

Student sustainability values & perceptions: teaching resources

Author: Nick Bunyan



Introduction

This resource contains example learning outcomes, learning activities, topic area ideas, and assessment resources to introduce into your teaching opportunities for students to explore their own and others values and perceptions on complex sustainability issues.

The guide focuses on teaching resources to support the self-awareness, normative, and aspects of the critical thinking competencies for sustainability.

Go to CIE's introductory [Learn more about Education for Sustainable Development \(ESD\)](#) webpages for more on the theory and practice behind competencies for sustainability.

If you have any resources that you use in your teaching that you think will be support student system thinking competency development and will be accessible to other subject areas, please contact cie@liverpool.ac.uk

Example learning outcomes

Critical thinking competency

- Demonstrate the capacity for independent, evidence-based integrated thinking as the foundation for developing their personal ethical code.
- Evaluate the consequences of their own actions and of collective actions.
- Reflect on their own values, perceptions, and actions, comparing and contrasting them to others who may have influence.
- Take an evidence-based position in the sustainable development discourse.
- Recognise their assumptions and evaluate the potential implications and consequences of them.

Self-awareness competency

- Clarify their own views on ways that sustainable development can be achieved in different local and global communities and circumstances.
- Access and engage with their own and other cultures and heritages.
- Maintain healthy mental and emotional state and be aware of their mental and emotional health, in particular to:
 - reflect on their own values, perceptions, and actions.
 - reflect on their own role in the local community and global society.
 - continually evaluate and further motivate their actions.
 - be aware of and engage with their own emotions.
 - make meaning in the work they do.

Normative competency

- Negotiate sustainable development values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.
- Understand and reflect on the norms and values that underlie one's actions.
- Engage with and understand different world views.
- Appreciate, critique and value different cultural contexts.

See also [Example learning outcomes aligned with competencies for sustainable development](#)

Sustainability topic areas from the UN's Sustainable Development Goals

See Appendix 2 for examples of sustainability topics that you could use in your teaching to support self-awareness, normative, and critical thinking competency development for sustainability.

Teaching sensitive topics

See CIE's guide on [Teaching sensitive topics and dealing with emotionally charged content](#) guide if you are concerned about potential student reactions to specific sustainability topics that might have political, cultural or racial aspects etc that you might want to plan through how to approach this with your students.

Example learning activities

You can adapt any of the following commonly used teaching approaches online or in the classroom:

Case studies

Introduce students to complex sustainability issues in context relevant to your subject area. Case studies can be introduced in any teaching setting, and you can use classroom polling or online interactive tools etc to illicit student views.

[SDG Academy](#) is a useful resource for finding SDG related case studies in different media formats.

Stimulus activities

Use different media (photo, video, newspaper article, poem etc.) to stimulate students to reflect on their perceptions and values on a given sustainability issue.

Discussions and debates

[Sustainable Development Toolkit: Tutor Resource and Student Activity Series](#) – Advanced HE toolkit curtesy from Prof Simon Kemp at the University of Southampton is a useful starting point to designing sustainability related discussions with groups of students.

‘Where do you stand’ (POLAK) game

Aims:

- An introductory activity for students to explore where they ‘stand’ or how they perceive a specific sustainability issue.
- Help students to reflect on their initial preconceptions and the perceptions of others.

Learning activity:

- Students are asked to identify where they are on a spectrum across four quadrants (see Appendix 1) relating to a sustainability issue.
- They are then asked to adjust their position depending on how optimistic or pessimistic they are.
- You can adapt this method to different classroom or online activities, for example through using polling technologies within a large class, or physically in a smaller seminar class.
- Use the distribution of students to discuss and explore their different perceptions and preconceptions on the given sustainability issue how they arrived at their positions.

Developed from Haywood et al, 2017.

Serious games & simulations

Aims:

- Provide students with an environment where they are required to make decisions, reflect on values, negotiate with other stakeholders on sustainability to solve sustainability problems.

Learning activities:

- Contact CIE cie@liverpool.ac.uk to learn more about serious games such as the [2030 SDGs Game](#) that can be used to support students to reflect on their sustainability related values and perceptions in engaging active learning.

