the journey towards sustainability in education is ongoing. The impact you have as a VET educator extends far beyond the classroom. By embracing sustainability principles and nurturing future professionals who are both knowledgeable and committed to sustainability, you contribute to a brighter and more sustainable future for us all. Your dedication and passion are the driving forces behind this transformative endeavour. Together, we embark on a path of continuous learning and progress, guided by the shared vision of a sustainable world.



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