DISC WP2:

Collection of Innovative learning formats and Open Educational Resources for Sustainability
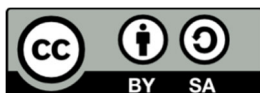
Table of Content

1   Foreword and Introduction

Higher education institutions across Europe are increasingly called upon to play a central role in addressing today's complex sustainability challenges. Within this context, Education for Sustainable Development (ESD) has emerged not only as a cross-cutting theme, but as a transformative educational approach. ESD empowers learners to acquire the knowledge, skills, values, and attitudes needed to shape a more sustainable future through innovation, critical thinking, and responsible action.

This report presents a structured collection of innovative learning formats that support the integration of ESD into higher education. Developed within the framework of the Erasmus+ DISC project (Developing Innopreneurship, Sustainability and Culture), it aims to inform and inspire academic staff, curriculum developers, institutional leaders, and educational stakeholders seeking to expand or enhance their sustainability-related teaching practices.
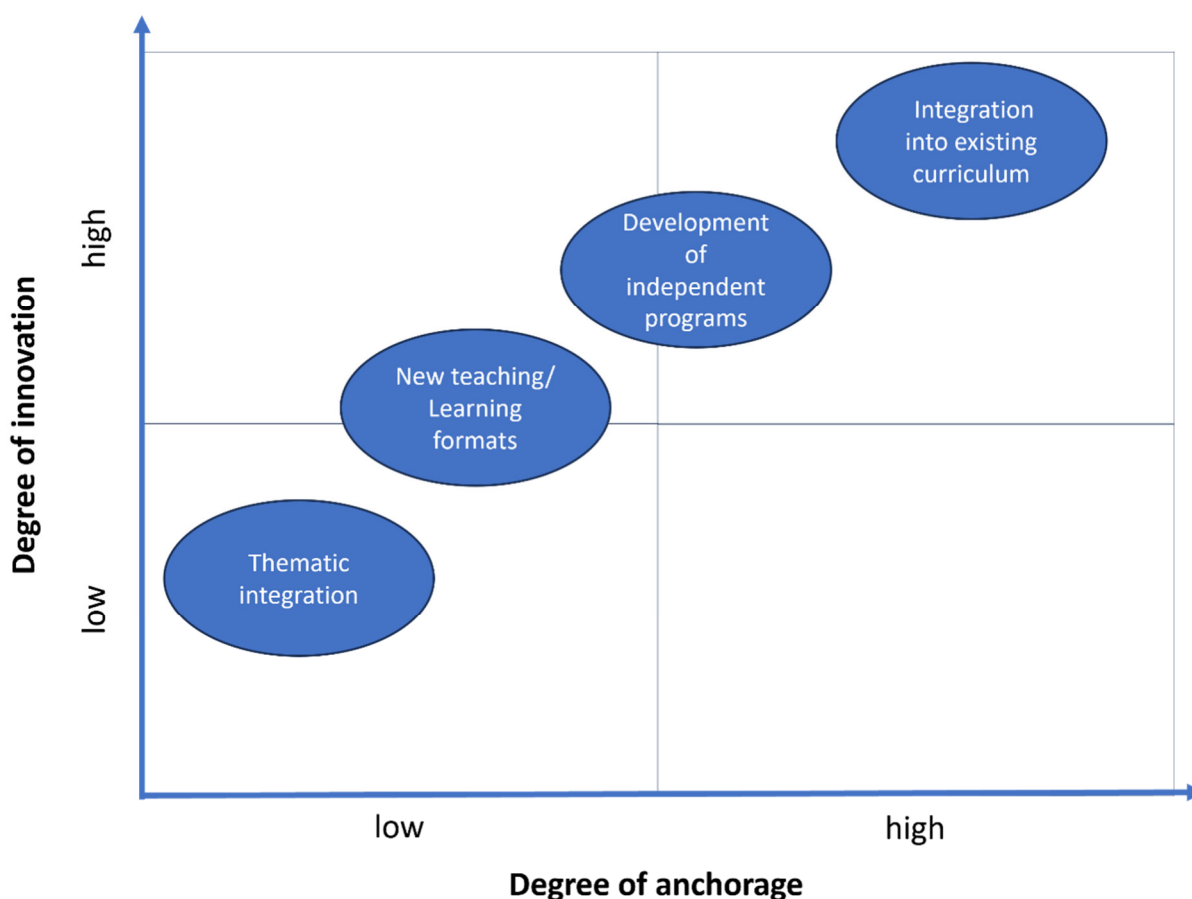
Figure 1: Implementation approaches for ESD in higher education

Figure 1 provides a conceptual map of the various implementation approaches for ESD in higher education. These are positioned along two key dimensions: the degree of curricular integration and the level of innovation. This framework illustrates the diversity of institutional strategies and can help guide the development or refinement of sustainability-oriented teaching initiatives.

The report is organised into five main sections. It starts with formats that show how sustainability is integrated into university teaching—such as lecture series, certificate programmes, and sustainability-themed events. This is followed by a range of teaching methods, including both face-to-face and digital approaches like project-based learning, scenario analysis, design thinking, and simulation games.

Next, the report looks at independent and cross-disciplinary models, such as sustainability semesters and special study programmes. It then presents platforms, toolkits, and networks that support educators in developing and sharing ESD practices.

The final section provides national examples of open educational resources (OER) from Germany, Greece, Italy, Portugal, and Serbia—offering practical tools that can be used or adapted by higher education institutions across Europe.

Rather than presenting an exhaustive catalogue, this collection offers a broad, practice-oriented overview of existing approaches and resources. It aims to foster mutual learning, promote adaptation, and support innovation in teaching and learning for sustainable development across Europe and beyond.

2   Thematic Integration

2.1   Lecture series

In most universities, ring lectures on sustainability have long been common practice.

Example of good practice: Lecture series on climate, energy and sustainability at Brandenburg University of Applied Sciences

Brandenburg University of Applied Sciences (THB) held its first lecture series on the topic of "Climate, Energy and Sustainability" in the summer semester of 2021. This was not only interdisciplinary, with various speakers from the fields of physics, mechanical engineering, economics and medicine, but was also developed and offered across universities with the Brandenburg Medical School (MHB). The lecture was aimed at students in higher semesters as part of the "Studium Generale" course anchored in the curriculum, but participation was also open to all members (both students and employees) of THB and MHB.

2.2   Certificate studies

Several German universities offer students the opportunity to obtain a certificate by participating in sustainability-specific courses and to have their achievements recognized in their own degree course.

