
EDUCATION FOR SUSTAINABLE DEVELOPMENT

TRAINING OF TRAINERS

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Foreword

Sustainable development concerns all of us! It means, satisfying current generation's needs without compromising the needs of the future generations. If we all together realise the ambitions of the Agenda 2030 and its 17 Sustainable Development Goals (SDG), the lives of all will be profoundly improved and our world will be transformed for the better. As one of the 17 goals, Quality Education plays a key role in the realisation of all the other goals. Education for Sustainable Development (ESD) as mentioned in SDG 4.7 particularly enables people to help shape the future in an active and sustainable way. Through a broad range of programmes and projects funded by the German Federal Ministry for Economic Cooperation and Development, Engagement Global supports the efforts in achieving quality education.

In 2013 the international project "Expert Net for Education for Sustainable Development" (ESD Expert Net) published a Training of Trainers (ToT) manual for multipliers. Since then, it has been successfully implemented in all the countries involved. This revised version takes into account various recent and current developments, among others, the growing influence of digitisation on human development and education. The design of the revised ToT aims to motivate multipliers to try out various internationally well-tested methods.

The ESD Expert Net along with Engagement Global has been a key partner in UNESCO's World Action Programme on ESD (2015-19). In November 2019, the UNESCO General Conference passed the follow-up programme titled: "Education for Sustainable Development towards 2030 (ESD for 2030)". The new phase sets the focus on stronger blending with the SDG. The ESD Expert Net is committed and well positioned to contribute to ESD for 2030 at national as well as international levels.

The multi-perceptivity of the network and its members from Mexico, India, South Africa and Germany reflects and represents the holistic as well as the global dimension of ESD across the continents. This unique perspective also flows into this manual, "ESD Training of Trainers".

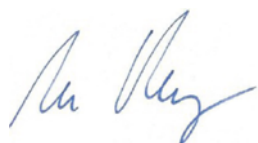
The modules in this manual are structured in a way that enables the trainers to further adjust and adapt the learning journey as per the challenges and framework conditions in different countries involved. Multiple references to the ESD Expert Net product "Teaching the Development Goals" have been made through the length of this manual. "Teaching the Development Goals" establishes a link with all the 17 SDG through case studies from all the countries involved in the Expert Net.

With this revised version, the ESD Expert Net adds on to its contribution to the UNESCO World Action Programme as well as the German National Action Plan on Education for Sustainable Development. As a next step the experienced adaptations in the further implementation of the manual will serve for revised versions under the responsibility of the participating countries of the ESD Expert Net.

I would like to warmly thank all the members of the ESD Expert Net who participated in the development of the Training of Trainers. I am certain that this manual provides educators with a new perspective on their own practice. Many stories of change from all over the world are brought to life through this manual and motivate educators to actively and critically tackle the key questions for our common future.

I hope you enjoy using and reading the manual.

With kindest regards



Anita Reddy

Introduction by the authors

The ESD Expert Net was brought into being in 2010 at the behest of the Federal Ministry for Economic Cooperation and Development, Germany. The goal: To put international dialogue about education for sustainable development on an equal footing and to exchange ideas with important emerging countries about how education can help to solve global problems.

Education for Sustainable Development (ESD) empowers children, adolescents and adults to develop the mind-set they need to bring about a sustainable future and enables them to take the action required. It refers directly to the Agenda 2030 target 4.7. "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development (...)"

On the road to sustainable development, we cannot do without schools. Many countries around the world have taken up the challenge and developed action plans and curricula that lay the foundations for an education system that fosters both the principles and the practice of sustainable development.

What has been missing so far, however, is systematic training for the trainers who will later teach ESD. What facts do they need to know about sustainable development? What competencies do they need to acquire? How can they support schools? How can they help multipliers, like teachers, to design ESD lessons and activities? The ToT course including this manual are presented as a response to those challenges.

This manual is the product of a shared vision and of common approaches, a product of our ESD expert network. We are a team of almost 60 experts from Germany, India, Mexico and South Africa in a global partnership. We come from universities and governmental and non-governmental organisations, thus representing a variety of professional expertise. Our aim is to support educators, multipliers and trainers in creating innovative programmes and materials and in building capacity in ESD. While developing this manual, we learned a lot about how different things may look if you live on the other side of the globe, but we also experienced that at the heart of change for sustainability is the human capacity to learn and to act together and ... to write this manual for you!

This manual has been prepared by the ToT (Training of Trainers) working group of the ESD Expert Net. It provides a thoroughly up-dated version of the first ToT manual of 2013. The 2013 manual can be viewed under

<https://gc21.giz.de/ibt/var/app/wp342P/1827/index.php>

The ToT working group was to up-date the 2013 version of the ToT, mainly in the light of the agenda 2030 and the SDGs, and in addition to up-grade the media part from a unit in the old manual to a module (now module 3). It focuses on school education, including teacher education and partners, actors who support school education as multipliers.

You will find the core body of the manual consisting of four training modules: Module 1 introduces trainers to the concerns of sustainable development. They learn about concepts and competencies of ESD and GCED in Module 2. Module 3 focuses the challenges of sustainable development and ESD through digitisation, whereas Module 4 tackles whole school development for ESD.

Each module consists of several units. Each unit follows the format below.

1. Instructor's guide
2. Thematic overview
3. Literature and Links
4. "Material for learners" This is material is connected to the instructor's guide and can be presented to the learners.

This printed manual does include for every unit the "Instructor's guide", the "Thematic overview" and the "Literature and Links". The "Material for Learners" is made available where possible only. That means that for example films and larger texts are referenced as on-line links. "Material for the instructor" also is available online only. The whole manual can be downloaded from <https://esd-expert.net/files/ESD-Expert/pdf/ESD-ToT-international.pdf>.

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For the ToT working group, Bonn, June 2020


Hannes Siege

What is Education for Sustainable Development (ESD)?

Thomas Hoffmann and Hannes Siege

After the “2030 Agenda for Sustainable Development” with the 17 Sustainable Development Goals (SDGs) have become the global consensus in 2015, their implementation poses the question which role education plays in achieving those goals. Since education obviously covers content of all SDGs and provides for skills and competencies, necessary to deal with the challenges of a sustainable future, a very basic question has to be answered clearly to proceed: What is Education for Sustainable Development?

To understand, what “Education for Sustainable Development” means, it is worth to reflect on the expression from the meaning of its single components. Following this approach, “education” is obviously an instrument or a means to support or strengthen the process of “sustainable development”. This process has obviously an intended aim, which is “Sustainability”. Based on these reflections we can conclude: To get an idea about and understand what “Education for Sustainable Development” means, we first need to understand what “Sustainable Development” means. And this again requires clarity about the term “sustainable” or “sustainability”. Therefore our explanation of what ESD is starts with the question, what sustainable resp. sustainability means.

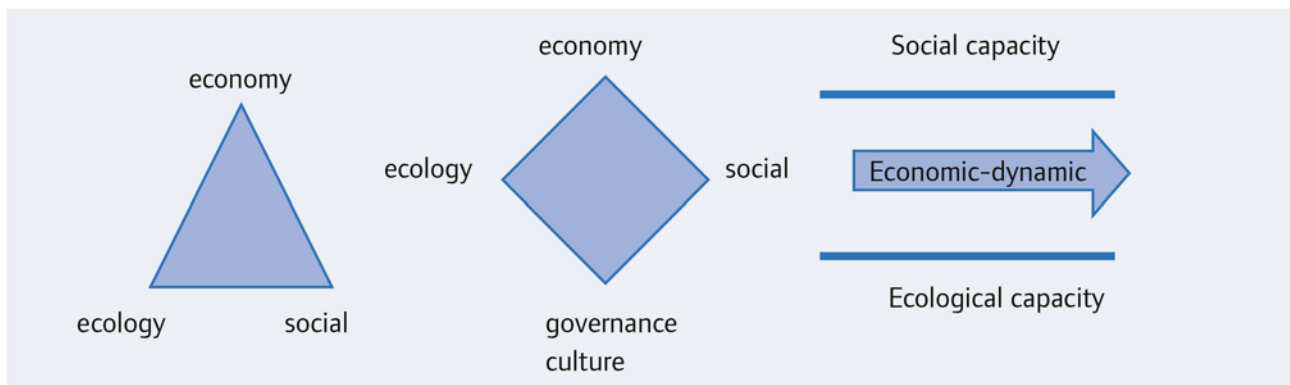
What is “Sustainability”?

In the European context the idea of sustainability came up in the beginning of the 18th century in the context of forestry and mining, when Hans Carl von Carlowitz gained the insight that there will always be enough wood as long as you do not cut more than in the same time will grow. Actually Carlowitz did not use the term sustainability, but sustainable use (in German: “nachhaltende Nutzung”). The extension of this basic idea to all fields of human activities was made much later by the Brundtland-Commission in preparation of “The United Nations Conference on Environment and Development (UNCED)”, the “World Summit”, in Rio de Janeiro in 1992. Though they did not define what their understanding of sustainability as a description of a particular status would mean, they offered a clear definition of what the process of sustainable development should be. This definition is still valid in the sense that the international debate on the Agenda 2030 and the Sustainable Development Goals do not provide a new definition of sustainability or sustainable development, but refer to the UNCED (Rio) definition of the three dimensions of sustainable development. “We are committed to achieving sustainable development in its three dimensions – economic, social and environmental – in a balanced and integrated manner” (UN, General Assembly, 2015, Transforming our world: the 2030 Agenda for Sustainable Development). For the “2030 Agenda” sustainable development is the sum of achieving the 17 SDGs and 169 targets, measured by a set of globally agreed indicators. If these targets are reached, then sustainable development happens and the prospects of sustaining life on the planet are good.

Modelling “Sustainability”

Whereas Carlowitz’s definition of sustainable use of wood is measurable, the different models of sustainability as above do not easily offer a definition of sustainability in a measurable sense. Neither the sustainability triangle nor the quadrangle, which supplements the dimensions “ecology”, “social” and “economy” with the dimension “good governance” or/and “culture” achieves that. Such models rather demonstrate the political will to recognise the developmental needs in particular of the developing world alongside the environmental capacity and thus, if not underpinned by measurable targets and indicators, allow for each and every interpretation. Guided by which interest ever you will find your point of view covered by those models: all dimensions are equal and equivalent and the shape of both forms is interpretable.

Though the guide rail model of sustainability as above shows the subordination of the economic dynamic under the dimensions of social development and ecological capacity, it also does not explain in a measurable sense what sustainability means.



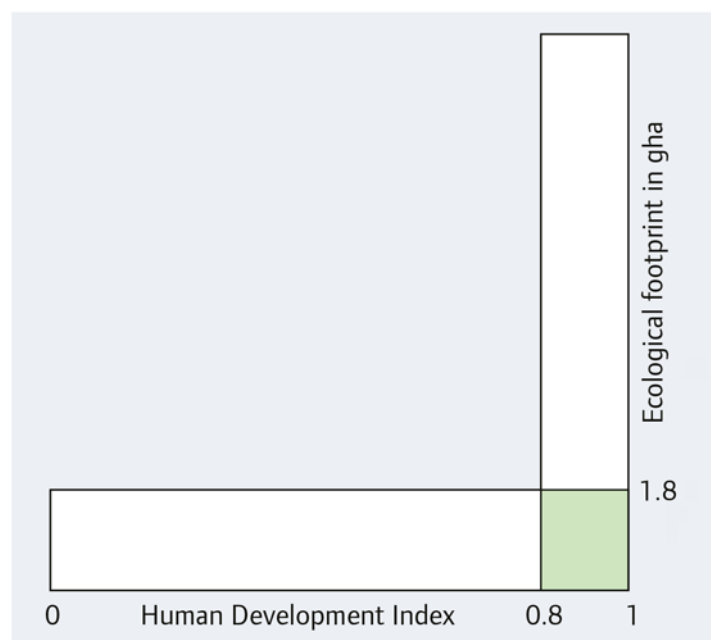
Source: Engagement Global (2018), unpublished

The interplay of two major indicators of sustainability, the human development index (HDI) and the ecological footprint (EF) offers a step towards the wanted definition. According to this model approach sustainability of a society in their respective space is given as soon as the HDI in average is above 0.8, which indicates a high standard of living, and simultaneously the ecological footprint of that social group is in average less than 1,8 global hectare. Based on that we can state:

$$S = \text{HDI} \uparrow 0.8 + \text{EF} \downarrow 1.8 \text{ gh}$$

S = sustainability HDI = human development index EF = ecological footprint

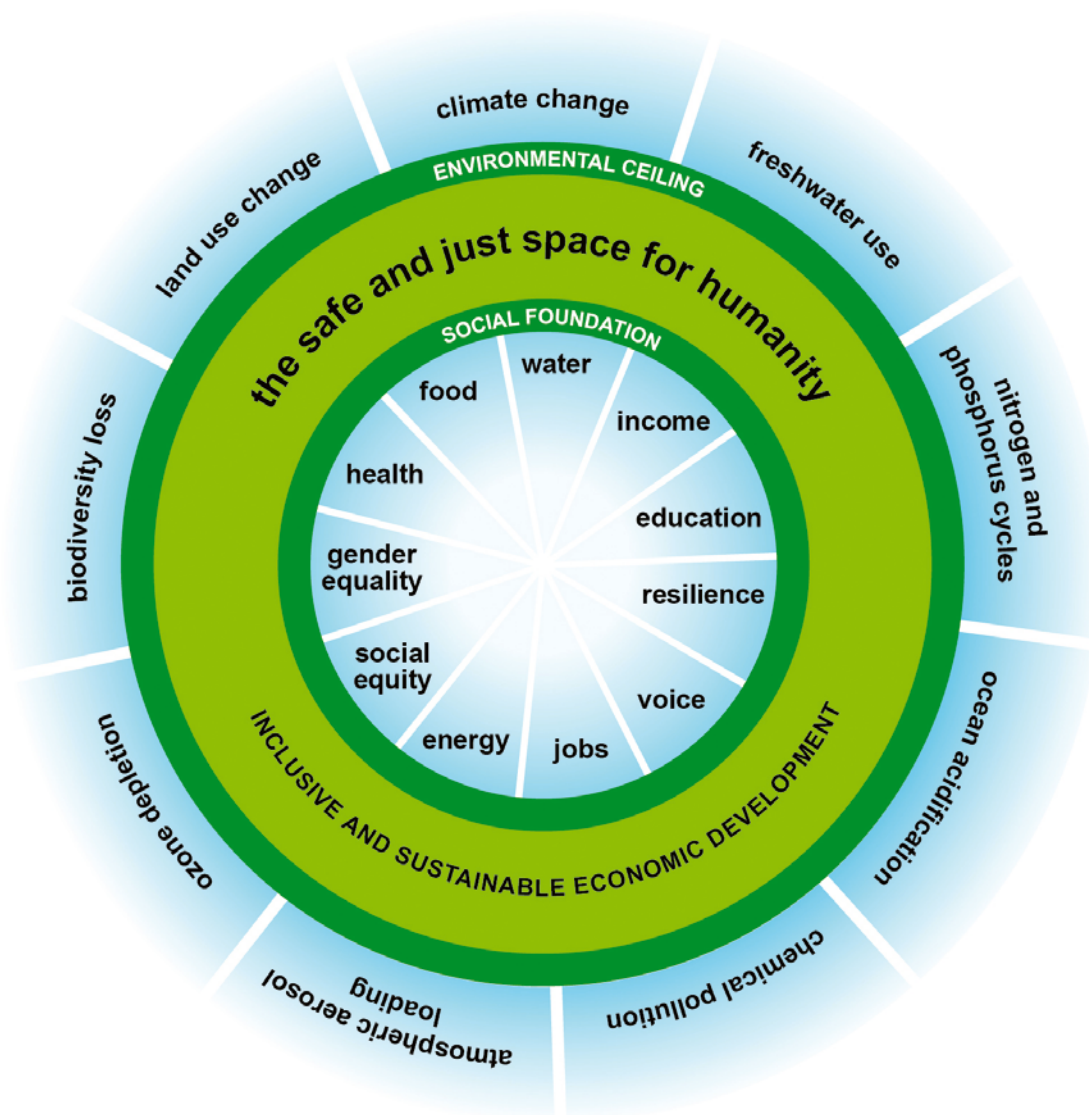
Model of Sustainability



Source: Engagement Global (2018), unpublished

But in view of the fact, that the HDI relevant topics life expectancy, average duration of schooling and average economic performance can counterbalance each other, critics rightly point to the finally again limited validity of this approach to define sustainability. In addition, both indicators measure only aspects of sustainability – as all indicators by definition do – and also the target values of 0.8 and 1.8 are debatable and prone to change over time.