Student group work

Student group work can be adapted to enable students to:

- Introduce students to collaboration & communication skills for working in diverse stakeholder groups.
- Techniques that can be used in complex sustainability problem solving with diverse student groups:

For example:

Active listening ([Non-violent communication](#))

Aims:

- Go beyond our first interpretation of what is being expressed and try to listen deeper in any communication situation.
- Foster a space for shared understanding.

Learning activities:

Students can be asked to practice this in pairs before engaging with external stakeholders but could also be practiced with students of other subject areas in an interdisciplinary project etc to build relationships.

For a given sustainability topic that has multiple perspectives and interpretations ask students to:

- Take turns to listen to each other.
- Each student speaks for a few minutes (1-2 minutes) on a topic with the other student listening, acknowledging what they are saying without interjecting their own thoughts and opinions, and asking further questions to deepen their understanding.
- Finally, the student listening can briefly summarise what the other student has said to confirm their understanding.

- Students then swap roles and after each has had a turn speaking and listening. They can then have an open discussion on what they noticed and felt about the process.

You could include a short demonstrate to the whole class at the beginning to demonstrate this activity, and include a plenary session at the end to gather whole group feedback and reflection.

Building trust within a diverse group

This activity can be modified and shortened for different contexts.

Aims:

- Variation on common team building activities that's focused on students or stakeholder participants getting to know each other on a personal level and building a climate of trust before they engage with a specific sustainability problem.

Learning activities:

- Each participant is given paper and pens etc and are asked to draw a large 'shield' on the paper and divide into four quadrants.
- In each quarter each participant is asked to describe themselves in pictures (not words) based on four different themes.
- Themes can be varied to meet the context. For example, a difficulty I got over, I am proud of this, this is what you don't know about me, my dream is to...
- Each participant one at a time shares there shield with the rest of the group for about a minute.
- The rest of the group listens and makes positive feedback notes to present back after each person has presented their shield.
- Final feedback session for each person one at a time.

For further information see the Inner Development Goals [The shield](#) activity.

Rich pictures

Aims:

- To enable students and stakeholders to systematically explore and frame a sustainability problem from their different perspectives.
- Helps identify specific problems within an ill-defined situation with multiple perspectives in a non-verbal form that can aid communication.

Learning activities:

- Hand out large pieces of paper and coloured pens (or online using appropriate software e.g. Miro) to each group of participants.

- Before the rich picture is started, get each participant to write down individually on a separate piece of paper what they already think and have articulated about the problem.
- Ask participants to then draw on a single large piece of paper what they see as problematic or significant, groupings or relationships on the given problem.
- Participants review and discuss each other's pictures – exploring what's missing, any new connections, and diversity of how people see the problem etc.

See also the Open University's resources on developing [Rich Pictures](#)

For other examples of collaboration and communication activities: [Inner Development Goals toolkit](#).

Assessing affective learning

Suggestions for assessment criteria that you could use to assess students [affective learning](#):

Affective Attribute	Characteristics of the Attribute	Approaches to Measure the Attribute
Receive	Learners are open to new experience and willing to listen. Verbs that describe their abilities include: to ask, to listen, to take part, to discuss and to acknowledge.	Assessment of learners' willingness and ability to listen.
Respond	Learners react and participate actively. Verbs that describe their abilities include: to interpret, to clarify and to question	Assessment of learners' ability to respond.
Value	Learners attach values and express personal opinions. Verbs that describe their abilities include: to debate, to critically evaluate, to refute and to justify.	Assessment of learners' values and attitudes.
Organise	Learners begin to develop a values system. Verbs that describe their abilities include: to formulate, to	Assessment of learners' reflective abilities.

	defend, to relate, to prioritise, to contrast and to compare.	
Internalise or Characterise	Learners adopt a belief system and behave consistently with it. Verbs that describe their abilities include: to act, to behave and to influence.	Observations and predictions of learners' behaviours and actions.

Taken from: Buissink-Smith et al, 2011

References

Buissink-Smith, N., Mann, S., & Shephard, K. (2011). How Do We Measure Affective Learning in Higher Education? *Journal of Education for Sustainable Development*, 5(1), 101-114.