Example of good practice: Studium Oecologicum, University of Tübingen

https://uni-tuebingen.de/studium/studienangebot/ueberfachliche-kompetenzen/zertifikate/zertifikat-studium-oecologicum/

The student initiative Greening the University e.V. initiated the

Studium Oecologicum in the summer semester of 2009. Today, the Studium Oecologicum is an established, interdisciplinary course program in the sense of education for sustainable development (ESD) at the University of Tübingen. Tübingen. It can be taken by students from all disciplines and degrees. Around 30 courses are offered each semester offered by university lecturers and external practice partners. are offered. Proof of performance in several of these courses (basic and themed courses), a certificate can be acquired. can be acquired.

2.3   Sustainability weeks

Example of good practice: Public sustainability week, University of Konstanz

https://www.publicsustainabilityweek.de/

During the public sustainability week, the University of Konstanz offers a week of free and public events on the topic of sustainability. The concept emphasizes practical and interactive learning formats, and in addition to public lectures, workshops and excursions are also offered for a broad target group.

3   Learning formats

3.1   Face-to-face

3.1.1   Project workshops

Example of good practice: Project workshops at HNE Eberswalde

https://www.hnee.de/de/Studium/Infos-zum-Studium/Fr-Studierende/Projektwerksttten/Projektwerksttten-Lehre-von-Studis-fr-Studis-K4908.htm

As an alternative to traditional face-to-face teaching, the project workshop format offers an opportunity for social, ecological and interdisciplinary-integrative teaching and learning. The prerequisite for this is a high degree of self-organization, initiative and cooperation on the part of the students. Project

workshops are led by student tutors, while the responsible lecturers are responsible for the examination performance and provide support in the event of problems. At the Eberswalde University for Sustainable Development (HNEE), students can choose between two project workshops, which can be taken once as a compulsory elective module with 6 ECTS credits.

3.1.2 Syndrome approach

The syndrome approach has been developed by the German Advisory Council on Global Change and seeks to identify functional patterns of human-nature interaction. It describes not only the actual global situation but offers possibilities of a systemic understanding of complexity. The syndrome approach represents the thesis that global change in its dynamics may be attributed to a manageable number of functional patterns in the relationship between nature and humankind. The non-sustainable courses of these dynamic patterns are identified as syndromes of global change. The syndrome approach covers both the dimensions of cause and of mechanisms of action and effect, as it has a holistic understanding of the system that interrelations and functional patterns can be described and visualized and problems can be represented as a whole. The description of non-sustainable developments helps to understand what a sustainable development may look like.

Example of good practice: seminar „syndromes of global change", Leuphana University

The concept of the syndrome approach has been adopted in a seminar called "Syndromes of global change at the Leuphana University of Lüneburg. The seminar might be seen as both an introduction to a new methodological approach for dealing with complexity in the

field of Sustainable Development as well as a problem-oriented, collaborative and self-directed way of learning for sustainable development. Thus, the course follows specific steps to familiarize students with the learning environment, the methodological concept of the

syndrome approach, and collaborative work on a given case study. The table below illustrates the various steps that are to be taken by students.

(1) Preparation phase
- Making students familiar with the learning environment
- Facilitating group building processes

(2) Introduction
- Input-oriented: Syndrome Approach – characteristics and working steps
- Enabling students to situate the approach in the broader context of sustainability science

(3) Collection of symptoms
- Identification of main trends in and between nature and society ("symptoms")
- Classification exercise according to the heuristic of nine different spheres

(4) Knowledge management
- Developing a shared knowledge base
- Interdisciplinary negotiation process between students in a wiki-system
- Turning implicit into explicit knowledge and developing and sharing of knowledge

(5) Creating a network of interrelations
- Developing a network of interrelations based on the information jointly collected
- Iterative process of analyzing and deconstructing complexity
- Visualization of causal chains

(6) Summary
- Working on a group report
- Summarizing the main aspects of the syndrome and describing the network of interrelations
- Reflecting on the syndrome approach for dealing with the different aspects of global change

Figure 2: Exemplary seminar plan following the syndrome approach

3.1.3   Scenario analysis

Scenario Analysis embraces a wide spectrum of procedures, methods and techniques to analyze systemic interrelations and to support systematic thinking about future developments, especially about complex, long-term and uncertain issues. It has been designed to allow improved decision-making by fostering a holistic perspective. First employed in strategic military planning, the SA became popular in the economic sector through its implementation in entrepreneurial planning processes by Royal Dutch

Shell in the 1970s. Today it is used in multiple contexts, for local, regional or global issues by various actors like decision makers, consultants or researchers.

Example of good practice: Seminar "Tourism and Climate Change", Leuphana University

On the basis of qualitative, formative and explorative scenario analysis a concept for a seminar has been developed with the aim of promoting the acquisition of relevant competencies, offering knowledge necessary to understand climate change and supporting

action in the face of an uncertain future. At the seminar's centre is the question: ''What could the environmental conditions for tourism look like in the Black Forest in 2050 when climate change is taken into account?'' Therefore, after an introduction to future science, complexity and growing uncertainty, the seminar's thinking process is structured in four main steps (see below).
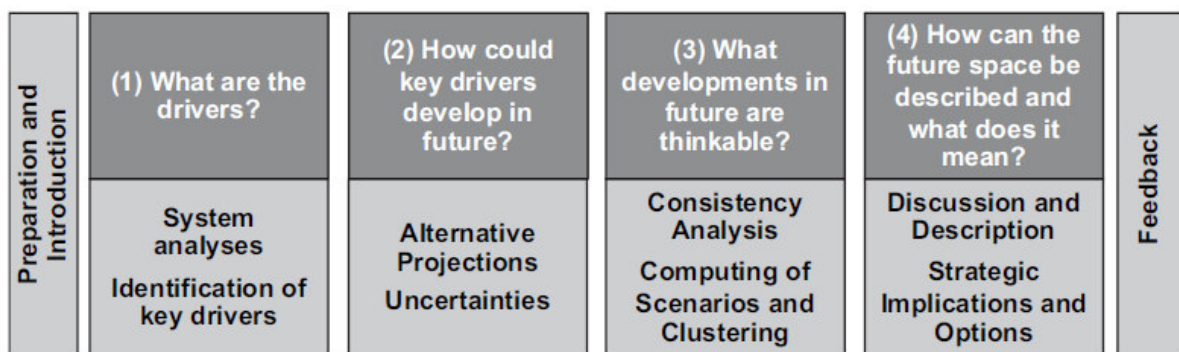
Figure 3: Stages of scenario analysis

3.1.4   Problem-based learning

Problem Based Learning (PBL) is a learning concept in which students are confronted with a real, complex problem in small groups. The goal of Problem Based Learning is the cognitive acquisition of knowledge and the process of understanding itself, leading to a step-by-step solution.