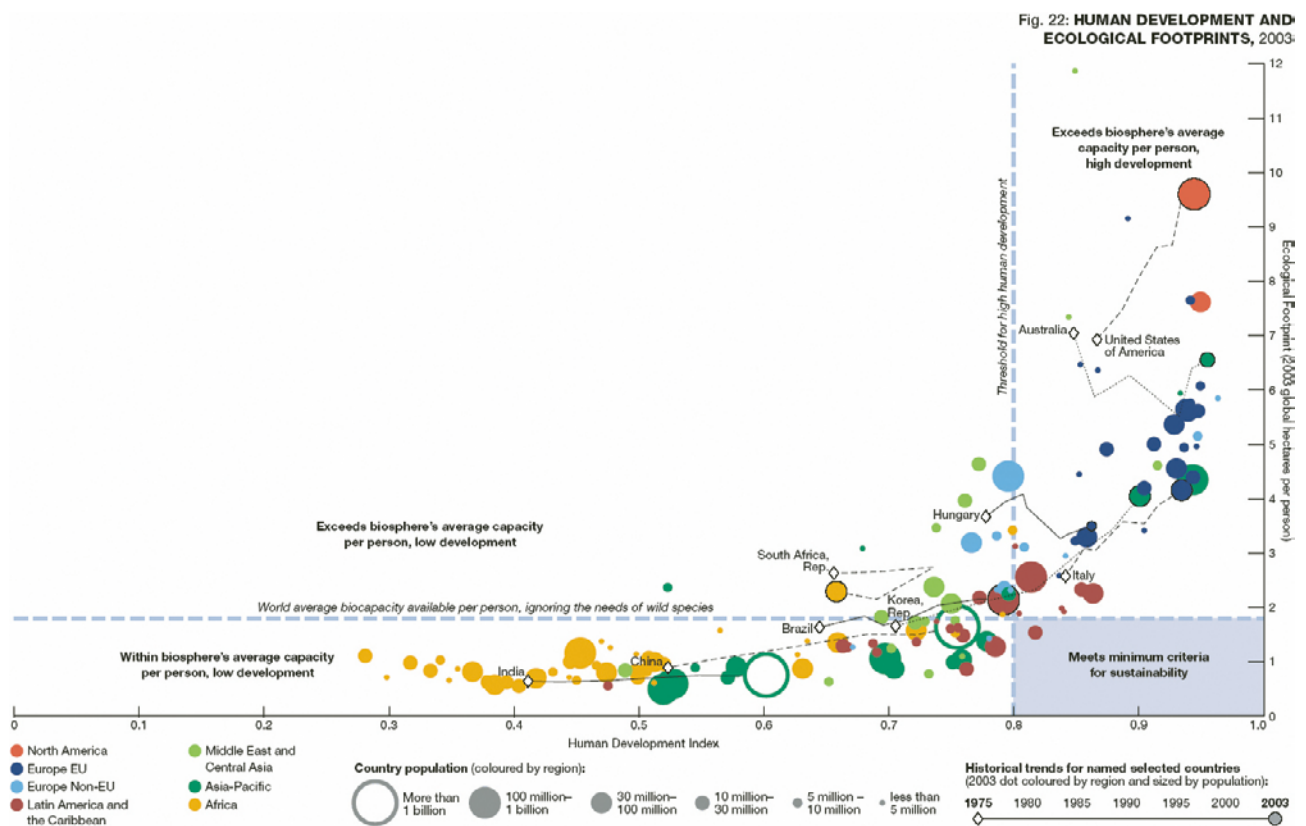
A more complex model of sustainability is the “Oxfam Doughnut”. This model visualises “the safe and just space for humanity” in the sense of sustainability by combining the earth system focused planetary boundary model set up by the Stockholm Resilience Center with 12 socio-economic dimensions like income, education, energy or health just to name a few. The model is open to include the SDGs and their targets, as measured by the global indicator set.



Source: Raworth, Kate (2017): Planetary and social boundaries: a safe and just space for humanity. (accessed at 08 June 2020) <https://oxfamblogs.org/fp2p/can-we-live-inside-the-doughnut-why-the-world-needs-planetary-and-social-boundaries/>

What is “Sustainable Development”?

According to the above mentioned Brundtland Commission and their final document “Our common future” “sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations” (Brundtland-Report, p. 43). This basic contribution to the subsequent global discussion reveals that the term development has often been associated exclusively with economic growth. But based on the above modelling of sustainability, the explanation of what sustainable development means is quite simple: sustainable development describes the process of individuals and/or social groups to achieve sustainability. Or, to use the same metaphor in the context of the interplay of HDI and ecological footprint, sustainable development is the path leading into the green corner of the model – from where ever an individual, social group or whole nation started.

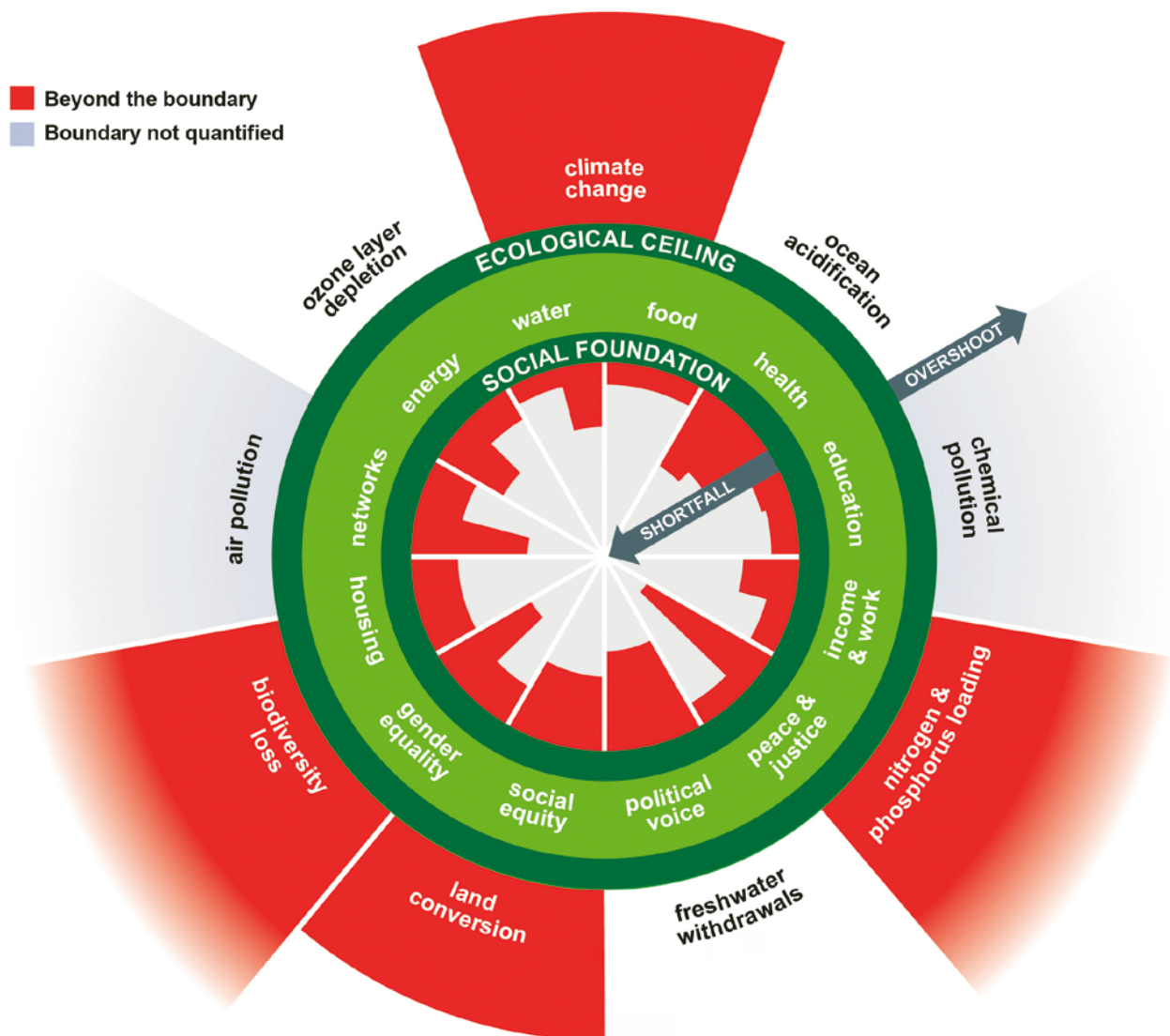


Global Footprint Network (2003): Human Development and Ecological Footprints. [accessed at 08 June 2020]

http://assets.panda.org/img/original/fig22_human_dev_and_eco_footprints.gif

That means, that sustainable development for most of the African and Asian countries first of all means the increase and improvement of their HDI by simultaneously keeping a low ecological footprint, while for the majority of the “Western World” sustainable development means the decrease of their ecological footprint and simultaneously keeping their high standard of living measured as HDI. For a third group of nations – mainly emerging countries – sustainable development means a more or less parallel increase of their HDI and simultaneously a decrease of their ecological footprint.

And accordingly in the more comprehensive model of the “Oxfam Doughnut” sustainable development means reaching “the safe and just space for humanity” by decreasing the negative impact on those relevant factors which ensure the resilience of the earth system and simultaneously decrease the “short falls of the life’s basics” of human societies all over the world.



Source: Raworth, Kate (2017): Doughnut Economics. Seven Ways to Think Like a 21st Century Economist. P. 51, London.

What is “Education for Sustainable Development”?

Picking up the initial thought, that education is an instrument to support the sustainable development process, we can generally state, that ESD covers all kinds of educational concepts, steps and processes, which are suitable to foster the individual and/or collective contribution towards sustainable development. And using the same metaphor, ESD supports the specific way into the green corner of the HDI and footprint model, or supports pathways to achieve the just and safe space for humanity of the “Doughnut”.

ESD generally focusses on the development and strengthening of individual competencies, enabling the individual to contribute to and participate in sustainable development processes of various kinds and dimensions. From that definition it is obvious that all types of competencies and skills including basic competencies such as reading, writing, numeracy are included. Higher level competencies such as creativity, solution oriented thinking and actionability are fundamental for ESD, since without them it would not be possible to find ways, concepts, techniques, which make us succeed to reach the space of sustainability. After more than two decades of intense discussions on this issue, it seems that an international consensus could be reached with the following set of eight competencies published by UNESCO in 2017:

“Systems thinking competency: the abilities to recognise and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.

Anticipatory competency: the abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one’s own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.

Normative competency: the abilities to understand and reflect on the norms and values that underlie one’s actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.

Strategic competency: the abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.

Collaboration competency: the abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.

Critical thinking competency: the ability to question norms, practices and opinions; to reflect on own one’s values, perceptions and actions; and to take a position in the sustainability discourse.

Self-awareness competency: the ability to reflect on one’s own role in the local community and (global) society; to continually evaluate and further motivate one’s actions; and to deal with one’s feelings and desires.

Integrated problem-solving competency: the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the abovementioned competences.

UNESCO: Education for Sustainable Development Goals Learning Objectives. Paris 2017, p. 10

[The competency approach is explained with more detail in unit 2.3.]

Like the basic competencies reading, writing, numeracy most of these competencies are necessary prerequisites for learners to find sustainable solutions, but are not sufficient to achieve them. For that one needs to learn about sustainability and sustainable development as content or topics.

Referring to the above models of sustainability, it becomes evident that the range of content reaches from economic via social to ecological aspects, which are usually interconnected, often interdependent. The “Curriculum Framework ESD” listed the impressive total of 21 thematic areas such as diversity of values, cultures and living conditions, globalisation of religious and ethical guiding principles, food and agriculture, health, education, protection and use of natural resources and generation of energy, global environmental change, poverty and social security or global governance just to mention a few.

However, in the education process, specifically in school education, ESD cannot prescribe specific solutions to sustainability problems or promote certain actions. Instead it is directed towards promoting self-determined decision making of learners on the base of human rights and democratic constitutions.

Against this background UNECE defines: "Education for Sustainable Development (ESD) promotes sustainable thinking and acting. It enables children and adults to make decisions and at the same time understand how those decisions affect future generations and the life of others."

To come back to the recent process of realising the "2030 Agenda" and especially SDG 4, which asks for "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all", it is essential to refer to the detailed prescription of the targets and indicators, especially of SDG 4.7 which reads: "by 2030 ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development." The global indicator calls for ESD and GCED to be mainstreamed in curricula, teacher education, assessment and education policy.

According to the "Global Monitoring Report" 2016 (UNESCO) the global indicator reflects the fact that the international community has recognised the importance of monitoring the content of education, which means that teaching about sustainability is at the heart of ESD.

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https://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf

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Notes

Getting out of confusion of E-, S- and D-competencies

Sanskriti Menon & Thomas Hoffmann

Two teacher trainers are standing on the veranda of a university compound when you pass by and overhear their conversation: 'I am glad that the idea of Environmental Education has been widened and now we talk about Education for Sustainable Development', one says. The other responds, 'I do not agree with you, because we had a clear understanding of Environmental Education-competencies to be developed and now we start getting lost in a range of Sustainable Development-competencies. I think that learners will only acquire them if their teachers possess solid competencies in Education for Sustainable Development.' Do you find such discussions confusing?

With this short article we would like to present definitions of the main competencies models used in the context of sustainability and education to supply some clarity for teachers.

- What are competencies?
- What are Environmental Education (EE)-competencies?
- What are Sustainable Development (SD)-competencies?
- What are Education for Sustainable Development (SD)-competencies?
- How do I reach competencies?

What are competencies in formal school education?

The discussion about competencies is a discussion about the aims of education. Is the aim of education only to transfer information? That would mean that teachers confront learners with a collection of facts, which are more or less interlinked and form the individual basis of understanding. Or should education lead to the empowerment of individuals to cope with current as well as future challenges that life offers, putting them into situations in which they have to act and find solutions to the given problems much more on their own. These thoughts bring up the question: What is the role of schools in a society?

Schools have the task to help each generation acquire a basic knowledge and understanding of their present time and contemporary life based on our collective history and traditions, our values and cultures. Similarly, we have to agree that education and school have to prepare each generation for their own future. That means that our perspective as teachers has to be threefold: related to the past, present and future. We cannot ignore even one of these time dimensions! We should not limit our efforts to educate about the past or for the present, but should integrate expected and prognosticated developments related to the future. While being aware that present and future are never static, but in permanent change, we have to analyse and understand our presence to be able to teach in the right way.

Our present times are dominated by two big processes: First, environmental degradation that intensified since the beginning of industrialisation. Secondly, globalisation has further exacerbated this in terms of time and level of exploitation. While the first endangers our living conditions, the latter in its current form very rapidly changes our economic and social lives to the benefit of some and the disadvantage of many. If school has to prepare students for their future lives, we have to accept that we cannot do so by perpetuating existing schooling practices that have not led to the kind of changes necessary to conserve the resource base required for future wellbeing.

Therefore, education should lead to the empowerment of individuals to cope with the current as well as future challenges that life offers, placing students in situations in which they have to act and find solutions to the given problems much more on their own.

The latter implies that education is far more than a certain amount of facts and linkages – it is the ability to act on the base of knowledge. This requires a fundamental change in teaching methods. Schooling has to change to coaching, and learners need to be given tasks or opportunities to explore their own spaces of experience, making them use learning methods that strengthen their autonomy as well as their self-confidence.

Joseph Leisen, a German physics didact, puts it in a very short formula-like definition, saying 'competence means acting with the use of knowledge'. That means that the educational concept of competencies is not suggesting that students be taught fewer facts, but suggesting that students learn how to use facts in making decisions about their actions. The learners are not only asked to repeat facts and aspects they have learned by heart, but are challenged to apply their knowledge in given situations.

Next, we question the adequacy of Leisen's statement that competencies mean 'acting with the use of knowledge' and suggest adding the words 'and values'. If we restrict our understanding of competencies to the use of knowledge, we disregard that education is and has always been connected to cultural as well as time-specific values.