<https://doi.org/10.1177/097340821000500113>

[Education for Sustainable Development Goals Learning Objectives](#) UNESCO (2017)

Hayward P., Candy C. (2017), The Polak Game, Or: Where Do You Stand? *Journal of Futures Studies*. Vol. 22. [http://dx.doi.org/10.6531/JFS.2017.22\(2\).A5](http://dx.doi.org/10.6531/JFS.2017.22(2).A5)

[Inner Development Goals Framework Toolkit](#)

Appendix 1: 'Where do you stand' (POLAK) game matrix

Taken from Hayward et al (2017)



The matrix consists of 4 quadrants:

Upper Left: Things are good and getting better. We have to work with larger forces and play our part; Lower Left: Things are getting worse; There is nothing I can do about it. I cannot make things worse, so I am free of the responsibility of trying to do that. Upper Right: Things are getting better; AND we can act to make things even better. Lower Right: Things are getting worse generally; But I can act to make a difference here and now, in this place. It may not change the futures, but it is still worthwhile.

Appendix 2:

Example sustainability topics & case studies aligned to the SDGs



Suggested topics for SDG 1 No Poverty

[SDG Academy library No Poverty](#)

- Definitions of poverty.
- Global, national and local distribution of extreme poverty and extreme wealth and their reasons.
- The importance of social welfare protection systems and measures.
- The importance of equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
- The interrelation of poverty, natural hazards, climate change and other economic, social and environmental shocks and stresses.
- Work conditions related to poverty such as sweatshops, child labour and modern slavery
- Resilience of the poor and those in vulnerable situations.
- Consequences of poverty such as malnutrition, child and maternal mortality, crime and violence Development cooperation.
- Policy frameworks at the local, national and international levels, based on pro-poor and gender-sensitive development strategies.



Suggested topics for SDG 2 Zero Hunger

[SDG Academy library Zero Hunger](#)

- Definition of the concept of hunger and malnutrition.
- Groups that are particularly vulnerable to hunger and malnutrition.

- Main drivers and root causes of hunger and malnutrition, including the relation between climate change and food security and the depletion of soil quality.
- Consequences of hunger and malnutrition on the health and well-being of people, including practices like migration as adaptation.
- Physical, emotional and socio-cultural functions of food.
- Hunger in relation to food abundance, obesity and food waste.
- Global food – import, export, cash crops, international taxes, subsidies, trading systems, merits, risks and challenges of utilising genetically modified organisms (GMOs).
- Institutions and movements related to hunger and sustainable agriculture like the UN's Food and Agriculture Organization (FAO), Foodwatch, Slow Food, community-based agriculture, the international movement Via Campesina, etc.
- Concepts and principles of sustainable agriculture, including climate-resilient practices, organic farming, biodynamic farming, permaculture and agro-forestry.
- Biodiversity of seeds, plants and animals, particularly in relation to wild species.



Suggested topics for SDG 3 “Good Health and Well-being”

[SDG Academic Library Good Health and Wellbeing](#)

Severe communicable and non-communicable diseases.

- Health problems of vulnerable groups and in the most vulnerable regions, and an understanding of how gender inequalities may affect health and well-being.
- Direct strategies to promote health and well-being, e.g. vaccines, healthy food, physical activity, mental health, medical consultation, education, sexual and reproductive health education including education about pregnancy avoidance and safer sex.
- Indirect strategies (public health) to promote health and well-being: e.g. political programmes for health insurances, affordable prices of medicine, health services including sexual and reproductive health care services, drug prevention, transfer of knowledge and technology, reduction of pollution and contamination, early warning and risk reduction.
- Philosophical and ethical conceptions of life quality, well-being and happiness.
- Sexual and reproductive health education including family planning.
- Discriminatory attitudes towards people living with HIV, other illnesses or mental disorders.
- Road traffic accidents.

- Overweight and obesity, insufficient physical activity and unhealthy food.
- Chemicals, pollution and contamination of air, water and soil.