Implementation   guide: https://lehreladen.rub.de/lehrformate-methoden/problemorientiertes-lernen/aktivierung-von-studierenden-durch-problemorientiertes-lernen/

3.1.5   Inverted Classroom

Example of good practice: Planetary Health Diet - Innovative inverted classroom teaching concept with cooking course, University of Göttingen

In the summer semester of 2022, an innovative inverted classroom teaching concept on the topic of "Planetary Health Diet" for students of all disciplines (Studium generale) with a practical cooking course in the Teaching Kitchen to improve nutrition-related health and sustainability skills was piloted at the

Georg-August-Universität Göttingen. It is based on the Planetary Health Diet of the EAT Lancet Commission (2019) and the food-related nutritional recommendations of the German Nutrition Society (DGE). The teaching concept was developed by the Institute for Nutritional Psychology at the Georg-August University of Göttingen in cooperation with Culinary Medicine Deutschland e.V. As part of the inverted classroom approach, students contribute presentations, self-created posters and their own recipes to the course. On the one hand, students prepare their own recipes in the Teaching Kitchen using the original recipe. At the same time, changes are made to the recipe to improve the nutritional profile and carbon footprint in the real-life laboratory approach and tested in practice. For the recipes, both a nutritional value calculation and a calculation of the climate impact based on carbon dioxide equivalents are carried out.

Implementation guideline: https://www.e-teaching.org/lehrszenarien/vorlesung/inverted_classroom

3.1.6   Design Thinking

Collection of methods: Design Method Toolkit

https://toolkits.dss.cloud/design/

The Design Method Toolkit is a project by the Digital Society School. It offers a collection of design and research methods.

Collection of methods: Tools for Taking Action, Stanford d.school

https://dschool.stanford.edu/resources

This is a curated collection of 30+ resources from Stanford d.school classes and workshops, including activities, tools, and how-to guides. They are intended for anyone who wants to become more familiar with design thinking or unlocking creative thinking in whatever challenge being tackled. Some are full-fledged workshops that for guiding others through. Other resources are short worksheet-based activities.

3.1.7   Storytelling

The term storytelling is attracting increasing attention both in academic discourse and in application-related areas. Narrative techniques can also be used to convey teaching content in university teaching. "Storytelling offers a way to convey facts in an exciting way and arouse students' curiosity" (Caminotti/Gray 2012, Schimel 2012, Zazkis/Liljedahl 2019).

Online Lesson (OER): Storytelling in sustainability communication

https://elearning.sustelling.de/

Implementation guide:

https://www.einfachlehren.tu-darmstadt.de/themensammlung/details_49408.de.jsp#artikel_details

3.2   Digitally supported

3.2.1   Virtual study offers / Blended Learning

Example of good practice: Virtual Academy for Sustainability, University of Bremen
https://www.va-bne.de/index.php/de/
Since the summer semester of 2011, the Virtual Academy for Sustainability (VAN) has been offering university courses on Education for Sustainable Development (ESD) throughout Germany. Basic

knowledge on sustainability topics is taught via video-based courses and associated examinations. An interactive learning platform for collaborative learning and competence-oriented examination formats are used to consolidate the basics. In addition, all universities have the opportunity to create and offer their own blended learning seminars using the Academy's teaching materials. This involves a didactically sensible combination of online learning phases with the Academy's materials and attendance phases at the respective university.

3.2.2   Game-based-Learning

Game-based learning refers to learning with (often digital) games. The underlying approach is to design or use games in such a way that they can be used to convey or develop learning content. Learning with games should not only increase the motivation to learn, but also promote a deeper processing of the learning content through active engagement with the game.

Collection of examples of good practices: https://www.thm.de/zekoll/images/Dokumente/GbL/Game-based_Learning_-_Impulse_fr_die_Lehre.pdf

Implementation guideline: https://www.e-teaching.org/didaktik/konzeption/methoden/lernspiele/game_based_learning

3.2.3   Simulation games

Simulation games are becoming increasingly popular in academic teaching. Their use at colleges and universities has so far varied, depending on the discipline and location.

Collection of methods: Plan games database of the Federal Agency for Civic Education https://www.bpb.de/lernen/angebote/planspiele/datenbank-planspiele/

Collection of methods: German Global Learning Portal

https://www.globaleslernen.de/de/suche?combine=&field_media_types_target_id%5B0%5D=2648&field_media_types_target_id%5B1%5D=2648

3.2.4   Toolboxes

Various universities offer toolboxes that can be used to design innovative teaching. Often the portals also include collections of open educational resources.

- **Digital Teaching Portal, Nuremberg Institute of Technology**

  https://leko.th-nuernberg.de/portal_digitale_lehre/
- **LEHRELADEN, Ruhr-University Bochum**

  https://lehreladen.rub.de/
- **Teaching toolbox, University of Konstanz**

  https://www.uni-konstanz.de/asd/infopool/toolbox-lehre/
- **Teaching tools, University of Zurich**

  https://teachingtools.uzh.ch/
- **Teach better Infopool, University of Vienna**

  https://infopool.univie.ac.at/startseite/

- **Method box, Berlin Center for University Teaching**
  https://bzhl-methodenbox.web.app/
- **Baukasten Lehre, Braunschweig University of Technology**
  https://baukastenlehre-tubs.de/

3.3 Independent formats

3.3.1 Sustainability semester

Example of good practice: Leuphana-Semester, Leuphana University Lüneburg

Since the winter semester 2007/08, all first semester students have started with a general "Leuphana semester", regardless of their later specialization. Students of all specializations work on the overarching question of how the concept of sustainable development can serve as a normative framework for the development of responsible action under the general topic of "Responsibility in Society". With this module and the subsequent conference studies, students are given the opportunity to deal with an overarching topic in depth.
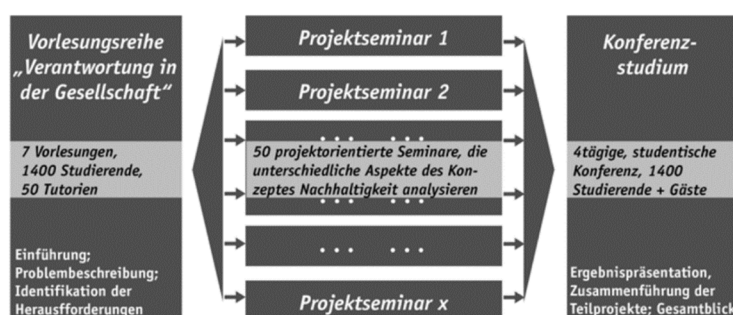

Figure 4: Concept of the "Leuphana-Semester"

3.3.2 Independent study programs

The "Higher Education Compass" platform of the German Rectors' Conference, which provides a complete overview of the German higher education landscape, currently lists 295 degree programs that have the keyword "sustainability" in their name.