According to the global challenges mankind faces and according to the concept(s) of Education for Sustainable Development, the values to be considered are therefore connected with the principles of sustainability: global as well as local social responsibility, respect towards nature, reducing disparities in living standards, peace, respect for diversity. Considering this, we could state: Competence is the ability to apply knowledge guided by values, including the readiness of the individual.

What are EE-competencies?

Environmental Education (EE) gained international recognition in 1972, when the United Nation Conference on the Human Environment in Stockholm, Sweden highlighted Environmental Education as the means to address environmental issues worldwide.

The recommendations from the first Intergovernmental Conference on Environmental Education, in Tbilisi, Georgia (in the then USSR), organised by UNESCO in partnership with UNEP in 1977, highlight the important role of EE in the preservation and improvement of the world's environment, as well as in the sound and balanced development of the world's communities. Subsequent conferences on EE by UNESCO and UNEP have helped evolve an international strategy for 'action in EE and training' (in Moscow in 1987) and highlighted the role of education and public awareness for achieving sustainability (in Thessaloniki, Greece in 1997).

According to UNESCO, 'ESD has its roots in EE. The founding documents are the Tbilisi Declaration (for EE) and, for ESD, Chapter 36 of Agenda 21, on education, public awareness and training. ESD is intended to build on the lessons of EE, not simply perpetuate EE under another name.'

The Tbilisi Declaration provides a general set of goals, objectives and principles for environmental education. The objectives refer to enhancing the students' awareness of and sensitivity to the complete environment and its connected problems, and helping them develop attitudes, values and feelings of concern for the environment, helping students acquire the skills for identifying, investigating and solving environmental problems. Further, they refer to participation and active involvement at all levels in working toward the resolution of environmental problems.

The North American Association for Environmental Education (NAAEE) has recently developed a Framework for Assessing Environmental Literacy. This puts forth seven competencies for learners, including the ability to identify, analyse and investigate environmental issues, evaluate and make personal judgments about environmental issues, use evidence and experience to defend positions and resolve issues, and finally to create and evaluate plans to resolve environmental issues.

The following table shows the UNESCO teacher competences on EE on the one and the NAAEE competencies on environmental literacy on the other side, documenting the development of the discussion within the EE-process as well as the necessity to consider both levels of competencies: the learners' as well as the teachers' ones.

Table 1: UNESCO teacher competencies on EE and NAAEE competencies on environmental literacy

UNESCO (1996) Learning for a sustainable environment - A competency-based framework for teacher education in environmental education	NAAEE (2011) Developing a framework for assessing environmental literacy
An effective environmental educator is characterised by: 1. an appreciation of the urgency of introducing environmental education into the curriculum; 2. an awareness of historical development of environmental education; 3. an awareness of environmental education as a cross-curricular theme; 4. an understanding of the philosophy, characteristics and goals of contemporary environmental education; 5. an understanding of the differences between environmental education and environmental studies; 6. an understanding of and commitment to the three- fold approach of education in, about and for the environmental education; 7. the ability to adapt and develop the competencies in: • knowledge and understanding of environmental issues and problems, • critical thinking abilities, • environmental values and attitudes, • environmental action outlined above; 8. the ability to establish the relevance of their subject specialisations to environmental education and how subject teaching can be enriched through developing this link; 9. the ability to develop values clarification and integration with students; 10. the ability to plan, deliver and assess issue-based learning; 11. the ability to introduce a variety of environmental dimensions (e.g. social, economic, political, historical, cultural, aesthetic, physical and biological) and environmental perspectives (e.g. women and indigenous peoples) in the curriculum; 12. the ability to discuss environmental fears and feelings with students; 13. the ability to introduce and assess the action- oriented component of environmental education; 14. the ability to employ a variety of teaching and learning styles to achieve environmental education goals, including individual to whole class learning; active to passive learning; co-operative to competitive learning; disciplinary to interdisciplinary learning; and include activities such as games and simulations, fieldwork, issue investigations, case- studies and action research activities; 15. the ability to develop environmental education in outdoor settings; 16. an awareness of the contributions of the hidden curriculum in achieving environmental education goals; 17. the ability to critically evaluate environmental education teaching and learning through the use of a variety of assessment approaches; 18. the ability to carry out an environmental audit 19. an awareness of a variety of child development and learning theories and the ability to use these theories in selecting, developing and implementing strategies to achieve environmental education goals; 20. the ability to utilise appropriate theories of moral reasoning in selecting, developing and implementing environmental education strategies to achieve environmental education goals.	Competencies are clusters of skills and abilities that may be called upon and expressed for a specific purpose. These include the capacity to: 1. identify environmental issues – including the ability to describe and provide evidence for the dimensions of the issue, human disagreements central to it, and factors that cause or contribute to it; 2. ask relevant questions – about environmental problems as well as human dimensions and historical or geographical features of an issue. This also includes the ability to ask higher-order questions aimed at discovering conditions that have implications for the issue; 3. analyse environmental issues – the interpretation and use of knowledge regarding physical, ecological and socio-political systems, and of information about stakeholders, their positions, beliefs and value perspectives. Also, this includes the ability to determine relevant factors and to discern interactions among those factors, and to predict likely consequences of issues; 4. investigate environmental issues – by gathering new information about an issue as well as locating and using relevant sources of additional information, synthesising, and communicating the outcomes of the investigation. 5. evaluate and make personal judgments about environmental issues – constructing dispassionate evaluations and explanations based on available information and the beliefs and values of stakeholders, and articulating views about actions that may be warranted. Critical thinking is at the core of this competency; 6. use evidence and experience to defend positions and resolve issues – constructing and defending a sound evidence- based argument about what it will take to resolve or help resolve an issue; 7. create and evaluate plans to resolve environmental issues – by assuming the responsibility for acting, frequently with others, and engaging in planning based on the environmental conditions, available resources, and socio-political contexts to resolve or help resolve issues.

What are SD-competencies?

In order to face the global challenges, which endanger humanity and to arrive at sustainable lifestyles, efforts are needed at the personal as well as collective and global levels. What exactly should individuals be capable of in order to progress towards a sustainable life?

Competencies are needed to observe, evaluate, decide and act in a sustainable manner. Different concepts have emerged from the international discussions, describing which competencies should be developed; some are very concrete, some are more general or even abstract. The following table lists ideas from six sources.

While the OECD DeSeCo Study suggests the 'use of tools', 'interacting in heterogeneous groups' and 'autonomous acting' as the key competencies, de Haan's concept of 'shaping competence' ('Gestaltungskompetenz') lists twelve types of competencies involving interdisciplinarity, cosmopolitan perception, empathy and more.

In contrast, the Core Curriculum Framework is much more concrete, as it focuses on human development, and under the domains 'Recognition', 'Evaluation' and 'Action', eleven core competencies are listed which are recognised as necessary in the context of development issues. Finally, Marco Rieckmann has tried to represent the consensus of different European and Latin American national discussions on the competences to be developed to be able to contribute to and realise sustainable lifestyles collectively as well as individually.

The ideas of SD competencies can provide a starting point for the teacher to think about what they would like to see their students become capable of.

Table 2: Concepts of competencies

OECD (2005) DeSeCo: Definition and Selection of Key Competencies	Global competency (BLK21/Transfer21/ de Haan)	Curriculum framework (2016)
Interactive use of media and resources (tools) • Ability to interactively use language, symbols and text • Ability to interactively use knowledge and information • Ability to interactively apply technologies Interacting in heterogeneous groups • The ability to maintain good and sustainable relationships with other people • Cooperativeness • Ability to cope with and resolve conflicts Independent action • Ability to act in the larger context • The ability to design and implement life plans and personal projects • Exercise of rights, interests, limits and requirements	• Being open to the world and able to build up knowledge by integrating new perspectives • Being able to analyse and assess developments with foresight • Being able to draw interdisciplinary insights and take action • Being able to identify and weigh up risks, dangers and uncertainties • Being able to plan and act together with others • Being able to consider conflicting objectives when reflecting on action strategies • Being able to participate in collective decision-making processes • Being able to motivate oneself and others to take action • Being able to reflect on one's own and others' mission statements • Being able to use ideas of justice as a basis for decision-making and action • Being able to plan and act independently • Being able to show empathy for others	Recognition 1. Acquiring and processing information ... Acquiring and processing subject-related information on globalisation and development issues. 2. Recognising diversity ... recognising the socio-cultural and natural diversity of the One World. 3. Analysis of global change ... analysing globalisation and development processes in subject-related terms using the model of sustainable development. 4. Differentiation of social levels of action ... recognising social levels of action from the individual to the world level in their respective functions for development processes. Assessing 5. Change of perspective and empathy ... to become aware of, appreciate and reflect on one's own and others' value orientations in their significance for shaping one's life. 6. Critical reflection and taking a stand ... taking a stand on globalisation and development issues through critical reflection and orienting oneself towards international consensus building, the guiding principle of sustainable development and human rights. 7. Assessment of development measures ... developing approaches for the assessment of development measures taking into account different interests and conditions and arriving at independent assessments. Acting 8. Solidarity and co-responsibility ... identifying areas of personal shared responsibility for people and the environment and taking them on as a challenge. 9. Understanding and conflict resolution ... overcoming socio-cultural and interest-determined barriers in communication and cooperation as well as in conflict resolution. 10. The ability to act in the face of global change ... assuring society's ability to act in the face of global change, especially in the personal and professional spheres, through openness and willingness to innovate, as well as through an appropriate reduction of complexity, and enduring the uncertainty of open situations. 11. Participation and co-creation The pupils are able and willing, on the basis of their responsible decision, to pursue goals of sustainable development in the private, academic and professional spheres and to participate in implementing them at the social and political levels.
http://www.oecd.org/education/skills-beyond-school/definitionand-selectionofcompetenciesdeseco.htm Source: Thoma Hoffmann, 2013	Programm Transfer-21 – Bildung für eine nachhaltige Entwicklung/ Haan, Gerhard de: Bildung für nachhaltige Entwicklung – Hinter-gründe, Legitimationen und (neue) Kompetenzen. Berlin 2009, p. 21	BMZ and KMK (Ed.): Orientierungsrahmen für den Lernbereich globale Entwicklung. Bonn 2016

Consensus approach (Rieckmann 2011)	Key competencies (Wiek 2011)	UNESCO: Key competencies (2017)
• Competency in tolerating ambiguity and frustration • Assessment competency • Competency in empathy and changing perspective • Competency to act in a fair and environmentally friendly manner • Competency in interdisciplinary work • Competency in communication and media use • Competency in critical thinking • Participation competency • Competency in planning and implementing innovative projects and plans • Competency in networked thinking and dealing with complexity • Competency in thinking ahead • Competency in cooperation in (heterogeneous) groups	• Systemic competency • Competency in thinking ahead • Normative competency • Strategic competency • Interpersonal competency	• Competency in critical thinking • Systemic competency • Competency in thinking ahead • Normative competency • Integrative, problem-solving competency • Strategic competency • Collaborative competency • Competency in self-perception
Rieckmann; Marco: Schlüsselkompetenzen für globales Denken und Handeln in der Weltgesellschaft. Berlin 2011	Wiek, Armin, Lauren Withycombe and Charles L. Redman: Key competencies in sustainability: a reference framework for academic program development. In: Sustain Sci, May 2011	UNESCO: Education for sustainable Development Goals. Paris 2017, p. 10

What are ESD-competencies?

To progress towards a more sustainable human condition, efforts and changes are needed in all parts of societies, and also in schools. In this context Education for Sustainable Development is to be understood as the pedagogic answer to the global challenges and as part of the collective efforts towards a (more) sustainable world.

The described SD-Competences (of learners) must not be confused with the ability (of teachers) to create, design and realise lessons in the sense of education for sustainability. This specified ability is to be understood as ESD-competence. ESD-competencies are what a teacher must have to create a learning arrangement in which students are enabled to develop their individual SD-competencies. The ideas developed by the UNECE working group will be chosen to explain the ESD-competence approach (see table 3).

According to this model, teachers have to be ready for 'learning to know', 'learning to do', 'learning to live together' and 'learning to be'. Under these categories of individual development, combined with the concepts of a holistic approach, envisioning change and achieving transformation, the teacher is described in detail as a person with manifold abilities and competencies, which allow him or her to create learning situations in which students develop their SD-competencies. To succeed as a teacher in the field of education for sustainable development, a teacher not only has to be able to create appropriate lessons, but must also be convincing and should develop his or her individual SD-competencies.

How do I develop competencies?

'Competences can't be taught, they have to be developed' is one of the central and crucial findings in the discussion about competencies.

One has to recognise the immediate consequences on the arrangement of single lessons in particular as well as on the school in general. Especially the use of self-organising learning methods have to be decided carefully, verifying which method would strengthen the autonomy and self-confidence of the learner most without overburdening him or her. If we want to educate young people to act in an autonomous and responsible manner, then we also have to make them act in this manner in school and not keep them as dependent learners. Therefore, we as teachers or trainers have to create learning arrangements which are appropriate for learners to develop all those competences needed for sustainable development. From a methodological point of view, this means that we should arrange our lessons in a way that encourages the learners to act and take responsibility for the space they are in, socially as well as institutionally. For example, it is better to make learners responsible for parts of the water supply of a school, than to explain the necessity to do so in a theoretical approach. This approach calls for a review of the institution of schools. In this sense, schools should rather become a place for experiencing sustainability than a place of restricted learning.

Experiences show that the more able students cope easily with such methods and clearly benefit, while the less able students may understand less and even get worse results compared to more conservative forms of teaching. Therefore, it is necessary to coach and support them carefully.

In the same way, teachers must also develop their own ESD-competencies. Learners may not understand when the teaching approach is changed. Teachers should reflect on their own methods and be prepared to change methods that do not work. Teachers also must be aware that they may have to rectify incorrect things that students learned in their 'unsuccessful' teaching attempts.

Table 3: Competencies for educators in education for sustainable development (Source: UNECE, 2011)

	Holistic approach Integrative thinking and practice	Envisioning change Past, present and future	Achieving transformation People, pedagogy and education systems
Learning to know The educator understands	- the basics of systemic thinking; - ways in which natural, social and economic systems function and how they may be inter-related; - the interdependent nature of relationships within the present generation and between generations, as well as those between rich and poor and between humans and nature; - their personal world view and cultural assumptions and seeks to understand those of others; - the connection between sustainable futures and the way we think, live and work; - their own thinking and action in relation to sustainable development.	- the root causes of unsustainable development; - that sustainable development is an evolving concept; - the urgent need for change from unsustainable practices towards advancing quality of life, equity, solidarity, and environmental sustainability; - the importance of problem-setting, critical reflection, visioning and creative thinking in planning the future and effecting change; - the importance of being prepared for the unforeseen and a precautionary approach; - the importance of scientific evidence in supporting sustainable development.	- why there is a need to transform the education systems that support learning; - why there is a need to transform the way we educate/learn; - why it is important to prepare learners to meet new challenges; - the importance of building on the experience of learners as a basis for transformation; - how engagement in real-world issues enhances learning outcomes and helps learners to make a difference in practice.
Learning to do The educator is able to	- create opportunities for sharing ideas and experiences from different disciplines/places/cultures/generations without prejudice and preconceptions; - work with different perspectives on dilemmas, issues, tensions and conflicts; - connect the learner to their local and global spheres of influence.	- critically assess processes of change in society and envision sustainable futures; - communicate a sense of urgency for change and inspire hope; - facilitate the evaluation of potential consequences of different decisions and actions; - use the natural, social and built environment, including their own institution, as a context and source of learning.	- facilitate participatory and learner-centred education that develops critical thinking and active citizenship; - assess learning outcomes in terms of changes and achievements in relation to sustainable development.
Learning to live together The educator works with others in ways that	actively engage different groups across generations, cultures, places and disciplines.	- facilitate the emergence of new worldviews that address sustainable development; - encourage negotiation of alternative futures.	- challenge unsustainable practices across educational systems, including at the institutional level; - help learners clarify their own and others world views through dialogue, and recognise that alternative frameworks exist.
Learning to be The educator is someone who	is inclusive of different disciplines, cultures and perspectives, including indigenous knowledge and world views.	- is motivated to make a positive contribution to other people and their social and natural environment, locally and globally; - is willing to take considered action even in situations of uncertainty.	- is willing to challenge assumptions underlying unsustainable practice; - is a facilitator and participant in the learning process; - is a critically reflective practitioner; - inspires creativity and innovation; - engages with learners in ways that build positive relationships.