Suggested topics for SDG 4 “Quality Education”

[SDG Academy Library Quality Education](#)

- Education as a public good, a global common good, a fundamental human right and a basis for guaranteeing the realization of other rights.
- The Education 2030 agenda, and innovative and successful case studies from across the globe.
- The relevance of inclusive and equitable quality education and lifelong learning opportunities for all (formal, non-formal and informal learning, including the use of ICT) and at all levels for improving people’s lives and sustainable development.
- Reasons for a lack of access to education (e.g. poverty, conflicts, disasters, gender inequality, lack of public financing of education, growing privatization).
- Global attainment of literacy, numeracy and basic skills.
- Diversity and inclusive education.
- Basic skills and competencies needed in the 21st century.
- Knowledge, values, skills and behaviours needed to promote sustainable development.
- The concept of education for sustainable development (ESD), whole-institution approach as a key strategy to scale up education for sustainable development, and pedagogy for developing sustainability competencies.
- Youth empowerment and empowerment of marginalized groups.



Suggested topics for SDG 5 “Gender Equality”

[SDG Academy Library Gender Equality](#)

- Gender as a social and cultural construct.

- Gender inequality, traditional gender roles and structural discrimination.
- Gender equality and participation in decision-making.
- Gender and labour, including pay disparity and recognition of unpaid work.
- Gender and education, including gender equality in achieving primary, secondary and tertiary levels of education.
- Sexual and reproductive health and rights.
- Gender and poverty, including food security and financial dependence.
- Gender in community dynamics (decision-making, governance, childcare, education, conflict resolution, disaster risk reduction and climate change adaptation).
- Exploitation and trafficking of women and girls.
- The intersectionality of gender with other social categories such as ability, religion and race.



Suggested topic for SDG 6 “Clean Water and Sanitation”

[SDG Academy Library Clean Water and Sanitation](#)

- The global water cycle and water distribution.
- The importance of equitable access to safe and affordable drinking water (achieving water security under climate change: e.g. coping with social and economic pressure caused by frequent waves of droughts and hence water shortages, and by floods and hence too much water).
- The importance of adequate and equitable sanitation and hygiene, water quality and quantity parameters for health.
- The human right to water and water as a global common good.
- Impacts of pollution, dumping and release of hazardous chemicals and materials on water quality.
- Water scarcity and water use efficiency Importance of water-related ecosystems.
- Water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies, water patents, landscaping for groundwater recharge as well as integrated water resources management
- Water exports (virtual water).
- Water and sustainable development (e.g. water and gender, water and inequality, water and health, water and cities, water and energy, water and food security,

water and disaster risk reduction, water and climate change, water and the green economy, water and jobs).



Suggested topics for SDG 7 “Affordable and Clean Energy”

[SDG Academy Library Affordable and Clean Energy](#)

- Different energy types, especially renewable energies like solar, wind, water, geothermal, tidal.
- Energy production, supply, demand and usage of different countries.
- Energy efficiency and sufficiency in energy usage.
- Strategies: Centralized versus decentralized energy production; energy self-sufficiency, e.g. via local energy supply companies (LESCOs).
- Political, economic and social dimensions of energy and linkages to power constellations, e.g. in mega energy projects like large scale solar farms or dam projects – potential conflict of interests (political and economic power (across borders), rights of especially indigenous people).
- Environmental impacts and issues of energy production, supply and usage (e.g. climate change, grey energy5).
- The role of the public and private sectors in ensuring the development of low carbon energy solutions.
- Peak of oil production and energy security – (over)dependence on non-renewable energies like oil.
- Bridging technologies and technology for a ‘cleaner’ use of fossil fuels.
- Gender issues related to energy production, supply and usage.



Suggested topics for SDG 8 “Decent Work and Economic Growth”

[SDG Academy Library Decent Work and Economic Growth](#)

- The contributions of economies to human well-being, and the social and individual effects of unemployment.

- Economic ethics.
- Theoretical assumptions, models and indicators of economic growth (GDP, GNI, HDI).
- Alternative economic models and indicators: steady-state economies, common-welfare economies, de-growth, subsistence economies, Inclusive Wealth Index, Global Hunger Index.
- Concepts and phenomena in financial systems and their influence on economic development (investments, credits, interests, banks, speculations on the stock exchange, inflation, etc.).
- Labour force (increase in population through birth rates, migration, etc.).
- Gender equality in the economy and the (economic) value of care work.
- Inequalities in the labour market: representation and participation of different social groups, and different income/wages and weekly worktime between countries, sectors, social groups, genders.
- Formal and informal labour, labour rights, especially for migrants and refugees, forced labour, slavery and human trafficking.
- Entrepreneurship, (social) innovation, new technologies and local economies for sustainable development.