Example of good practice: Interdisciplinary distance learning program in environmental sciences (infernum)

The Interdisciplinary Distance Learning Program in Environmental Sciences (infernum) is a university continuing education program for professionally qualified specialists and managers (with and without a first academic degree), which is offered jointly by the FernUniversität in Hagen and the Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT in Oberhausen. The central aim of the course is to impart interdisciplinary environmental knowledge and design skills in order to initiate and support sustainable development processes. Students are enabled to approach complex environmental and sustainability science problems holistically and to understand the perspectives and "languages" of different disciplines. The range of courses includes modules from the natural sciences, engineering, social sciences, law and economics as well as interdisciplinary cross-sectional topics. Depending on their previous education, students put together their own individual study program. The commitment to interdisciplinary study means that all three dimensions of sustainability (economic, ecological and social) are taken into account. infernum enables students to think in a networked way and provides them with an interdisciplinary conceptual and understanding basis as a prerequisite for working in multidisciplinary teams. The course content is taught in a blended learning structure in which distance, online and face-to-face teaching complement each other as required.

4 Platforms, Pilot projects

4.1 Netzwerk n

https://netzwerk-n.org/

The student initiative "netzwerk n" aims to establish and professionalize student sustainability initiatives and their projects throughout Germany. netzwerk n offers student initiatives free further training ("itinerant coaching") on how to further develop their commitment to sustainability at their university and make it relevant to practice. With the help of the itinerant coaching, over 140 student sustainability initiatives and over 1,000 students in German-speaking countries have been reached in recent years.

4.2 UniNEtz

The project UniNEtz (short for "universities and sustainable development goals") was launched in 2019 as a joint initiative of the Alliance of Sustainable Universities in Austria and the BMBWF, in order to implement SDGs at universities in all areas. The UniNEtz project aids inter- and intra-university networking and the integration of the SDGs in areas of university life such as teaching, research, student initiatives, management and administration, and aims over the long term to make a significant contribution to sustainable development in Austria. Currently there are 16 out of 22 Austrian universities involved in the UniNEtz project, one or sometimes two universities taking the lead for one of the SDGs and work with other universities to develop the project.

4.3 INNO4BNE

https://wiki.dg-hochn.de/index.php?title=Projektseite_INNO4BNE

The INNO4BNE project aims to create a collection of innovative teaching formats for education for sustainable development in the HochN wiki and thus support the "ESD 2030" process. Members of the DG HochN hub group of the same name can link to all existing formats and tools that they have found particularly useful in their own teaching. The wiki is also accessible to teachers outside the network. In addition, the network is particularly interested in open educational resources that can be transferred and used at other universities without barriers. The project runs for a period of 2 years, from 01.04.2023 to 31.03.2025

4.4 ESD Sachsen

http://www.bne-sachsen.de/

The portal, which is managed by civil society and funded by the state and federal government, offers thematically appropriate educational offers and teaching materials for each of the 17 global Sustainable Development Goals (SDGs). In addition to current information on ESD in Saxony, over 130 associations and organizations present themselves and their bookable offers and projects. This allows the learning content of the school to be linked with extracurricular learning opportunities, learning locations and partners. The events and further education calendar lists the events currently on offer.

4.5 Bavarian University & Sustainability Network

https://www.nachhaltigehochschule.de/

The Bavarian University & Sustainability Network supports university stakeholders in improving the framework conditions for sustainable development at Bavarian universities. It is aimed at university management, academics and students from all disciplines as well as administrative staff at Bavarian universities and involves stakeholders from ministries, politics, business and civil society. It offers a platform for the exchange of knowledge, methods and good practice examples for the overall institutional implementation of sustainability.

4.6   SUSTAINICUM COLLECTION

https://sustainicum.at/resources/methods

On the initiative of BOKU Vienna, the teaching resource collection Sustainicum Collection was developed in a joint project with the University of Graz and Graz University of Technology. It comprises a collection of teaching aids for lecturers who want to incorporate sustainability aspects into their courses, design a new course on this topic, are looking for methods of knowledge transfer or participation or want to make their proven teaching aids, course programs or methods available to others.

The multi-award-winning collection aims to promote education for sustainable development (ESD) and important skills such as holistic and systemic thinking or inter- and transdisciplinary action at universities. All teaching resources are related to ESD or the 17 United Nations Sustainable Development Goals (SDGs).

4.7   Foundation for Innovation in University Teaching

https://stiftung-hochschullehre.de/

The Innovation in University Teaching Foundation was established on 9 November 2020 as a new, largely independent trust foundation under the umbrella of the Toepfer Stiftung gGmbH. It is intended to promote the exchange and networking of relevant stakeholders as well as the transfer of knowledge on successful teaching and new results and findings. In order to continuously incentivise the creation of teaching innovations, the development of innovative study and teaching formats is to be supported through appropriate funding. The funding lines are intended, for example, to strengthen universities as places of study and teaching, improve study conditions and further develop their concepts and structures.

4.8   Wikipedia portal "University teaching"

https://de.wikipedia.org/wiki/Wikipedia:WikiProjekt_Hochschullehre

The project "Establishment of a Wikipedia portal for university teaching" is funded by the Foundation for Innovation in University Teaching and aims to provide interested parties with an initial orientation in the field of university teaching via the free encyclopaedia Wikipedia. The development of a writing community helps to identify relevant knowledge on university teaching through targeted writing activities and to make it systematically available in a Wikipedia topic portal.

4.9   Overview of teaching and learning-related portals

https://stiftung-hochschullehre.de/netzwerk-und-transfer/lehrbezogene-portale/

A comprehensive overview of teaching and learning-related online portals was compiled on the basis of a Germany-wide search.

4.10 Klimabildung e.V.

https://klimabildung.org/

Klimabildung e.V. actively campaigns for change in the education system and acts as a multiplier at various levels. In cooperation with teachers, pupils and students, we develop new formats at schools and universities. The aim is to impart basic and practical knowledge on climate education and ESD.

4.11 Working group for sustainability at the universities of Brandenburg

https://nachhaltigkeit-an-brandenburger-hochschulen.de/

With the aim of anchoring university education for sustainable development in the consciousness of all university members in the long term, the working group organizes cross-university activities to anchor sustainability in mission statements and curricula and to develop further training courses. The working

group is made up of representatives from the eight state universities in Brandenburg and is supported by the coordination office through accompanying research and organizational work.