Module 1

Living and Learning in a Complex World

Unit 1.1

Risks and Challenges

Instructor's Guide

Unit 1.1 provides an overview of the major global issues and scientific perceptions relevant for our lives on Earth now and in the future.

In particular, the unit focuses on

- the concepts people have of human development,
- the challenges and risks we face living on Earth today,
- the conceptualisation of a “safe and just space for humanity” (see Raworth (2012, 2017) and Rockström/Steffen et al.).

The objectives of the unit are to

1. provide a basic understanding of the challenges people face on Earth,
2. initiate a reflection on the concept of a safe and just space for humanity,
3. train abilities for envisioning societal changes towards sustainability.

Participants will be able

- think systemically about linkages of environmental and socio-economic boundaries for a safe and just space for humanity.

Approach, Methods and Activities

The unit takes a participatory approach and wants to draw a connection to the participants' experiences. Learners are encouraged to ask questions, analyse, think critically and come to conclusions, also in collaboration with others.

It is proposed to address objectives 1 and 2 consecutively. Objective 3 is overarching.

Activity 1.1.1: More than Ecological Doomsday Scenarios

Discussing current and future human life on Earth involves the danger of only providing doomsday scenarios. Thus, it is important to realise that risks can also be seen as challenges and that considerable progress has been made with regards to improving human life on Earth (see also Gapminder test below).

1. Start with brainstorming on a guiding question by collecting personal experiences, knowledge, beliefs, feelings and values from different individual and cultural backgrounds and generations, such as:
 - How do you/we want to live – and which challenges do we face today?
 - What kind of development do we want?

The learners can also take the Gapminder-test if desired: <http://forms.gapminder.org/s3/test-2018>

Broaden the learners' perspectives, by discussing challenges, experiences and positive examples of change implemented in different countries (e.g. India, Mexico, South Africa and Germany), focusing on positive action-centred (learning) processes (see also: Teaching the Sustainable Development Goals: <https://esd-expert.net/lehr-und-lernmaterialien.html>).

Activity 1.1.2: A Safe and Just Space for Humanity

1. Introduce the concept of the “Safe and Just Space for Humanity”.
2. Let the learners read Learning Material 1.1.1 and lead them through the material by using guiding questions, such as:
 - What are the main risk factors in your environment? (see Figure 2, Learning Material 1.1.1)
3. Show the film “Can we have green equality?” (see Learning Material 1.1.2: <https://www.youtube.com/watch?v=9U1COenXMfl>)
4. Discuss: How does the doughnut model (see Figure 1, Learning Material 1.1.1) target conflicts between ecological boundaries and just development mediated in the model?

Duration: 2 hours

Thematic Overview

Risks and Challenges

When the Millennium Development Goals were formulated in the year 2000, they provided measurable indicators of progress towards a better and more sustainable life on Earth. The MDGs comprise eight goals that all 191 UN member states at that time had agreed on trying to achieve by the year 2015. The eight Millennium Development Goals are:

- to eradicate extreme poverty and hunger,
- to achieve universal primary education,
- to promote gender equality and empower women,
- to reduce child mortality,
- to improve maternal health,
- to combat HIV/AIDS, malaria and other diseases,
- to ensure environmental sustainability,
- to develop a global partnership for development.

“The final MDG report confirms that goal-setting can lift millions of people out of poverty, empower women and girls, improve health and well-being, and provide vast new opportunities for better lives.”

(see <http://www.undp.org/content/undp/en/home/librarypage/mdg/the-millennium-development-goals-report-2015.html>)

The MDGs and their success laid the groundwork for the political will to come up with the Agenda 2030 and the Sustainable Development Goals (SDGs) in 2015. The MDGs also showed that there already were thousands of success stories about people moving towards a better and more sustainable life. The ESD Expert Net has collected some of these success stories and arranged them, so that they can be used for educational purposes

(see <http://www.esd-expert.net/lehr-und-lernmaterialien.html>).

Although we still live in a world of change – complexity, uncertainty, social injustice, global challenges and risks endanger the well-being of present and future generations –, the success of the MDGs shows that our efforts are not fruitless

(see <https://www.gapminder.org/>).

However, the progress made, as measured by most of the MDGs' indicators, shows exceptions. Environmental sustainability, for example, shows critical data, when measured by the development of biodiversity or the CO₂ emission. We know that human actions change the climate in unpredictable ways and that the degradation of the environment is one of humanity's biggest challenges.

The MDGs' progress is not without its fall backs, although overall trends are positive. Poverty, hunger and inequality still prevail in many regions of the world. Armed conflicts and wars deprive millions of a life in safety.

In reaction to these deprivations new social movements emerge in different parts of the world and express the discontent of many people with the negative effects of globalisation, which these people criticise to be unjust.

A Safe and Just Space for Humanity

Scientific research on the functioning of the Earth system underlines the urgent need for change and transformation.

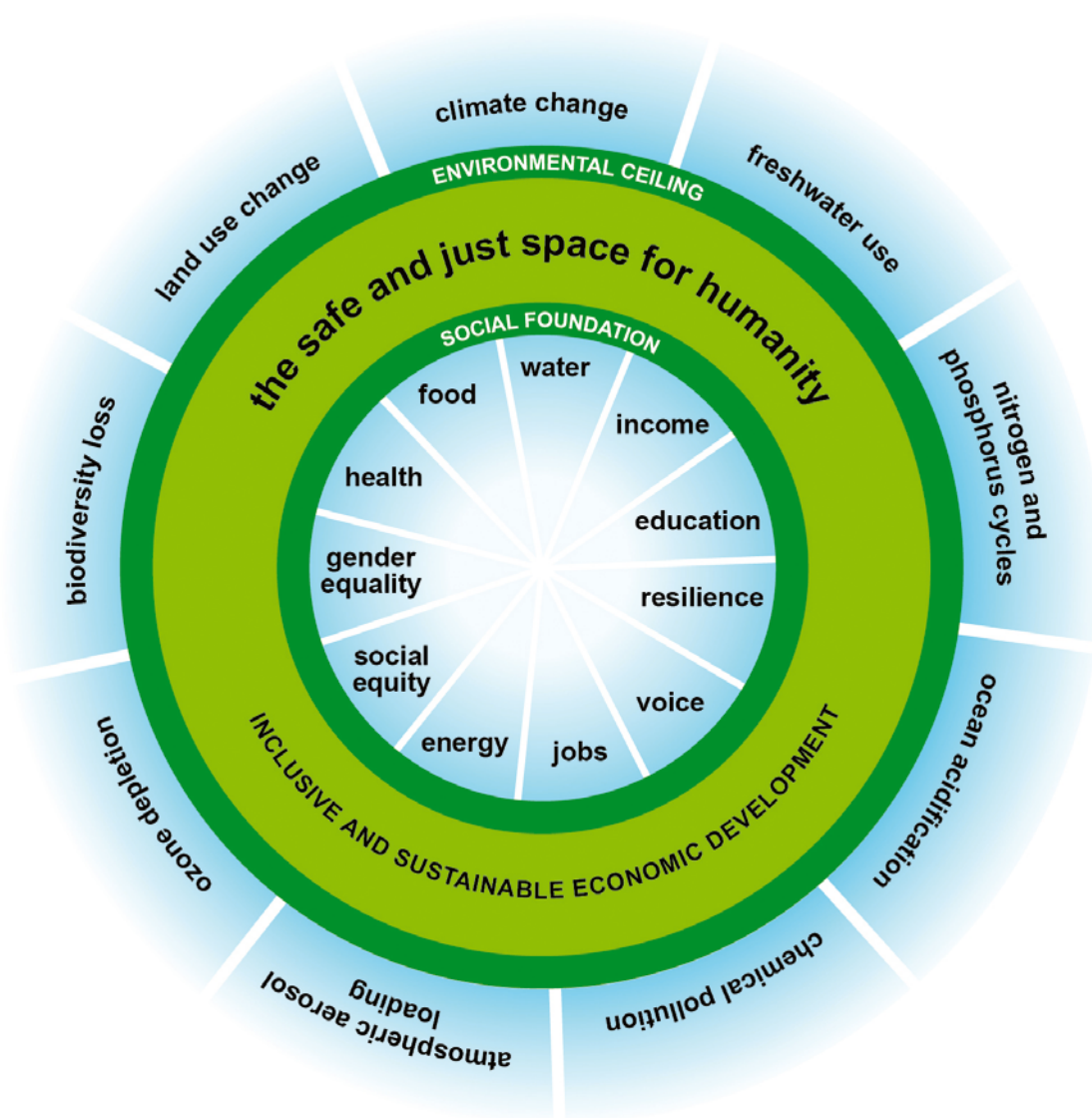
The current global environmental change is to some extent the result of human activities and is therefore called the Anthropocene (see Material for instructor, Box 1). Accelerating from the mid-1950s, the wide-ranging impacts of human activities – including climate change, air pollution, land and water degradation, chemical pollution, nutrient overload, loss of species and habitats – have put crucial ecosystems under stress. The planetary boundaries concept reveals that our Earth system is defined by major environmental factors and processes, the existence and proper function of which

are necessary for the ecological stability of the Earth and the provision of its ecosystem services.

An environmental ceiling of resource use is needed, above which lies unacceptable environmental degradation. In addition, a socio-economic foundation of resource use is needed, below which lie unacceptable human deprivations. Rockström and Klum explain the link between well-being and the environment: “If we’re serious about social and economic development for everyone, it must be founded on principles that are not only safe but also include a fair and just sharing of Earth’s remaining ecological space among all citizens today and in the future. This is a massive, and so far heavily underestimated, collision between meeting peoples’ needs and desire for affluence on the one hand, and securing a future within planetary boundaries on the other” (see Rockström/Klum). Thus, the global resource challenge is shifting from living within limits to living in balance with regard to meeting human needs and achieving equity in the global distribution of resources.

The link between the boundaries of peoples’ needs and the planetary boundaries has been explained by Oxfam in the doughnut model (see Figure A).

Figure A: Doughnut Economics



Source: Raworth, Kate (2017): Planetary and social boundaries: a safe and just space for humanity. (accessed at 08 June 2020) <https://oxfamblogs.org/fp2p/can-we-live-inside-the-doughnut-why-the-world-needs-planetary-and-social-boundaries/>

The doughnut model depicts a “safe and just space for humanity” through “inclusive and sustainable development” within socio-economic and environmental boundaries.

Literature, Media and Links

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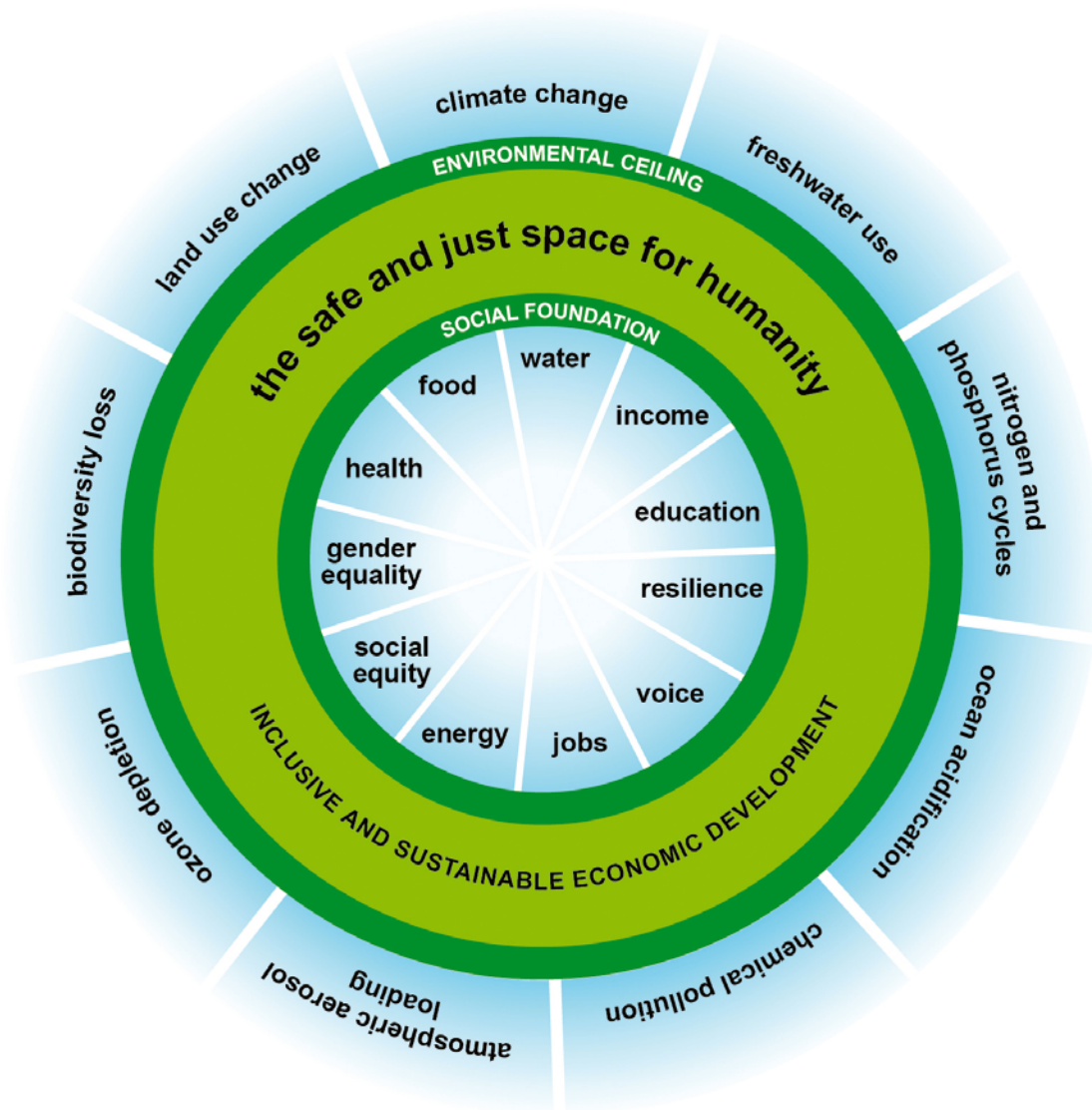
United Nations Development Programme: The Millennium Development Goals Report (2015) [accessed at 5 December 2018]

<http://www.undp.org/content/undp/en/home/librarypage/mdg/the-millennium-development-goals-report-2015.html>

Learning Material 1.1.1

A Safe and Just Space for Humanity

Figure 1: Doughnut Economics



Source: Raworth, Kate (2017): Planetary and social boundaries: a safe and just space for humanity. (accessed at 08 June 2020) <https://oxfamblogs.org/fp2p/can-we-live-inside-the-doughnut-why-the-world-needs-planetary-and-social-boundaries/>

Between its social foundation of human well-being and ecological ceiling of planetary pressures lies the safe and just space for humanity.

The doughnuts inner ring – its social foundation – sets out the basics of life on which no one should be left falling short. These 12 basics include: sufficient food, water and sanitation, education, health care etc. Furthermore, it calls for achieving these with gender equality, social equity, political voice and peace and justice. Since 1948, international human rights norms and laws have sought to establish every person's claim to the vast majority of those basics, no matter how much or how little power they have. (...) They are all included now in the United Nation's SDGs.