Suggested topics for SDG 9 “Industry, Innovation and Infrastructure”

[SDG Academy Library Industry Innovation and Infrastructure](#)

- The sustainability of information and communication technology (ICT) including supply chains, waste disposal and recycling.
- The relation of quality infrastructure and the achievement of social, economic and political goals.
- The need for basic infrastructure like roads, information and communication technologies, sanitation, electrical power and water.
- Inclusive and sustainable innovation and industrialization.
- Sustainable and resilient infrastructure development.
- Sustainable electricity: national grids, feed-in tariffs, expanding sustainable renewable sources, conflicts.
- The sustainable job market, opportunities and investments.
- The sustainability of the internet – from green chat groups to the ecological footprint of search-engine servers.
- The sustainability of transport infrastructure.

- Alternative currencies as investment in local infrastructure.



Suggested topics for SDG 10 “Reduced Inequalities”

[SDG Academy Library Reduced Inequalities](#)

- Social, economic and political inclusion versus inequalities (on national and global levels) – typical discriminatory categories.
- Different indicators to measure inequality.
- The meaning of rights to land, property and natural resources for equality and the impact. of inequalities on vulnerabilities and capacities.
- Fiscal, wage and social protection policies.
- Global trade systems and regulations (including tax regimes).
- Labour standards.
- Representation of different social groups/nations in governments/on boards of meaningful and powerful institutions.
- The amount and effects of international development aid.
- Historical roots of current inequalities (including the role of multinational companies)
- Migration and mobility of people.



Suggested topics for SDG 11 “Sustainable Cities and Communities”

[SDG Academy Library Sustainable Cities and Communities](#)

- The need for shelter, safety and inclusiveness (human needs, contextualizing our different individual and collective wants and needs according to gender, age, income and ability).
- Management and use of natural resources (renewables and non-renewables).
- Sustainable energy (residential energy use, renewable energies, community energy schemes) and transportation.

- Sustainable food (agriculture, organic agriculture and permaculture, community supported agriculture, foodshed8, food processing, dietary choices and habits, waste generation).
- Urban ecology and how wildlife is adapting to humanity's settlements.
- Sustainable resilient buildings and spatial planning (building materials, energy saving, planning processes).
- Waste generation and management (prevention, reduction, recycling, reuse).
- Communities and their dynamics (decision-making, governance, planning, conflict resolution, alternative communities, healthy communities, inclusive communities, ecovillages, transition towns).
- Water cycle and restoring ground water through urban design (Green Roofs, rainwater harvesting, daylighting old river beds, sustainable urban drainage).
- Disaster preparedness and resilience, resilience to weather problems and in the future and a culture of prevention and preparedness.



Suggested topics for SDG 12 “Responsible Consumption and Production”

[SDG Academy Library Responsible Consumption and Production](#)

- Advertising, peer-pressure, belonging and identity-creation.
- Production and consumption history, patterns and value chains, and management and use of natural resources (renewables and non-renewables).
- Environmental and social impacts of production and consumption.
- Energy production and consumption (transport, commercial and residential energy use, renewable energies).
- Food production and consumption (agriculture, food processing, dietary choices and habits, waste generation, deforestation, overconsumption of food and hunger).
- Tourism.
- Waste generation and management (prevention, reduction, recycling, reuse).
- Sustainable lifestyles and diverse practices of sustainable production and consumption.
- Labelling systems and certificates for sustainable production and consumption.
- Green economy (cradle-to-cradle, circular economy, green growth, degrowth)



Suggested topics for SDG 13 “Climate Action”

[SDG Academy Library Climate Action](#)

- Greenhouse gases and their emission.
- Energy, agriculture and industry-related greenhouse gas emissions.
- Climate change-related hazards leading to disasters like drought, weather extremes, etc. and their unequal social and economic impact within households, communities and countries and between countries.
- Sea-level rise and its consequences for countries (e.g. small island states)
- Migration and flight related to climate change.
- Prevention, mitigation and adaptation strategies and their connections with disaster response and disaster risk reduction.
- Local, national and global institutions addressing issues of climate change.
- Local, national and global policy strategies to protect the climate.
- Future scenarios (including alternative explanations for the global temperature rise).
- Effects of and impacts on big eco-systems like forests, oceans, glaciers and biodiversity.
- Ethics and climate change.