4.12 German Society for Sustainability at Universities e.V.

https://www.dg-hochn.de/

DG HochN supports the implementation of the UNESCO programme "Education for Sustainable Development for 2030" in the German German higher education system and endeavours to make sustainable development at universities in Germany and to inform sustainability sustainability actors through application-related co-creative exchange. co-creative exchange.

In the exchange formats offered - hubs - people come together come together virtually or in person to discuss topics that are relevant to their relevant to their sustainability work. They thrive on the active exchange between all participants on an equal footing, regardless of the background of the panellists and which university status groups they come from. university status groups they come from.

4.13 Advance HE

https://www.advance-he.ac.uk/teaching-and-learning/education-sustainable-development-higher-education

Advance HE is a member-led, sector-owned charity that works with institutions and higher education across the world to improve higher education for staff, students and society. Advance HE's strategic goals are to enhance confidence and trust in higher eduction, address systemic inequalities and advance education to meet the evolving needs of students and society.

Advance HE have published a framework and guidance for Education for Sustainable Development to help UK HE staff integrate Education for Sustainable Development into their curricula. This is supplemented by a series of practice guides.

4.14 Copernicus alliance

https://www.copernicus-alliance.org/

The COPERNICUS Alliance is a European network of universities and colleges committed to transformational learning and change for sustainable development. It aims to enable European higher education institutions and their partners to jointly identify challenges in higher education for sustainable development and spearhead development of processes, tools, and knowledge to address these challenges from a whole-institution perspective.

5 Apps

5.1 ESD-App of University of Applied Sciences Northwestern Switzerland

The ESD app from the University of Applied Sciences Northwestern Switzerland aims to bridge the gap between personal commitment and cultural and political change in our society. The app is designed to enable users to reflect on their experiences with a self-chosen commitment to sustainability-related behavioral change. In this way, participants should gain insights that lead to suggestions on how to create the conditions for a transformation towards sustainable development through measures at their school, workplace or political level.

5.2 Green Campus App

A self-assessment tool for evaluating and improving campus sustainability practices, avalibale for both Andriod and IOS system. It also feaatures a collection of good practices from universities worldwide to inspire meaningful change.

https://www.greencampusproject.eu/

6 Annex: National Collection of Open Educational Resources for ESD

6.1 Examples from Germany

Methode n

https://netzwerk-n.org/ressourcen/bildungsmaterial/#methode-n

The method booklet provided by netzwerk n provides tools to tackle the transformation of universities towards sustainable development. The focus is on activating and professionalizing collective action - from reflecting on one's own work processes to ways of finding visions and imparting project planning know-how. The methods and techniques provided are intended to help in conducting group workshops that are committed to the transformation of universities.

Futurzwei

https://netzwerk-n.org/ressourcen/bildungsmaterial/#futurzwei-bildungsmaterialien

In cooperation with FairBindung, netzwerk n and the Konzeptwerk Neue Ökonomie and supported by the German Federal Agency for Civic Education (bpb), the German Council for Sustainable Development (RNE), the German Federal Environmental Foundation (DBU) and the Forum for Responsibility (FfV), 16 templates for workshops and teaching units have been created. The educational materials address the sometimes abstract topics of the "Great Transformation" and relate them directly to the reality of young people's lives. They invite experimentation and make it possible to experience self-efficacy. From pure problem knowledge, criticism and analysis, the methods enable the necessary step towards concrete experimentation and trial and error in the reality of personal life. Your own actions and their effects become comprehensible on an individual, interpersonal and social level.

KATE SDG toolbox

https://www.kate-stuttgart.org/sdg-toolbox

The website gives multipliers from small and medium-sized enterprises and vocational training institutions access to all the educational materials in the SDG toolbox so that they can implement low-threshold and attractive sustainability education for employees and junior staff in their own organization. The SDG toolbox consists of five components: visual awareness-raising, auditory awareness-raising, sustainability rally, SDG videos and interactive e-learning.

"Growing into Eco-Conscious Adults

https://geaeducation.eu/learn/courses/growing-into-eco-conscious-adults/

The online course provides innovative and high-quality educational resources addressed to both adult educators and adult learners (especially with disadvantaged socio-economic/educational background), ultimately aimed at raising environmental awareness among adults who are out of formal education, while conveying the importance of social and digital inclusion in the field of adult education.

everGREEN

https://evergreen-vle.eu/my-courses/

everGREEN provides a collection of 32 mini-courses that suppoer VET communities, including leaders, staff, and learners, to initiate the greening process of the sector and enable behavioural changes and greener mindsets at both professional and personal level. Depending on the readiness level, and thematic Focus of the participants, different courses will be of particular relevance to. To receive a personal recommendation for suitable mini-courses, participants is required to take an assessment and then receive course recommendations.

6.2   Examples from Greece

Healthcare Access for Marginalized Groups
https://apps.who.int/iris/handle/10665/337304
This article, available through the WHO Open Access Repository, discusses disparities in healthcare access for marginalized groups. It contributes to SDG 3 (Good Health and Well-being) and serves as a key resource for raising awareness and shaping educational programs across all levels of education.

Educational Equality
https://www.kallipos.gr/el/open-access-books/
A thematic book published by EKT Open Academic Editions, focusing on equality in the Greek education system. It supports SDG 4 (Quality Education) and is targeted at the higher education sector to promote discussions on educational equity.

Empowering Women and LGBTQ+ Communities
https://trainingcentre.unwomen.org/
Developed by the UN Women Training Centre, this comprehensive book explores gender and LGBTQ+ empowerment across several countries. It aligns with SDG 5 (Gender Equality) and is applicable in vocational and higher education.

Social Inclusion and Poverty
https://www.ekt.gr/el/education
Course material provided by the National Documentation Center (EKT) aimed at higher education. It addresses themes of social inclusion and poverty, directly supporting SDG 1 (No Poverty) by promoting an inclusive education approach.

Gender Inequalities
https://www.isotita.gr/el/ekpaideutiko-yliko/
This educational package from the General Secretariat for Gender Equality offers resources focused on tackling gender inequalities. It serves higher education institutions and supports SDG 5 (Gender Equality).

Integration of Students with Special Needs
https://dschool.edu.gr/
The Digital School, under the Ministry of Education, provides tailored educational materials aimed at integrating students with special needs in school settings. It supports SDG 4 (Quality Education).

Inclusive Education Toolkit
https://unesdoc.unesco.org/ark:/48223/pf0000371247

UNESCO's Inclusive Education Toolkit offers broad, adaptable resources for overcoming educational barriers related to gender, poverty, and disability. It supports all levels of education under SDG 4 (Quality Education).