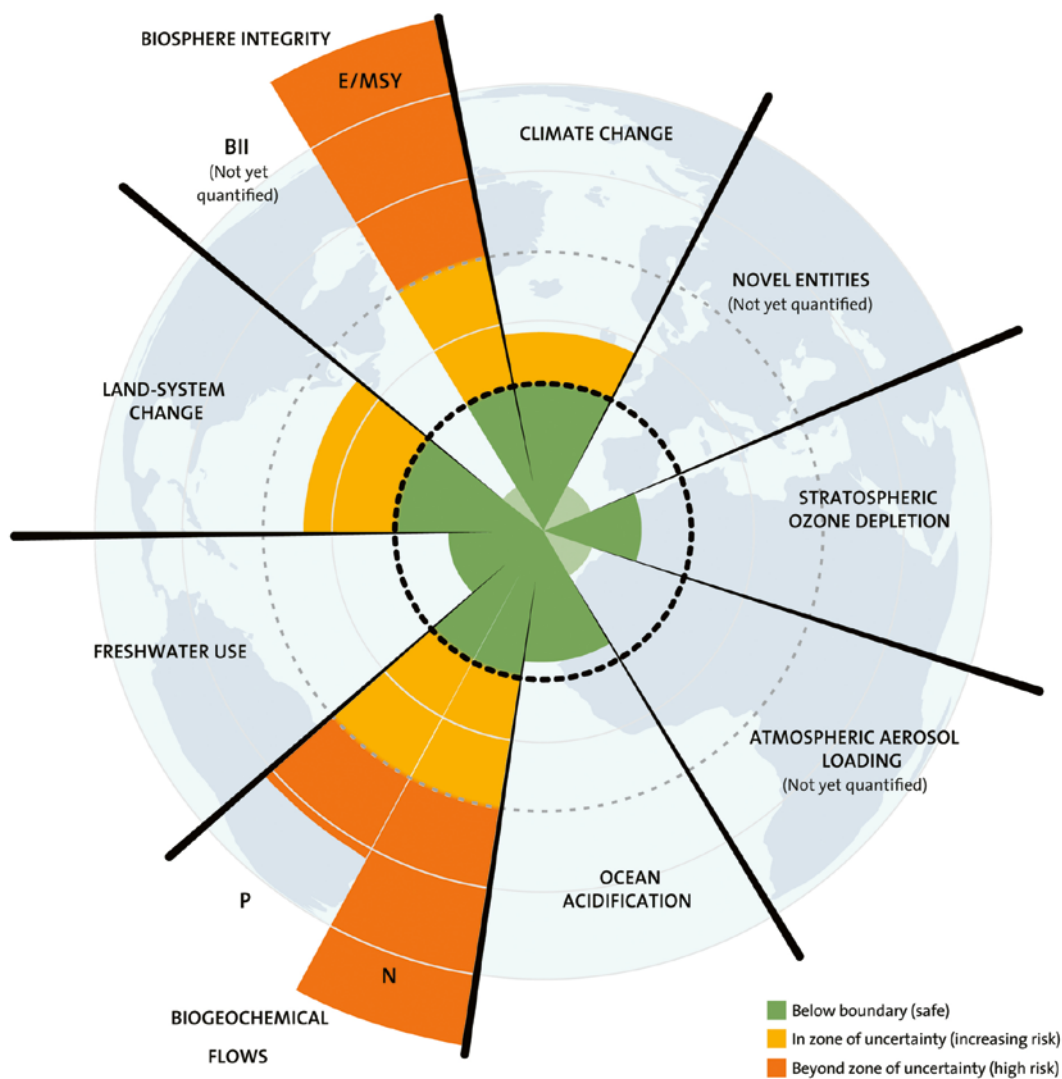
From: Raworth, Kate, (2017), Doughnut Economics, Random House, London, p. 45

Planetary Boundaries – A Safe Operating Space for Humanity

Planetary boundaries mark the outer ring of the doughnut. They define ecological ceilings of human activity.

The Planetary Boundaries concept, introduced in 2009 by a group of international earth system and environmental scientists (Rockström/Steffen et al. 2009) and updated in 2015 with extended analysis, aims to define the environmental limits within which humanity can develop safely for generations to come. Such a “safe operating space for humanity” (UN Secretary-General’s High-level Panel on Global Sustainability 2012, 22) is based on scientific research looking holistically at how humanity is stressing the entire earth system and indicating that since the Industrial Revolution, human actions have gradually become the main driver of global environmental change. This means that humanity has begun to emit more than nature can absorb and acquire more than the natural resources can provide.

Figure 2: Current status of the control variables for seven of the nine Planetary Boundaries



Source: Will, Steffen et al. (2015): Planetary Boundaries: Guiding human development on a changing planet. (accessed at 08 June 2020) <https://www.stockholmresilience.org/research/planetary-boundaries.html>

The concept identifies nine biophysical processes and systems that are essential for human life and survival regulating the stability and resilience of the earth system – the interactions of land, ocean, atmosphere and life that together provide conditions upon which mankind depend (Steffen et al. 2015):

- Climate change
- Change in biosphere integrity (biodiversity loss and species extinction)
- Stratospheric ozone depletion
- Ocean acidification
- Biogeochemical flows (phosphorus and nitrogen cycles)
- Land-system change (for example deforestation)
- Freshwater use
- Atmospheric aerosol loading (microscopic particles in the atmosphere that affect climate and living organisms)
- Introduction of novel entities (e.g. organic pollutants, radioactive materials, nanomaterials, and micro-plastics).

These nine global interlinked priorities have boundaries that, to the extent that they are not crossed, mark the safe zone for the planet and human life. The authors argue that we must stay within the boundaries in order to avoid the risk of abrupt or irreversible global environmental changes that could undermine long-term development opportunities, drive the earth system into a much less hospitable state and trigger abrupt changes for human societies (e.g. heat waves, droughts and floods, rapid sea level rise, ecosystem collapse, ...).

“Scientists estimate that human activity – more precisely activities of different human societies and different social groups in different time periods – appears to have already transgressed the boundaries associated with climate change, rate of biodiversity loss, rate of land-system change, changes to the global nitrogen cycle and the phosphorus cycle (see Fig. 1). Climate change and the loss of biosphere integrity are of special importance; they should be recognised as core planetary boundaries through which the other boundaries operate” (Steffen et al. 2015, 1259855-8).

The concept of Planetary Boundaries does not place a cap on human development. Instead it provides a safe space for innovation, growth, development and human prosperity in an increasingly populated world. The framework does not indicate specific societal pathways for remaining or thriving within the safe space – but it requires societies to define a framework for sustainable development that permits economic and human development within the boundaries of the life-support systems on Earth. Without any doubt there are likely to be many different possible pathways that can deliver inclusive and sustainable development respecting different cultures and societies with different needs, visions, knowledge and values. The challenge is how we can become planetary stewards? How we can achieve a long-term balance between human well-being and a sustainable use and protection of the earth’s ecosystems?

Learning Material 1.1.2

Can we have green equality?

Raworth, Kate (2012), Can we have green equality?, Oxfam, Oxford:
<https://www.youtube.com/watch?v=9U1COenXMfl>

Module 1

Living and Learning in a Complex World

Unit 1.2

What is Sustainable Development?

Instructor's Guide

Unit 1.2 gives an overview of how the concept of sustainable development has developed in the course of the mainly UN-led debates from 1972 until today's Sustainable Development Goals (SDGs). It focuses on the current understanding of sustainable development including traditional concepts.

In particular, the unit focuses on

- how the concept of sustainable development has evolved through international debates and agreements,
- showing that there are non-scientific approaches to sustainability, based on traditional cultural practices,
- definition(s), principles and dimensions of sustainable development,
- the concept of a safe and just development as measured by the Human Development Index (HDI) and the Ecological Footprint (EF).

The objectives of the unit are to

1. convey the idea of sustainable development, its dimensions and principles,
2. encourage reflections on sustainable development, taking account of different contexts around the world,
3. deepen the reflection on the SDGs by applying different measurements of sustainable development (HDI and footprint) in the ecological and human development dimension.

Participants will be able to

- understand sustainable development as a concept which has evolved in political debates and through tradition,
- assess sustainable and unsustainable actions and reflect on systemic connections,
- recognise different development avenues in different countries around the world, measured by the development of the HDI and the ecological footprint.

Approach, Methods and Activities

The learning setting alternates between instruction and reflection in pairs and groups.

The activities proposed relate to the three focal areas of the description. Not all three proposed activities have to be implemented. They can also be put in a different order. For some audiences the first activity on how the concept of sustainable development evolved might not be of interest.

Activity 1.2.1: The Definition of Sustainable Development over Time

Provide an input on the process of defining what sustainable development should be over the centuries, covering the UN-led debates from the environmental agenda of Stockholm in 1972 to the Agenda 2030.

It is also possible to hand out Learning Material 1.2.1, which provides a short, but sound description of the history of sustainable development. Notice that this text does not cover the SDGs.

Furthermore you can refer to the United Nations Sustainable Development Knowledge Platform:

<https://sustainabledevelopment.un.org/>

Finally you can introduce the concept of Buen Vivir to illustrate an approach to sustainability based on traditional lifestyle approaches (see Learning Material 1.2.5).

Activity 1.2.2: Linked and Conflicting Dimensions of Sustainable Development

Focus on the linkages between the three dimensions of sustainability (or four dimensions if you want to include culture and politics, see Activity 1.2.1). Use Learning Material 1.2.2 to discuss the conflicting dimensions of sustainable development. Figure 1 (see Learning Material 1.2.2) can be used to introduce the search for synergetic sustainable solutions.

It can serve as (visual) background in the training or it can be used for discussions and a final presentation of the results. The task given could be: Analyse the target conflicts 1 to 6 and possible sustainable solutions for the issues we have chosen as presented in Figure 1.

Let learners find examples for target conflicts and for how the target conflicts have or have not been balanced. These examples can come from the local environment as well as from the national or global level.

Note that not all six target conflicts need to be addressed. For more advanced learners a variety of dealings with the chosen issues can be supported by the model – from the individual to the global level.

Activity 1.2.3: Human Development Index and Ecological Footprint

Hand out Learning Material 1.2.3. Let learners read and explain the content. If necessary, provide additional information about the Human Development Index (HDI). Figures 3 and 4 can also be shown separately.

Show participants the animated graphic “Ecological Footprint and Human Development Index, 1980-2011” (see <http://www.footprintnetwork.org/our-work/sustainable-development/>) and ask them to interpret it. For example, ask which countries are represented by the two big red dots (answer: China and India). Ask where the participants’ home countries might have been located in 1980 and where they are located today. The Global Footprint website also provides country-specific data.

Measure your ecological footprint (see Learning Material 1.2.4 and 1.2.6):

- Once you have understood the concept of your footprint, divide into groups to discuss growth and consumption patterns across the world.
- Consider the effects of your global footprint within your group. Discuss your consumption patterns and identify ways of leading a sustainable lifestyle.
- Consider the concept of the global handprint, too, which measures positive impacts.

Follow the instructions given in Learning Material 1.2.4, learners will be able to understand the concept of the ecological footprint and handprint and will get to know ways of conveying this knowledge to their groups of learners. They learn how much various aspects of their personal lifestyle (food consumption, housing, mobility etc.) affect the environment and what they can do to reduce their ecological footprint. While the global footprint shows learners the negative impacts they have on the Earth, the handprint pushes them to take actions to improve the situation on our planet. It inspires learners to recognise their potential and empowers them to achieve it.

Material 1.2.6 allows you to measure your and your learners’ footprints without having to access the Internet. It is a paper-based exercise which has been developed specifically for schools and learners in India and which can replace the online calculation of the footprint.

Duration: 5 hours

Thematic Overview

What is Sustainable Development?

Unit 1.2 gives an overview of how the concept of sustainable development has developed in the course of the mainly UN-led debates from 1972 until today's Sustainable Development Goals (SDGs). It focuses on the current understanding of a sustainable development in the context of the Agenda 2030.

In particular, the unit focuses on:

- the evolution of the concept of sustainable development in international debates and agreements,
- definition(s), principles and dimensions of sustainable development,
- measuring the safe and just space for humanity.

The International Agenda

The United Nations Conference on the Human Environment in Stockholm in 1972 paved the way for an environmental agenda. It gave the growing concerns a voice that natural resources and hence economic growth are limited. But the Stockholm agenda was mainly perceived in the industrialised world and had only little influence on developing countries. Indira Gandhi, the then Prime Minister of India, speaking for the developing world, made this point very clear: "There are grave misgivings that the discussion on ecology may be designed to distract attention from the problems of war and poverty [...]. We have to prove to the disinherited majority of the world that ecology and conservation will not work against their interest but will bring an improvement in their lives. To withhold technology from them would deprive them of vast resources of energy and knowledge. This is no longer feasible nor will it be acceptable" (LASU-LAWS Environmental Blog).

As a result of the conference the United Nations Environmental Programme (UNEP) was founded, also with the aim of bringing the environmental agenda closer to the Third World, as it was called in 1972. Following the Stockholm conference, environmental education emerged and strengthened the overall awareness of environmental challenges. However, the tension between the environmental agenda and the developmental needs of the Global South, as pointed out by Gandhi, remained a major issue in the following years. It was only later that both environment and development merged into one system of internationally agreed objectives, based on the concept of sustainable development.

Almost simultaneously, in 1974, UNESCO's General Conference passed a recommendation on Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental Freedoms. With its competence objectives and demand for a "global perspective" regarding all areas of education and life-long learning, this is regarded as an important reference document of "global citizenship education" and ESD.

Later, in 1992, the United Nations Conference on Environment and Development in Rio became the starting point for the international community to accept the notion of sustainable development as a combination of developmental and environmental aspects, including social and economic dimensions. The summit resulted in the Agenda 21, an action agenda for global sustainable development. At the time, sustainable development meant that the "right to development must be fulfilled to equitably meet developmental and environmental needs of present and future generations" (The Rio Declaration on Environment and Development).

The resolutions passed in 1992 and at the follow-up conferences in Johannesburg (2002) and Rio+20 (2012) are at the core of the international community's political reference framework.

The Earth Summit Rio+20 again focussed on balancing the economic and ecological dimensions of sustainable development in order to connect the fight against poverty with ecological challenges. Paragraph 2 of the Rio +20-declaration states: "Eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development. In this regard we are committed to freeing humanity from poverty and hunger as a matter of urgency" (United Nations: Future we want).

In September 2015, the United Nations adopted a plan for achieving a better future for all – laying out a path for the next 15 years to end extreme poverty, fight inequality and injustice and protect our planet. At the heart of the Agenda 2030 there are 17 Sustainable Development Goals (SDGs) which aim to ensure that all human beings can lead a life in dignity within the means of this one planet. For the first time, an agenda applied to all nations, leaving no one behind. Almost at the same time, in December 2015, the Paris Agreement on Climate Change set the target to rapidly decarbonise the global economy and keep the global average temperature well below 2 °C above pre-industrial levels and limit the increase to 1.5 °C in the 21st century.

Figure A: The 17 Sustainable Development Goals



Source: United Nations (2020): Communication Materials (accessed at 08 June 2020)

<https://www.un.org/sustainabledevelopment/news/communications-material/>

Traditional concepts of sustainability

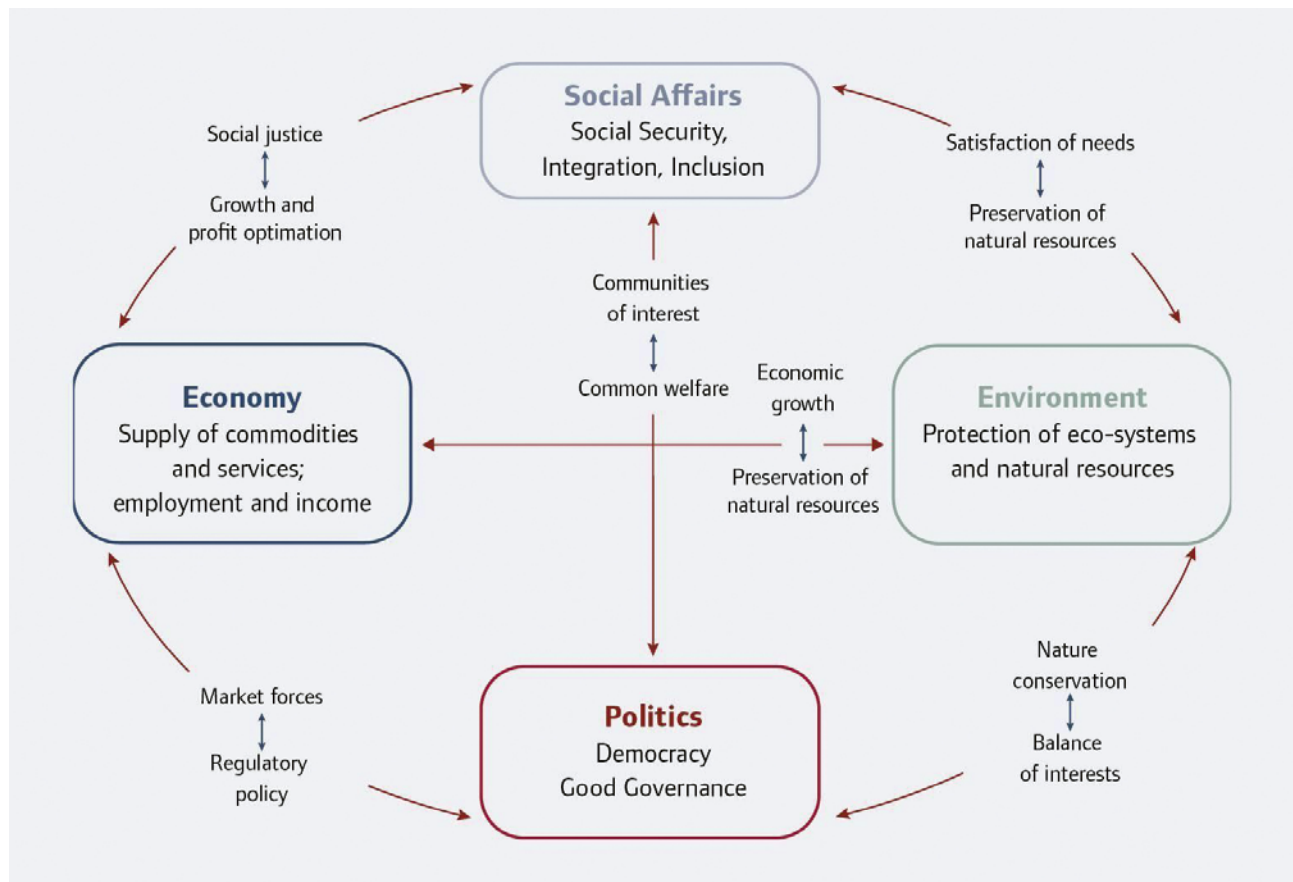
The concept of sustainability and sustainable development as described above has been established in the tradition of the European enlightenment and rests upon a science-based concept of interactions between humans and nature. Non-scientific concepts of living sustainably have been developed over the millennia, such as Buen Vivir, which is enshrined in the constitutions of Ecuador and Bolivia, Vasudhaiva Kutumbakam, a Indus Cultures that is 2000 years old, or the Christian concept of Integrity of Creation.