Suggested topics for SDG 14 “Life below Water”

[SDG Academy Library Life Below Water](#)

- The hydrosphere: The water cycle, cloud formation, water as the great climate regulator.
- Management and use of marine resources (renewables and non-renewables): global commons and overfishing, quotas and how they are negotiated, aquaculture, seaweed, mineral resources.
- Sustainable Marine Energy (renewable energies, wind turbines and their controversy).

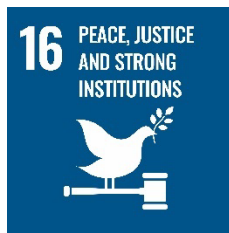
- Marine ecology – the food web, predators and prey, competition, collapse.
- Coral reefs, coasts, mangroves and their ecological importance.
- Sea level rise and countries that will experience total or partial loss of land; climate refugees and what a loss of sovereignty will mean.
- The oceans and international law: international waters, territory disputes, flags of convenience and their related issues.
- Ocean pollutants: plastics, microbeads, sewage, nutrients and chemicals.
- The deep ocean and deep-sea creatures.
- Cultural relationships to the sea – the sea as a source of cultural ecosystem services such as recreation, inspiration and building of cultural identity.



Suggested topics for SDG 15 “Life on Land”

[SDG Academy Library Life on Land](#)

- Ecology: competition, predator-prey, community dynamics, energy flow through food webs, dispersal and ranges. Specific ecosystems – local and global native ecosystems and also human-made ones, e.g. managed forestry plantations.
- Threats to biodiversity: habitat loss, deforestation, fragmentation, invasive species and overexploitation (caused by unsustainable production and consumption practices, unsustainable technologies, etc.).
- The dangers of extinction: Individually endangered species, how extinction is forever, the long time needed to form species, and the six mass extinctions.
- Restoration of wildlife and seeing humans as a healing force.
- Climate change and biodiversity, ecosystems as carbon sinks, disaster risk reduction and ecosystems (ecosystems as a natural barrier to natural hazards).
- Soil and its formation and structure.
- Desertification, deforestation and efforts to combat them.
- The human’s connection with nature – the natural self.
- Ecosystem services (cultural, provisioning, regulatory and supporting).
- Evolution and genetics, genetic resources, ethics.



Suggested topics for SDG 16 “Peace, Justice and Strong Institutions”

[SDG Academy Library Peace Justice and Strong Institutions](#)

- Definitions of justice: retributive and rehabilitative.
- Crime and punishment, comparing laws and punishments across the globe.
- Climate Justice.
- Trade Justice.
- Child labour and exploitation of children.
- Global treaties and agreements related to war, peace and refugees.
- Corruption and how to measure it.
- The illegal weapons trade.
- Drug abuse and its trade.
- The international criminal court and its role.



Suggested topics for SDG 17 “Partnerships for the Goals”

[SDG Academy Library Partnerships for the Goals](#)

- Global partnerships between governments, the private sector and civil society for sustainable development, their shared accountability and possible conflicts between the different actors.
- Local, national and global systems, structures and power dynamics.
- Global governance and policies and the global market and trading system in the light of sustainable development.
- The prisoner’s dilemma and tragedy of the commons as challenges for creating global governance and markets promoting sustainable development.
- Global citizenship and citizens as change agents for sustainable development.
- Cooperation on and access to science, technology and innovation, and knowledge sharing.
- Global distribution of access to the internet.

- Development cooperation, development assistance, and additional financial resources for developing countries from multiple sources.
- Capacity-building to support national plans to implement all the SDGs.
- Measurements of progress on sustainable development.



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