Labor Integration for ROMA

https://www.oaed.gr/ekpaideysi

This workshop-based material by the Greek Employment Authority (DYPA) promotes labor integration of marginalized communities, particularly ROMA. It is aligned with SDG 8 (Decent Work) and SDG 10 (Reduced Inequalities).

Research on Climate Impacts on Vulnerable Communities

https://www.heal-link.gr/

Published via HEALink, this research material highlights the disproportionate climate impacts on vulnerable groups. It is intended for vocational and higher education, contributing to SDG 13 (Climate Action).

Innovation in Low-Income Countries (GR)

https://www.oercommons.org/search?q=digital%20divide

Hosted on OER Commons, these workshop resources address digital inequality and innovation challenges in low-income areas, supporting SDG 9 (Industry, Innovation, and Infrastructure) in all education sectors.

Marine Ecosystems and Equity

https://www.oceanliteracy.unesco.org/

The UN Ocean Literacy Portal provides this workshop material to promote awareness and education on marine conservation and equitable access to marine resources, supporting SDG 14 (Life Below Water).

Social Policy and Poverty

https://www.eap.gr/el/programmes/undergraduate/

An online undergraduate course from the Hellenic Open University that delves into issues of social policy and poverty. It addresses SDG 1 (No Poverty) in higher education contexts.

Courses on Urban Inequality

https://courses.ntua.gr/

These online courses by the National Technical University of Athens explore urban inequality and sustainable city development. Aligned with SDG 11 (Sustainable Cities and Communities), they serve higher education audiences.

Food Security

https://elearning.fao.org/

This FAO eLearning Academy course tackles food insecurity in vulnerable populations, targeting vocational and higher education institutions under SDG 2 (Zero Hunger).

Global Partnerships for Development

https://www.futurelearn.com/courses/global-partnerships

Offered via FutureLearn, this series of online courses emphasizes global cooperation and

development partnerships, addressing SDG 17 (Partnerships for the Goals) across all education sectors.

Understanding Poverty
https://olc.worldbank.org/
World Bank's Open Learning Campus offers this course on poverty traps and economic exclusion, intended for use in all educational contexts under SDG 1 (No Poverty).

Water and Sanitation Infrastructure
https://ocw.mit.edu/courses/11-479j-water-and-sanitation-infrastructure-planning-spring-2007/
An MIT OpenCourseWare series that examines infrastructure planning for clean water access, supporting SDG 6 (Clean Water and Sanitation) in vocational and higher education.

Energy Poverty Solutions
https://openstax.org/details/books/energy-science-and-technology
This OpenStax course covers sustainable energy strategies to combat energy poverty, supporting SDG 7 (Affordable and Clean Energy) for VET and higher education.

Circular Economy and Waste Reduction
https://www.futurelearn.com/courses/circular-economy
A FutureLearn online course exploring sustainable consumption, focused on SDG 12 (Responsible Consumption and Production), suitable for all education sectors.

6.3   Examples from Italy

Sustainable Development Education
https://asvis.it/educazione-allo-sviluppo-sostenibile/
Developed by ASVIS (Italian Alliance for Sustainable Development), this platform offers e-learning courses and collections of resources, including good practice case studies. The materials are geared toward promoting sustainable development (SDG 4.7) across all education sectors, focusing on transformative learning and lifelong education principles.

Global Challenges for a Sustainable Society
https://www.kuleuven.be/duurzaamheid/sustainability/education/learningmaterial
This MOOC by KU Leuven introduces global challenges from a scientific perspective, exploring their interrelations and potential solutions. The course enhances understanding of sustainability-related data and fosters knowledge-based arguments, aimed at higher education learners.

GreenOn
https://greenonproject.eu/resources/
Part of an Erasmus+ project, GreenOn provides a toolkit, card game, and self-assessment tools to promote green transition strategies in organizations. The resources support eco-responsibility and green management, particularly for adult education and vocational education institutions.

Appreciative Design for Climate Activism

https://climatecommons.eu/how/?lang=it

Produced by Climate Commons, this guide presents an Appreciative Design framework for fostering climate activism in community spaces. It supports ecological thinking and design-led education strategies within adult education and youth sectors.

Educare giocando

https://www.cesvi.org/wp-content/uploads/2018/08/Educare-Giocando-Kit-Didattico-Agente0011.pdf

A didactic kit by CESVI and Agente0011 project, created by students for students. It includes multiple workshops related to Agenda 2030 and promotes environmental and social sustainability in school and youth education.

The Economy of the Green Transition

https://economiapertutti.bancaditalia.it/progetti-educativi/transizione-verde/

Offered by the Bank of Italy and Polytechnic of Milan, this MOOC targets secondary school teachers and adult educators. It explains the economic underpinnings of climate change and explores the role of finance and individual action in the green transition.

Journey 2050

https://www.journey2050.com

A gamified, virtual learning program developed by Nutrien. It helps students explore sustainable agriculture through simulations that balance environmental, economic, and social factors. It is suitable for school-age learners.

Sustainability from the Start

https://www.edchild.com

An online curriculum designed by edChild to integrate sustainability concepts into everyday learning and teaching. The eight modules explore sustainable development across school and adult education sectors.

Protect the Blue: Marine Protected Areas

https://education.nationalgeographic.org/resource/protect-blue-marine-protected-areas/

National Geographic's lesson tool encourages students to understand the ecological and geopolitical importance of marine protected areas. It suits school-based environmental science and geography classes.

Lesson Plans on the SDGs

https://www.ecoschools.global/lesson-plans-for-teachers

These lesson plans by the Foundation for Environmental Education support SDG pedagogy through action-oriented learning. They are used widely in schools to link academic content with real-world environmental goals.

Virtual Field Trips and DE Docs

https://www.discoveryeducation.com/community/virtual-field-trips/

Discovery Education offers immersive virtual experiences with hands-on guides, emphasizing social and environmental sustainability in classroom learning. Primarily aimed at school educators.

Cool Australia
https://cool.org
A comprehensive platform providing free units, activities, and lesson plans on environmental sustainability. These are suitable for teachers in schools and freely accessible upon registration.

Primary and Secondary School Resources
https://www.wwf.org.uk/get-involved/schools/resources
WWF UK's portal offers environmental education materials categorized by age group. Topics include biodiversity, climate, and citizenship, supporting cross-curricular school learning.

EcoVille
https://www.mwatoday.com/environmental-responsibility/education/simulation-game-start/
An interactive simulation by Metro Waste Authority. Players engage in waste management scenarios, developing environmental responsibility through game-based adult and vocational education.