The Dimensions of Sustainable Development

Since the World Conference in Rio, sustainable development has been defined as the triad of economic development, ecological protection and social inclusion. Because questions of governance are highly relevant for ESD, we have added a fourth area, the Political Dimension.

Figure B shows that the four dimensions of sustainable development are obviously not in a harmonious relationship, but evoke conflicts, some of which are shown in figure B. The SDGs reflect these target conflicts (see also unit 1.3).

Figure B: Conflicting Sustainable Development Goals



Source: KMK, BMZ (2017): Curriculum Framework for Education for Sustainable Development, Cornelsen, Berlin, p. 43.

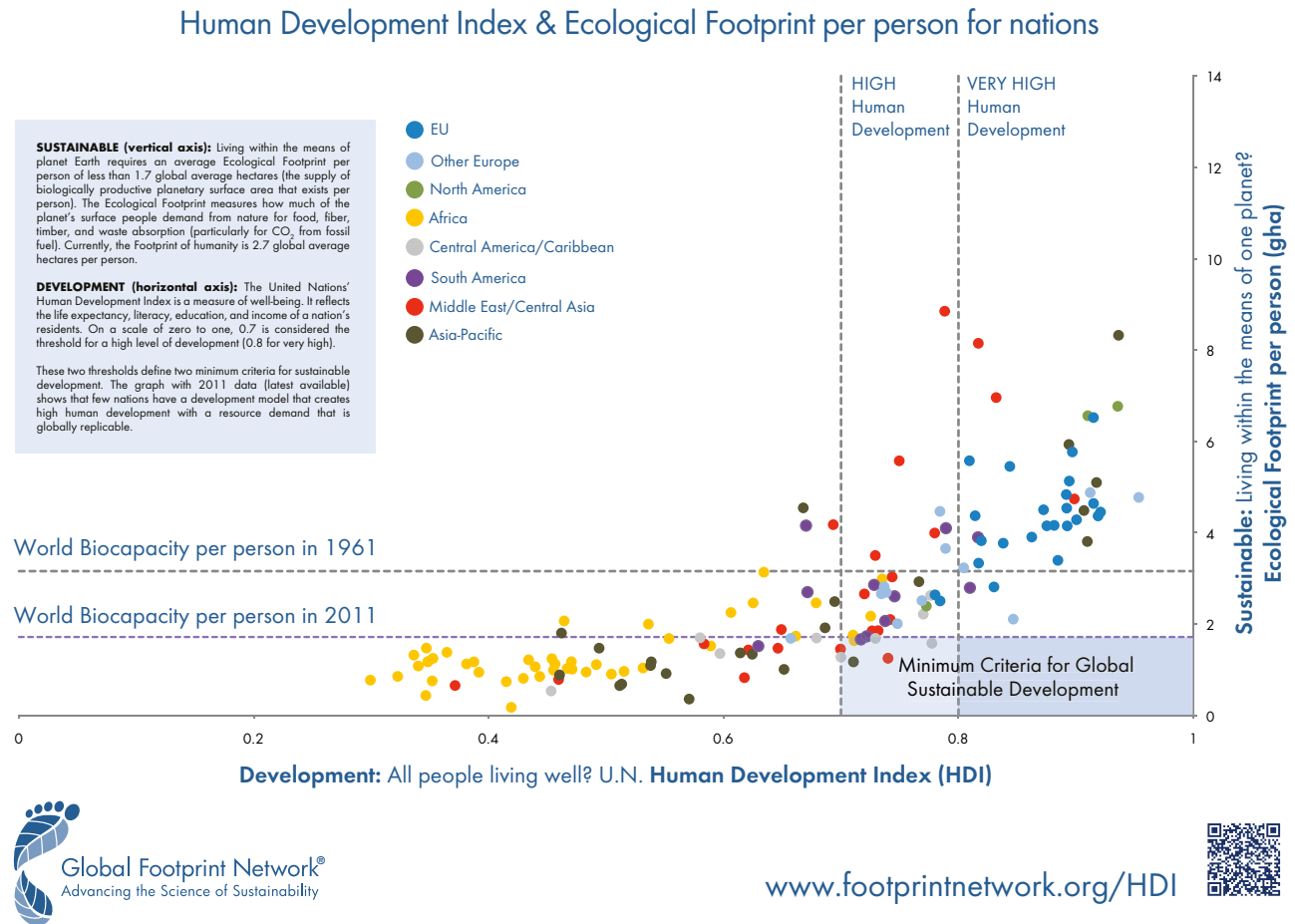
Definitions, Principles and Dimensions of Sustainable Development – Human Development Index (HDI) and Ecological Footprint

The first and since then most widely used definition for sustainable development can be found in the UN report “Our Common Future” (1987), also called Brundtland Report: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains two key concepts: The concept of ‘needs’, in particular, the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organisation on the environment’s ability to meet present and future needs.”

The Brundtland Report’s reference to the needs of humankind within the boundaries of the planet (environment) provided the basis of all further conceptualisation of sustainable development, from Rio 1992 to the Agenda 2030 and the SDGs. It also forms the basis of the “doughnut concept” describing a safe and just space for humanity (see unit 1.1).

For practical purposes we, in this unit, define sustainable development as a balance between the ecological footprint (EF) and the human development index (HDI) by the UN. The HDI by definition stands for the needs of humankind, the EF for the planetary boundaries. Figure C shows how both relate empirically.

Figure C: Human Development Index & Ecological Footprint



Source: Global Footprint Network (2015): Human Development Index & Ecological Footprint per person for nations (accessed at 08 June 2020)

https://www.footprintnetwork.org/content/images/article_uploads/2015_HDI_poster_final_low_res.pdf?_ga=2.167840289.1205842649.1591610114-2026779019.1591610114

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Learning Material 1.2.1

History of sustainable development



Wikipedia: Wikipedia (2018): Blue marble [accessed at 08 June 2020]

https://en.wikipedia.org/wiki/Sustainable_development#/media/File:The_Earth_seen_from_Apollo_17.jpg

The Blue Marble photograph, taken from Apollo 17 on 7 December 1972, quickly became an icon of environmental conservation.

Sustainability can be defined as the practice of maintaining processes of productivity indefinitely—natural or human made—by replacing resources used with resources of equal or greater value without degrading or endangering natural biotic systems. Sustainable development ties together concern for the carrying capacity of natural systems with the social, political, and economic challenges faced by humanity. Sustainability science is the study of the concepts of sustainable development and environmental science. There is an additional focus on the present generations' responsibility to regenerate, maintain and improve planetary resources for use by future generations.

Sustainable development has its roots in ideas about sustainable forest management which were developed in Europe during the seventeenth and eighteenth centuries. In response to a growing awareness of the depletion of timber resources in England, John Evelyn argued that "sowing and planting of trees had to be regarded as a national duty of every landowner, in order to stop the destructive over-exploitation of natural resources" in his 1662 essay *Sylva*. In 1713 Hans Carl von Carlowitz, a senior mining administrator in the service of Elector Frederick Augustus I of Saxony published *Sylvicultura oeconomica*, a 400-page work on forestry. Building upon the ideas of Evelyn and French minister Jean-Baptiste Colbert, von Carlowitz developed the concept of managing forests for sustained yield. His work influenced others, including Alexander von Humboldt and Georg Ludwig Hartig, eventually leading to the development of a science of forestry. This in turn influenced people like Gifford Pinchot, first head of the US Forest Service, whose approach to forest management was driven by the idea of wise use of resources, and Aldo Leopold whose land ethic was influential in the development of the environmental movement in the 1960s.

Following the publication of Rachel Carson's *Silent Spring* in 1962, the developing environmental movement drew attention to the relationship between economic growth and development and environmental degradation. Kenneth E. Boulding in his influential 1966 essay **The Economics of the Coming Spaceship Earth** identified the need for the economic system to fit itself to the ecological system with its limited pools of resources. One of the first uses of the term sustainable in the contemporary sense was by the Club of Rome in 1972 in its classic report on the Limits to Growth, written by a group of scientists led by Dennis and Donella Meadows of the Massachusetts Institute of Technology. Describing the desirable "state of global equilibrium", the authors wrote: "We are searching for a model output that represents a world system that is sustainable without sudden and uncontrolled collapse and capable of satisfying the basic material requirements of all of its people."

In 1980 the International Union for the Conservation of Nature published a world conservation strategy that included one of the first references to sustainable development as a global priority and introduced the term "sustainable development". Two years later, the United Nations World Charter for Nature raised five principles of conservation by which human conduct affecting nature is to be guided and judged. In 1987 the United Nations World Commission on Environment and Develop-

ment released the report *Our Common Future*, commonly called the Brundtland Report. The report included what is now one of the most widely recognised definitions of sustainable development.

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- The concept of ‘needs’, in particular, the essential needs of the world’s poor, to which overriding priority should be given; and
- The idea of limitations imposed by the state of technology and social organisation on the environment’s ability to meet present and future needs.”

— World Commission on Environment and Development, *Our Common Future* (1987)

Since the Brundtland Report, the concept of sustainable development has developed beyond the initial intergenerational framework to focus more on the goal of “socially inclusive and environmentally sustainable economic growth”. In 1992, the UN Conference on Environment and Development published the Earth Charter, which outlines the building of a just, sustainable, and peaceful global society in the 21st century. The action plan Agenda 21 for sustainable development identified information, integration, and participation as key building blocks to help countries achieve development that recognises these interdependent pillars. It emphasises that in sustainable development everyone is a user and provider of information. It stresses the need to change from old sector-centred ways of doing business to new approaches that involve cross-sectorial co-ordination and the integration of environmental and social concerns into all development processes. Furthermore, Agenda 21 emphasises that broad public participation in decision making is a fundamental prerequisite for achieving sustainable development.

Learning Material 1.2.2

Figure 1: Conflicting development dimensions

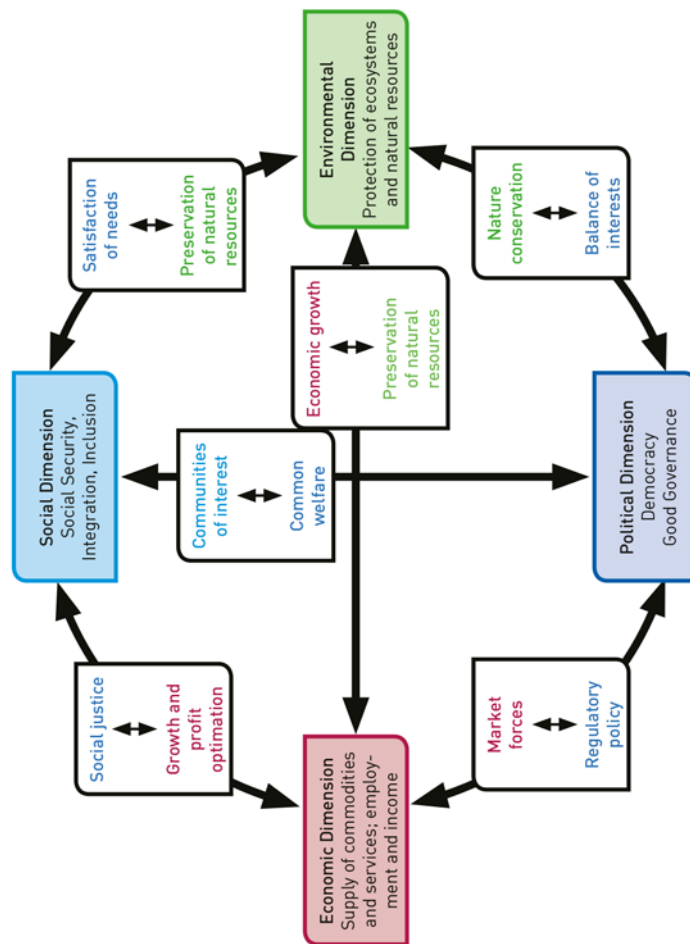
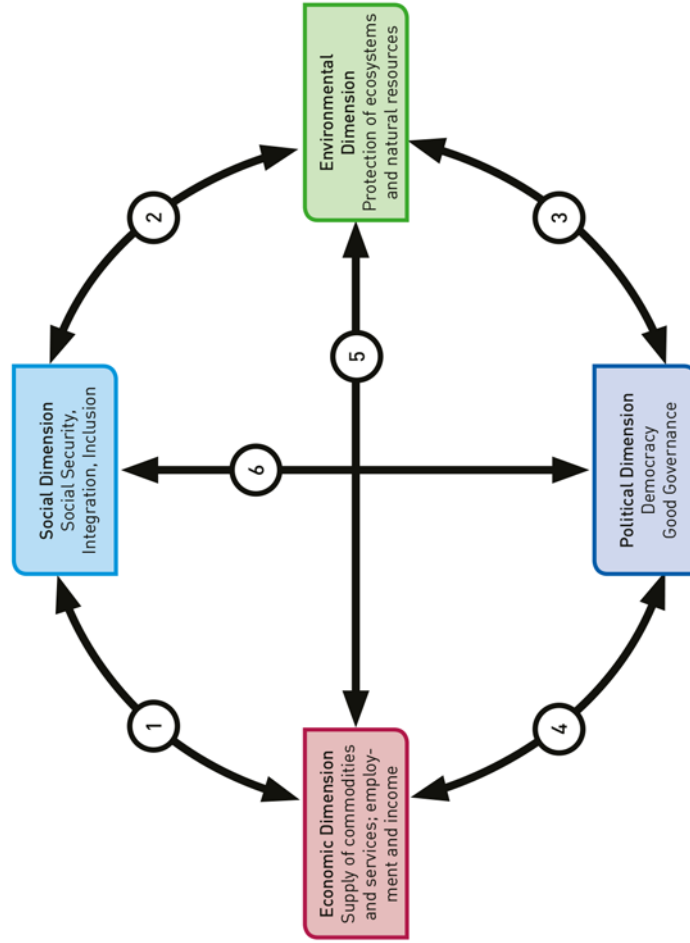


Figure 2: Basic model for analysing development conflicts and finding synergetic sustainable solutions



Learning Material 1.2.3

Ecological Footprint and Human Development Index

“**Development**” is shorthand for committing to well-being for all. “**Sustainable**” implies that such development must come at no cost to future generations. In other words, development is required to occur within what the planet’s ecosystems are able to provide season after season, year after year. It needs to be enabled within the means of nature.