Footprint Calculator
https://www.footprintcalculator.org/home/en
A globally recognized tool for calculating one's ecological footprint. It supports sustainability awareness in all educational sectors, from youth to higher education.

FoodSpan – Teaching the Food System
https://www.foodspan.org
Created by the Johns Hopkins Center for a Livable Future, this high school curriculum explores the food system from farm to fork, advocating sustainable and healthy food choices in secondary education.

LEAF Teaching Material
https://www.leaf.global/our-resources
The LEAF (Learning About Forests) program provides hands-on resources related to forest environments and biodiversity. It encourages school and youth learners to connect with nature.

Data Nuggets
http://datanuggets.org/about-nuggets-2/content-and-graphing-levels/
Designed to build quantitative reasoning in science education, Data Nuggets are mini-research projects for school and higher education, focusing on scientific sustainability data.

Youth Climate Toolkit
https://www.nature.org/en-us/about-us/who-we-are/how-we-work/youth-engagement/educating-for-climate-action/
The Nature Conservancy's toolkit helps students create climate action plans. It's tailored for youth and school educators and includes strategies, talking points, and funding ideas.

Lesson Plans and Online Resources for Educators
https://www.epa.gov/students/lesson-plans-teacher-guides-and-online-environmental-resources-educators

The U.S. EPA provides this suite of environmental science lesson plans and guides for use in classrooms worldwide, adaptable to multiple teaching contexts.

Climate Campaign Resources
https://www.powershift.org/resources
Compiled by the Power Shift Network, these resources support youth-led climate activism, focusing on marginalized communities and advocacy in adult and youth education.

L'educazione ambientale e allo sviluppo sostenibile
https://scuolaconsulting.com/l-educazione-ambientale-e-allo-sviluppo-sostenibile/steschiavone-ss/
An in-depth article by Giovanna Vazzano analyzing how Italian educational policy incorporates sustainability. It is useful for school administrators and teachers aiming to embed sustainable development across curricula.

Cambridge Sustainability Framework per l'inglese
https://www.cambridgeitaly.it/blog/portare-la-sostenibilita-in-classe-cosa-intendiamo-per-conoscenza
Created by Jade Blue and Cambridge University, this material helps Italian students develop sustainability skills through English language education. It is used in schools and adult education programs.

OneHealth
https://www.educazionedigitale.it/onehealth/
Developed by Medtronic for Italian schools, OneHealth is an educational platform linking human and environmental health under the One Health paradigm, promoting holistic health understanding.

Sustainability Free Learning Resources
https://skillsbuild.org/it/students/course-catalog/sustainability
IBM's SkillsBuild platform aggregates global educational materials on sustainability and ocean sciences. It provides open resources for students and educators across school, adult, and vocational education.

6.4   Examples from Portugal

Ambiente e Sustentabilidade: Olhares Diferentes, Questões Globais
https://aulaberta.uab.pt/blocks/catalog/detail.php?id=32
This Portuguese-language MOOC explores environmental and sustainability issues through interdisciplinary perspectives. It emphasizes biodiversity, energy, and the human-environment relationship, contributing to a more sustainable world. Offered in partnership with Brazilian and Portuguese universities, it supports SDGs 4, 11, 12, and 13 for higher education learners.

Ideas Competition on Sustainability
https://ciencias.ulisboa.pt/en/event/sep-262022/ideas-competition
An initiative by the Faculty of Sciences at the University of Lisbon (FCUL), this competition encourages students to develop innovative sustainability ideas. The project promotes SDG 12 (Responsible Consumption and Production) and is targeted at higher education students.

Campus Biodiversity Project

https://www.biodiversity4all.org/projects/biodiversidade-ips-setubal

Led by the Polytechnic University of Setúbal, this citizen science initiative documents campus biodiversity and engages students and educators in ecological awareness, supporting SDGs 4 and 15 in higher education.

Biodiversity4All

https://www.biodiversity4all.org

A collaborative platform fostering biodiversity awareness through citizen science. This Portuguese NGO initiative supports SDGs 4, 14, and 15 by involving all education sectors in ecological observation and data collection.

Bolsa de Voluntários

https://bolsavoluntarios.ipportalegre.pt/

The Polytechnic University of Portalegre promotes student volunteering in social and environmental causes, supporting holistic education and community engagement in alignment with SDG 1.

EUN - Sustainability in the Classroom and Beyond

https://www.dge.mec.pt/noticias/mooc-eun-sustainability-classroom-and-beyond-engage-whole-school

This European Schoolnet Academy MOOC applies a whole-school approach to sustainability education, fostering critical thinking and community action across all education levels.

Explica-me como se tivesse 5 anos

https://explicame.tecnico.ulisboa.pt

A science communication initiative from Instituto Superior Técnico where scientists answer children's questions in simple terms. It enhances science literacy and sustainability education for all ages.

JUST4ALL - Adult Education for Just Transition

https://learning.eaea.org/course/index.php?categoryid=41

This English-language MOOC by EAEA strengthens adult learners' capacity to engage in social innovation and support the just transition across Europe, promoting SDGs 4, 7, 9, 11, 12, and 13.

Voluntariado

https://www.ipp.pt/comunidade/menu-comunidade/responsabilidade_social/voluntariado

Run by the Polytechnic University of Porto, this program encourages students and staff to participate in civic and environmental volunteering, supporting SDGs 4, 8, and 17 in higher education.

Sustentabilidade e Economia Circular

https://www.atec.pt/cursos-empresas-particulares/...

ATEC's professional training course equips learners with sustainability and circular economy knowledge. It targets higher education and professional development sectors aligned with SDGs 4, 11, and 17.

Learncafe – Online Sustainability Courses

https://www.learncafe.com/cursos-gratis/meio-ambiente/sustentabilidade

Offering short and free sustainability-themed courses in Portuguese, this platform caters to learners in higher education and beyond, contributing to SDGs 4, 7, 9, 11, 12, and 13.

European Week for Waste Reduction (EWWR) Videos

https://www.ewwr.eu

The EWWR campaign provides educational videos promoting waste reduction awareness across all sectors, aligned with SDG 11.

UN CC:Learn Self-Paced SDG Courses

https://unccelearn.org/?lang=en

This UN platform offers over 130 free, self-paced courses covering topics like climate change and green economy, supporting global learners across education levels.

Waste 360 – Student Ideas Challenge

www.waste360.com/waste-reduction/students-share-creative-waste-management-ideas-for-contest

A youth-focused contest inviting innovative ideas for waste management, supporting SDG 11 through creative engagement.

Green Campus Handbook

https://www.greencampusproject.eu/wp-content/uploads/2024/12/20241215-Green-Campus-Handbook-D2_lq.pdf

A practical guide from the Green Campus Project offering tools for sustainable living and management in universities, aligned with SDGs 4 and 11.

Earth Charter – Courses on Sustainability & Ethical Leadership

https://earthcharter.org/courses/earth-charter-introductory-course/

These multilingual courses foster ethical leadership and sustainable development education for youth and adults in various professional and civic sectors.

Carbon Footprint Network – Data Tools

https://www.footprintcalculator.org/home/en

A suite of resources from the Global Footprint Network including calculators, data dashboards, and scenario tools for evaluating ecological and carbon impacts across education sectors.

Sustainability in Engineering

https://rdmc.nottingham.ac.uk/...

This online course from the University of Nottingham introduces engineering students to sustainability issues, bridging environmental science with engineering practice.

6.5 Examples from Serbia

Sustainability School

https://www.se.com/rs/sr/work/solutions/sustainability/school-training-and-online-courses.jsp#Coursecurriculum

Developed by Schneider Electric, this online training series promotes sustainability in business,

focusing on climate systems, low-carbon transitions, and digital solutions. Designed for vocational and adult education, it equips learners with practical tools to align business operations with sustainability goals.

Introduction to Sustainability

https://www.akademijaodrzivosti.rs/course/uvod-u-odrivost

This course from the Sustainability Academy provides foundational knowledge of sustainability, the circular economy, and strategic integration for businesses. It is aimed at adult and vocational education sectors.

Sustainability in the HoReCa Sector

https://www.akademijaodrzivosti.rs/course/sustainability-in-horeca

This specialized course supports sustainable transformation in the hospitality industry. It covers supply chains, resource use, waste management, and ESG strategies. It is tailored for vocational and adult education.

ESG Training

https://enakademija.rs/ESG-obuka.html

Offered by EnergyNet Academy, this training equips participants with knowledge about ESG (Environmental, Social, Governance) principles and sustainability reporting. It targets the vocational and adult education sectors.

Sustainable Development Goals: A Need for Relevant Indicators

https://www.sciencedirect.com/science/article/pii/S1470160X15004240

This article critiques the lack of conceptual clarity in SDG indicators and offers a framework to enhance their relevance and applicability. It's useful for higher education and research audiences.

The SDGs and Higher Education – Podcast

https://www.youtube.com/watch?v=GzCE6KoJ6vE

This UN podcast explores how universities engage with the SDGs, including cooperation strategies and impact measurement. It's relevant for students, educators, and policy-makers in higher and adult education.

Design and Planning in Environmental Engineering

https://ftn.uns.ac.rs/courses/Z401B/design-and-planning-in-environmental-engineering/

An advanced engineering course focusing on sustainability in urban and industrial contexts. It includes renewable energy, waste management, and water optimization projects for higher education learners.

AgriGREEN Courses

https://agrigreen.ef.uns.ac.rs/...

The AgriGREEN project at the Faculty of Agriculture promotes sustainable agriculture practices, including organic farming and soil conservation. It's accessible to vocational and higher education audiences.

Environment and Health

https://www.mf.uns.ac.rs/.../Environment%20and%20Health.pdf

This course from the Faculty of Medicine explores links between environmental and public health. Topics include pollution, climate change, and sustainability in healthcare, targeting higher education students.

Sustainable Development
https://educons.edu.rs/.../OAS-Sustainable-Development.pdf
Offered by Educons University, this course focuses on sustainable energy technologies and efficiency, aimed at higher education learners in engineering and environmental sciences.

Industrial Eco-Marketing Management
https://ftn.uns.ac.rs/courses/IMDR82/industrial-eco-marketing-management/
This course teaches circular economy principles and sustainable industrial strategies, fostering collaboration with local businesses. It is part of the Faculty of Technical Sciences curriculum for higher education.

Adapting Universities for Sustainability Education in Industry 4.0
https://www.mdpi.com/2071-1050/12/15/6100
This academic paper discusses how Industry 4.0 technologies can be used to enhance sustainability education in universities, addressing challenges and proposing innovative strategies.

Seven Recommendations for University Sustainability Education
https://www.emerald.com/insight/.../full/html
This article outlines best practices for developing sustainability education programs at universities, serving as a guide for institutions aiming to integrate sustainable principles in teaching.

Managing Sustainable Business
https://ftn.uns.ac.rs/courses/IMS422/managing-sustainable-business/
A course designed to foster business models grounded in the digital economy and sustainability. Students learn strategy creation, innovation frameworks, and circular economy principles in higher education.

Sustainability Education for the Future
https://www.mdpi.com/2071-1050/13/5/2901
This article explores transformative education and pedagogical innovation in response to environmental and societal challenges, advocating for sustainability-driven curricula in higher education.

Education for Sustainable Development – Youth Guide
https://www.knjizare-vulkan.rs/pedagogija/99791-obrazovanje-za-odrzivi-razvoj
Prof. Dr. Tiodor Rosić's book promotes sustainability education in economics, environment, and social studies. It's aimed at youth across higher, vocational, and school education.

Education for Sustainable Development – Transnational Report
https://www.aelia-project.eu/...
Part of the AELIA project, this report assesses sustainability education in multiple countries

including Serbia. It supports curriculum design and policy development in vocational and adult education.

Gaps in Sustainability Education

https://www.emerald.com/.../full/html

This paper investigates how coursework affects students' perceptions of sustainability. It highlights the importance of curriculum design in higher education for effective sustainability learning.

Empowering Future Teachers

https://www.carocci.it/...

This bilingual book helps prepare future teachers for intercultural and inclusive education grounded in sustainability principles. It supports curriculum development in teacher education.

AI-Driven Adaptive Learning for Sustainability

https://onlinelibrary.wiley.com/...

This article reviews how AI is reshaping education to be more sustainable, personalized, and inclusive. It is relevant to researchers and developers in higher education technology.

Education for Sustainable Development

https://www.gesjjz.edu.rs/.../Obrazovanje-za-odrzivi-razvoj.pdf

This elective curriculum at a Serbian high school introduces students to sustainability through a critical and action-based approach, promoting future-oriented thinking.

Nursing and Sustainability – Integrative Review

https://onlinelibrary.wiley.com/...

A review exploring nursing students' and educators' engagement with climate change and sustainability. It informs curriculum development in healthcare and environmental education.

Towards Sustainable Higher Education Institutions

https://link.springer.com/article/10.1007/s10639-023-12025-8

This paper discusses the integration of SDGs into ICT curricula in universities, analyzing practical challenges and best practices in Serbian and international higher education.