One simple way to assess sustainable development is by using the Ecological Footprint and Human Development Index (HDI). An Ecological Footprint less than 1.7 global hectares per person makes those resource demands globally replicable. The United Nations considers an HDI over 0.8 to be “very high human development.”

Measuring these two variables reveals that very few countries come close to achieving sustainable development, despite growing adoption of the Sustainable Development Goals and other policies that strive to increase well-being without sacrificing the environment.

At current population levels, our planet has only 1.7 global hectares (gha) of biologically productive surface area per person. Thus, the average Ecological Footprint per person worldwide needs to fall significantly below this threshold if we want to accommodate larger human populations and also provide space for wild species to thrive.

On a scale of zero to one, the United Nations defines 0.7 as the threshold for a high level of development (0.8 for very high development).

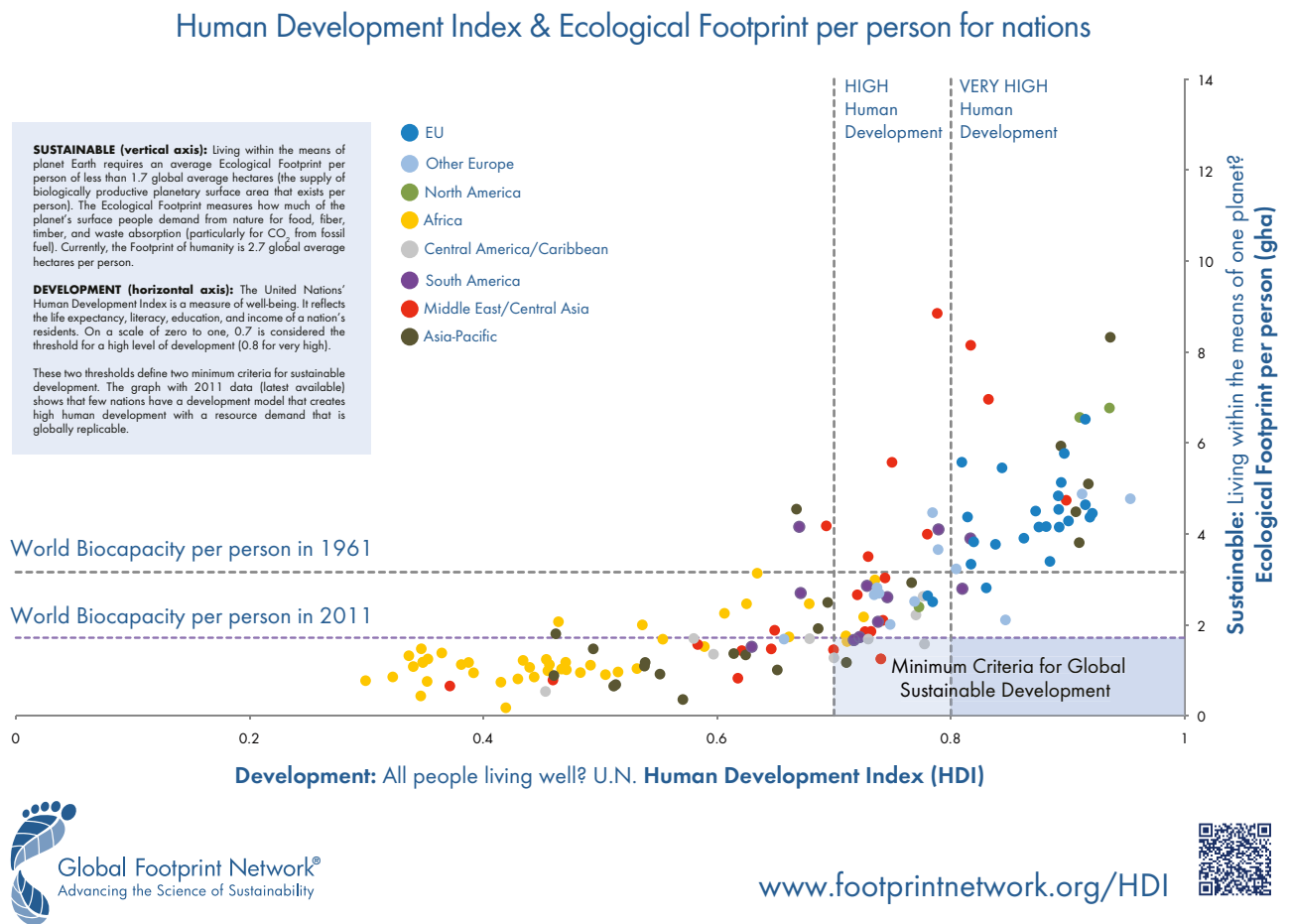
These two thresholds define two minimum criteria for global sustainable development—an average Footprint (significantly) lower than 1.7 gha per person and an HDI of at least 0.7. Each country’s endowment and ability to trade vary enormously. However, to achieve global sustainable development, humanity’s demand, at current population levels, has to fall below an average of 1.7 gha per person.

Measuring these two variables reveals that very few countries come close to achieving sustainable development, despite growing adoption of the Sustainable Development Goals and other policies that strive to increase well-being without sacrificing the environment.

Because both the Ecological Footprint and Human Development Index can be assessed at various geographic scales (region, country, community), this framework can be used to track sustainable development progress.

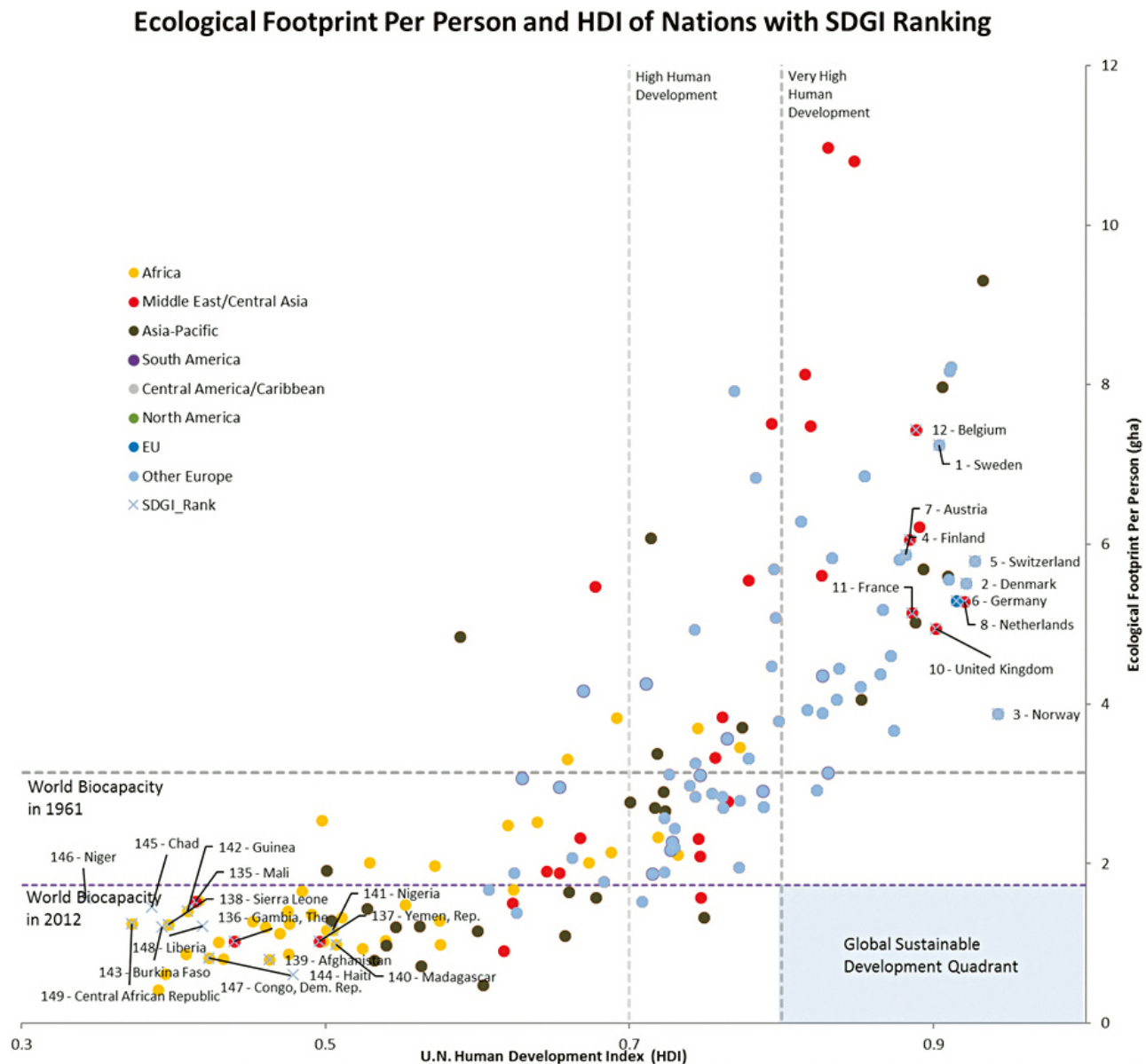
Source: <http://www.footprintnetwork.org/our-work/sustainable-development/>

Figure 3: Human Development Index & Ecological Footprint



Source: <http://www.footprintnetwork.org/our-work/sustainable-development/>

Figure 4: Ecological Footprint Per Person and HDI of Nations



Source: Global Footprint Network (2015): Human Development Index & Ecological Footprint per person for nations (accessed at 08 June 2020)

https://www.footprintnetwork.org/content/images/article_uploads/2015_HDI_poster_final_low_res.pdf?ga=2.167840289.1205842649.1591610114-2026779019.1591610114

SDGi ranks countries based on their performance across the 17 global goals, a set of ambitious objectives across the three dimensions of sustainable development - economic development, social inclusion and environmental sustainability, underpinned by good governance.

Source: Global Footprint Network, 2013

Read more at:

http://economictimes.indiatimes.com/articleshow/53332238.cms?utm_source=contentofinterest&utm_medium=-text&utm_campaign=cppst

Learning Material 1.2.4

GF Handprint

- Measure your ecological footprint (see links).
- Once you have understood your footprint, divide into groups to discuss growth and consumption patterns across the world.
- Now, consider the effects of your global footprint within your group. Discuss your consumption patterns and identify ways to lead a sustainable lifestyle.
- Consider the concept of the global handprint, too, which measures positive impacts.

Links

- Global footprint calculator
- <http://www.footprintnetwork.org/resources/footprint-calculator/>
- Earth Day version: <https://www.earthday.org/foodprints-calculators/>
- The global handprint e.g. <http://www.handprint.in/>

Learning Material 1.2.5

Buen Vivir and sustainable development

In a recent meeting, the members of **Suma Uta**, a network of municipal executives, exchanged the different views of **Buen Vivir** or **Suma Jakana** ("walking upright" in Aymara language); every one of the 15 participants, men and women, expressed another view of the characteristics. Finally, all participants agreed, that each of the 15 definitions was essential for a real understanding of **Suma Jakana**. If only one of the definitions were excluded, it wouldn't be **Suma Jakana**, **they said**. We can learn from this example that attempts to find a precise and thus limited and constricting definition must fail, and that it is impossible to subsume lively collective learning under the framework of planning for fixed external targets.

The **Suma Uta** chiefs' collective description of their idea of **Buen Vivir** is in agreement with David Choquehuanca, the respected Foreign Minister of Bolivia, who has said that "**Buen Vivir means to [...] live in community, in brotherhood and most of all supplementing each other [...] not competing, in harmony with the peoples and with nature, caring for our needs, protecting our environment [...], in order to restore the health of Mother Earth.**" Hence, **Buen Vivir** is not a utopia. It is a personal experience which is being lived in communities that share a common culture, a cosmic vision and a way of living. Even though this expression of the wisdom of the central Andean indigenous peoples is culture-specific, the idea of **Buen Vivir**, meaning good life, is a part of all cultures. Its growing popularity should be understood as a warning towards the dominating development discourse to firmly include **Buen Vivir** as a central component, a - still not visible - cultural pillar of sustainability. Hence, in the central Andes **Buen Vivir** is of paramount significance for sustainable development. Together with the view of community, the firm connection with a life in peace is a lasting element in the descriptions of **Buen Vivir** in the central Andes. Apparently, peace is the transcultural context for experiencing a good life in the local community. Therefore, it is an indispensable platform for the intercultural dialogue on sustainability.

As a concept, **Buen Vivir** has been used for the elaboration of constitutions in two central Andean countries: Ecuador (2008) and Bolivia (2009). Thus, it is tremendously influential in the public awareness when questioning the claim that economic growth will lead to a better life and necessarily to **Buen Vivir**. For the central Andean indigenous peoples it is becoming apparent that growth through the exploitation of natural resources leads to the loss of access to their ancestors' land. Hence, they would need to surrender a way of life which has proven sustainable for thousands of years.

Jorge Ishizawa, since 1996 coordinator of the project Andino Tecnologías Campesinas in Peru (from development dialogue 59, 2012 with kind permission of Dag Hammarskjöld Stiftung).

see: Acosta, A. and Cray, C. (2012)

Learning Material 1.2.6

How Big is Your Footprint?

Objective:	To calculate the ecological footprint
Teaching Method:	Survey
Teaching Aids:	Ecological footprint quiz and computer with Internet connection
Group Size:	Individual
Duration:	35 minutes

Introduction

Climate Change (CC) is closely linked with another C. That is Consumption. Consumption involves exhaustive use of materials and energy. CC is linked with our lifestyles: what we buy, how we use our resources, and how we live. How do we know how much materials and energy each of us utilises to maintaining our lifestyle? Ecological footprint calculator is a tool that can help us find out.

How to Do?

Method 1

Distribute copies of the quiz to the students. Ask each student to complete based on their daily actions and habits. After all have filled in, ask students to exchange their sheet with that of their neighbour.

Now, ask students to mark the sheets and give a score as given below:

1 point for each "a" answer

2 points for each "b" answer

3 points for each "c" answer

Let them add up the scores and exchange the sheets back. Call out that those who have got a score from

0-10 should give themselves	***
11-20 should give themselves	**
21-30 should give themselves	*

Explain the star rating to the students:

- *** You have a small footprint! Your actions and habits help to reduce waste and conserve resources.
- ** You have a medium-sized footprint. Although some of your actions are environment friendly, a few changes will help the environment more.
- * Your footprint is big! Read the questions again and ask yourself if you can make changes to help decrease the size of your footprint. Even small changes can have a big effect!

The ecological footprint calculator is a tool that can help us know how much materials and energy each of us utilises to maintain our lifestyle? In this activity students can calculate and find out their "footprint".

Method 2

Students to log on to any of these sites to calculate their ecological footprint.

<http://www.earthday.net>

<http://www.ecologicalfootprint.com>

<http://www.footprintnetwork.org>

<http://www.myfootprint.org>

Recap and Discussion

Ecological footprint is an estimate of earth's productive land area and water that it takes to supply the resources that an individual or group demands, and to absorb the waste that the individual or group produces.

Every human being has an ecological footprint! It is our lifestyle that determines how small or big our footprint is.

Discuss how every human being has an ecological footprint! We need natural resources for all our wants, needs, and conveniences. The more we consume, more energy, food and goods have to be produced. When we consume more and more, we are also using up more resources of Earth.

Evaluation

It is the lifestyle that determines how small or big our footprint is. Ask students to identify 10 things that they did yesterday that increased their footprint (for example, going to the shop on a scooter even though it was within walking distance).

Home Assignment

Get your neighbours and family members to take this quiz (see next page), and together think of ways to achieve a 3-star rating.

Ecological Footprint Quiz

1. **How did I get to school today...**
 - a. I walked or rode my bike
 - b. I took the bus
 - c. I was driven in a car
2. **How much water did I use this morning...**
 - a. I did not shower
 - b. I had a short shower
 - c. I bathed in a full tub
3. **When I eat a meal there is this much food left on my plate...**
 - a. I clean my plate
 - b. A little bit of food
 - c. Half of the food that was there to begin with
4. **In my lunch box, this much food is wrapped in disposable paper or plastic...**
 - a. None of it
 - b. Some of it
 - c. All of it
5. **During one day, I waste this many sheets of papers from my notebook...**
 - a. I reuse papers
 - b. 5-10 sheets
 - c. more than 10 sheets
6. **When I leave a room, I turn off the lights and fans...**
 - a. Always
 - b. Sometimes
 - c. Never
7. **At my house we recycle...**
 - a. All of the things that can be
 - b. Some of the things
 - c. Nothing
8. **When I am at school, I drink water from...**
 - a. School water fountain
 - b. My own water bottle
 - c. Bottled water which I have bought
9. **If I put all of the garbage that I threw away today into a container, I would need...**
 - a. I produced no garbage today
 - b. A shoebox
 - c. A crate
10. **Each day, I eat these many packets of packaged snacks...**
 - a. 1
 - b. 2
 - c. 3 or more

Source: adapted from Earth Care Canada, 2015 Paryavaran Mitra, Teacher's Handbook. Mamata Pandya. Rajeswari Gorana, CEE.

Notes

Module 1

Living and Learning in a Complex World

Unit 1.3

Sustainable Development and the Agenda 2030

Instructor's Guide

Unit 1.3 gives an overview of how the concept of sustainable development has developed in the course of the predominantly UN-led debates from 1972 until today. It focuses on the current understanding of what sustainable development is (Agenda 2030) and refers to the efforts of measuring progress towards a sustainable development.

In particular, the unit focuses on

- evoking the concept of sustainable development through international debates and agreements,
- lifestyle choices and definition(s), principles and dimensions of sustainable development,
- the Agenda 2030 and the SDGs, indicators of sustainable development.

The objectives of the unit are to

1. revisit the SDGs and the Agenda 2030,
2. deepen the idea of a sustainable development and encourage comparisons between unsustainable and sustainable development processes, taking into consideration different contexts and value systems from around the world and help participants to understand that and recognise whether decisions in our daily lives are more or less sustainable,
3. deepen the reflection on the SDGs by applying the mystery method to foster systemic thinking.

Participants will be able to

- assess sustainable and unsustainable actions and reflect on systemic connections,
- recognise that actions are usually more or less sustainable, not sustainable or unsustainable, depending on a variety of complex factors.

Approach, Methods and Activities

The learning setting alternates between instruction and reflection in pairs and groups.

The activities proposed relate to the three focal areas of the description. Not proposed activities have to be implemented. They can also be put in a different order.

Activity 1.3.1: What are the Agenda 2030 and the Sustainable Development Goals?

Provide an input on what the Agenda 2030 and the SDGs are about.

Show the film "Understanding the dimensions of sustainable Development" by the UN Staff College (see Learning Materials 1.3.1: <https://www.youtube.com/watch?v=wSxaWHpeIH0>).

Activity 1.3.2: What is Sustainable and what is Unsustainable?

Hand out Learning Material 1.3.2 and divide the group into pairs. Give the following instructions:

- Work with a partner and read Learning Material 1.3.2. Decide, which activities are sustainable and which are unsustainable.
- Remember that it might not be possible to class all activities categorically, since the circumstances in which the activity takes place might determine whether it is sustainable. Thus, activities might be more and less sustainable.
- Give reasons for your decisions.
- Name three more activities that can be deemed as sustainable or unsustainable.
- Swap your list of activities with another pair.

The participants work in pairs and exchange the results of their work (see worksheet, Learning Material 1.3.2). They gain an idea of what sustainability means in environmental, social and economic terms for societies as a whole and in their own lives. Also the learners practise critical and systemic thinking.

Activity 1.3.3: Black Forest Mystery Story

Background: The mystery-solving method was established in England in the context of “Thinking through Geography” and aims to help learners grasp and structure complex issues.

Students are given initially two, in complex mysteries also three, beginnings of narrative strands of an entire story. This part is concluded with a question, which aims to question how the initially completely incompatible – and therefore mysterious – appearing parts of the story are connected with each other. The students receive a set of cards, on which individual steps of complex facts in small texts, pictures, graphics or with the help of other information carriers are presented.

They are then instructed to reflect on how these apparently completely incompatible, and therefore mysterious, segments are related to one another (see Learning Material 1.3.3).

Task for the learners: Work in groups (ideally of four participants), put the cards into a logical sequence and identify nodes between the different threads.

Participants are encouraged to contribute to the discussion, communicate with other group members and use logical argument plus their persuasion, which will strengthen their professional and social competencies. They learn that many of today’s global challenges are interdependent and cannot be addressed separately. The mystery-solving method allows to apply systemic thinking by providing apparently unconnected information and asking learners to combine these information into a meaningful narrative.

Duration: 1–2 hours

Thematic Overview

Sustainable Development and the Agenda 2030

Unit 1.3 introduces the Agenda 2030 which connects the SDGs to sustainable pathways within a safe and just space for humanity.

The Agenda 2030 and the SDGs

The agenda 2030 groups the 17 SDGs into five areas of sustainable development, the so-called five Ps: people, planet, prosperity, peace and partnerships:

“People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

Peace

We are determined to foster peaceful, just and inclusive societies, which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.

Partnerships

We are determined to mobilise the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focused in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.” (see Preamble to the Agenda 2030, United Nations General Assembly Resolution A/RES/70/1, adopted UN GA 2015)

Figure A: The Five Ps of Sustainable Development



Source: Global Development Research Centre(2015): The five key elements (“5 Ps”) that led to the development of the SDGs (accessed at 08 June 2020) <https://sdg.gdrc.org/post/128479353317/the-five-key-elements-5-ps-that-led-to-the>

The goals of the Agenda 2030 are not legally binding, but governments are expected to take ownership and establish national frameworks for their achievement. The 17 Sustainable Development Goals and examples of activities for implementing each of them can be approached using the “SDG Material” of the ESD Expert Net group.

What is Sustainable, what is not Sustainable?

This question can also be phrased differently – and probably more accurately when it comes to lifestyle choices: What is more and what is less sustainable when trying to live a sustainable life?

A Google search on “ways to live sustainably” provides, of course, millions of hits. They include the whole range of areas of human development covered by the SDGs and all dimensions of sustainable development – economic, ecological, social and political.

The quote below, taken from the website <http://www.biologicaldiversity.org>, shows that practical life style choices are a) rather choices between more or less and b) are open to covering areas which few people are likely to follow (example: “Choose to have a smaller family”). The website mentioned above focuses on the environmental impact of actions and does not cover the other dimensions of sustainable development. It also caters mainly for middle class households, respectively their consumption patterns, and would have to be adapted to different audiences.

“Every day we make choices in our lives that affect the environment, the climate and other species. From what we eat to how many children we decide to have, there’s a lot we can do to ‘choose wild’ and reduce our environmental footprint to leave more room for wild animals and plants.

1. Think twice before shopping.
2. Make sure your big purchases have big environmental benefits.
3. Ditch the plastic.
4. Boycott products that endanger wildlife.
5. Pay attention to labels.
6. Be water wise.
7. Drive less, drive green.

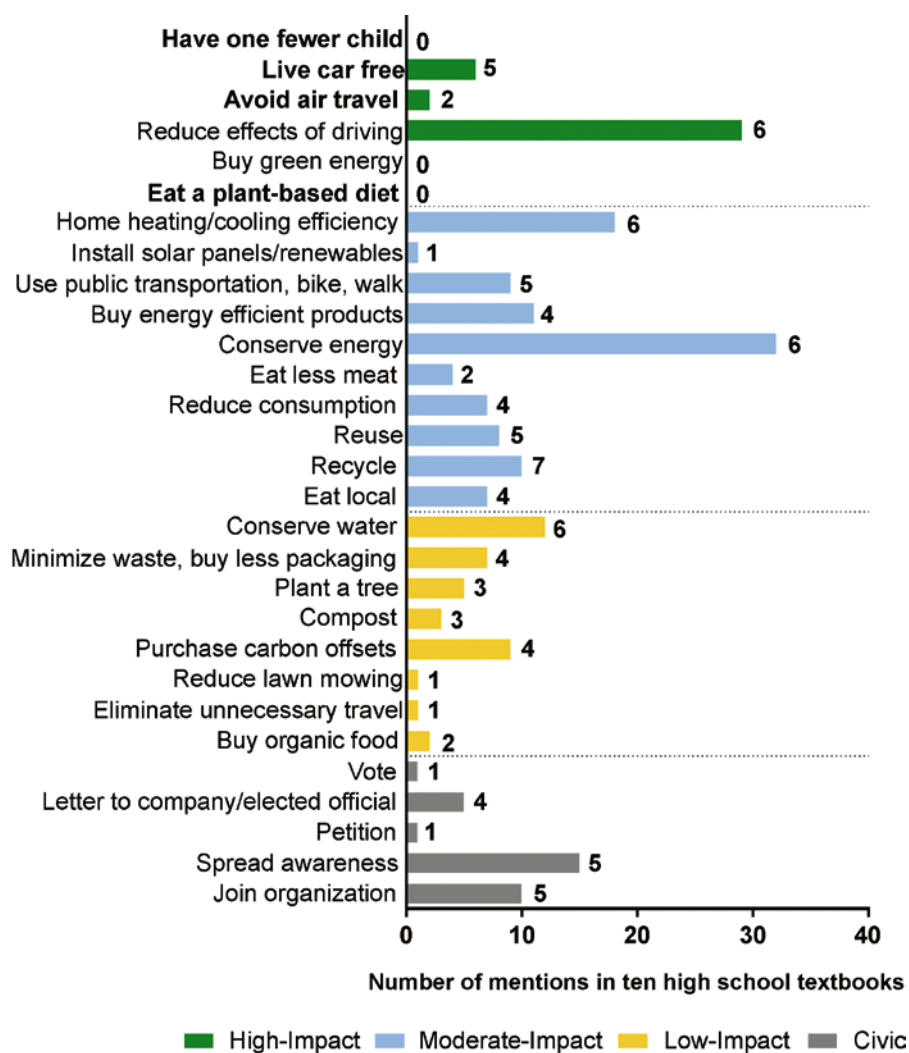
8. Green your home.
9. Choose renewable energy.
10. Take extinction off your plate: Eat less meat.
11. Choose to have a smaller family.
12. Use your voice and your vote."

(see 12 ways to live more sustainably: https://www.biologicaldiversity.org/programs/population_and_sustainability/sustainability/live_more_sustainably.html)

It is problematic if recommendations only focus on environmental issues and do not consider economic and social aspects as are shown in the high impact action "Eat a plant based diet". From the point of view of some emerging economies in the Global South, which ranch livestock in semi-arid, low rainfall areas (for example San in Botswana or Herero in Namibia), such recommendations do not make sense. In these regions, animal ranching cannot be replaced by growing plants and the social and economic fabric of these societies has adapted accordingly.

Figure B shows recommendations for climate action taken from Canadian textbooks, ranked by their climate impact (reduced CO₂ output). Civic action and advocacy are proposed in some textbooks, but no data for reduced CO₂ output is available.

Figure B: Recommendations for Climate Action taken from Canadian Textbooks



Source: Wynes, Seth Wyne; Nicholas, Kimberly A. (2017): The climate mitigation gap: education and government recommendations miss the most effective individual action. *Environmental Research Letters* 12.

Unit 1.3 Literature, Media and Links

Centre for Biological Diversity (2018): 12 ways to live more sustainably: (accessed at 12 December 2018)

https://www.biologicaldiversity.org/programs/population_and_sustainability/sustainability/live_more_sustainably.html

Hoffmann, Thomas (2014): Klimawandel in Baden-Württemberg. Unterrichtseinheit als Beitrag zur Bildung für nachhaltige Entwicklung. (accessed at 13 March 2019)

https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/Dokumente/2_Presse_und_Service/Publikationen/Klima/UE_Klimawandel_BW.pdf

Sustainable Development Solutions Network (2015): Getting started with the Sustainable Development Goals. A Guide for Stakeholders. (accessed at 12 December 2018) <https://sdg.guide/>

Teaching the Sustainable Development Goals (2018): (accessed at 5 December 2018)

<http://www.esd-expert.net/lehr-und-lernmaterialien.html>

United Nations (2015): Preamble to the Agenda 2030 United Nations General Assembly Resolution A/RES/70/1, adopted UN GA 2015. (accessed at 12 December 2018)

http://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf

United Nations System Staff College (2017): Understanding the dimensions of sustainable Development. (accessed at 12 December 2018)

<https://www.youtube.com/watch?v=wSxaWHpelH0>

WESSA. People Caring for the Earth (2016): Stepping up to the SDGs. (accessed at 12 December 2018)

https://globalactiondays.abae.pt/wp-content/uploads/2017/02/WESSA_Stepping_up_to_the_Sustainable_Development_Goals_-_Jun_2016.pdf (accessed at 25 June 2020)

Wynes, Seth Wynes; Nicholas, Kimberly A. (Ed., 2017): The climate mitigation gap: education and government recommendations miss the most effective individual actions. Environmental Research Letters 12, 074024.

Learning Material 1.3.1

Understanding the dimensions of sustainable development

United Nations System Staff College: Understanding the dimensions of sustainable Development:
<https://www.youtube.com/watch?v=wSxaWHpeIH0>

Learning Material 1.3.2

- Activity: What is sustainable and what is unsustainable? Task**
- Work with a partner and decide which activities are sustainable and which are unsustainable.
 - Remember that it might not be possible to class all activities categorically, since the circumstances in which the activity takes place might determine whether or not it is sustainable. Thus activities might be more and less sustainable.
 - Give reasons for your decisions.
 - Name three more activities that can be deemed more or less sustainable or unsustainable.
 - Swap your list of activities with another pair.

Learning material Table (see next page)

Objective Participants gain an idea of what sustainability means in environmental, social and economic terms for societies as a whole and in their own lives. They practise critical thinking.

Worksheet: Which activities are sustainable and which are unsustainable?

(More) sustainable why? (Reason/situation/ circumstances)	Less/Not sustainable Why?	
		Using public transport versus a private car
		Using recyclable water bottles
		Using one-way water bottles
		Banning coal mining
		Using solar panels for heating water
		Using fire wood for heating water
		Using wind power for heating water
		Using plastic bags for shopping
		Backpacking versus organised mass tourism
		Obtaining rights to cultivate land and live in forests/ rural areas
		Literacy campaigns
		Advocacy for climate action
Name 3 activities which can be put in the same categories		

Source: Thomas Hoffmann (2013), unpublished

Learning Material 1.3.3

Global challenges. The scientific aspects

Activity: Black Forest Mystery Story

Teaching method	The mystery-solving method was developed in England in the context of Thinking through Geography and aims to help students grasp and structure complex issues. Students are given initially two, in complex mysteries also three, beginnings of narrative strands of an entire story. This part is concluded with a question, which aims to question how the initially completely incompatible - and therefore mysterious - appearing parts of the story are connected with each other. The students receive a set of cards, on which individual steps of complex facts in small texts, pictures, graphics or with the help of other information carriers are presented. They are then instructed to reflect on how these apparently completely incompatible, and therefore mysterious, segments are related to one another.
Task	Work in groups (ideally of four students) to put the cards into a logical sequence and identify the nodes of the different threads.
Learning material	A mystery story, a set of cards laying out the individual steps of a complex chain of events in the form of short texts, images, diagrams, etc. (see next pages).
Objective	Participants are encouraged to participate actively, communicate with other group members and use their powers of logical argument and persuasion, which will strengthen their professional and social competencies. They learn that many of today's global challenges are interdependent and cannot be addressed separately.

Source: Hoffmann, Thomas: Klimawandel in Baden-Württemberg, 2014 (accessed 2020)

https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/Dokumente/2_Presse_und_Service/Publikationen/Klima/UE_Klimawandel_BW.pdf

The Black Forest Mystery (© Ministry of the Environment, Climate Protection and the Energy Sector Baden-Wuerttemberg, Germany)

Black Forest Mystery Story (fett)

After the big excitement and the sorrows of the last few days, slowly the usual happy state and adventurous attitude of the May family returns. Florian, the youngest son of the family, was bitten by a mosquito on the boat ride through the branches of the Altrhein last weekend. He described the mosquito as 'striped and beautiful'. He had a fever and everyone was worried that he might have Dengue, a life-threatening tropical fever. However, the blood analysis report from the Tropical Institute removed all such concerns.

It cannot go on like this. Everyone agrees with that. But what's the best thing for future? The Merk Family has been discussing for a long time what type of investment to make to supplement their dairy farm business which has been running for many generations in the Black Forest region in Germany. Many options were discussed and the pros and cons considered. Before this difficult question is finally settled, the couple wants to know all the details of the financial loans that may be available and the interest they would have to pay. Tomorrow's appointment at the bank shall finally bring clarity.

Right at the beginning of her working day, Mrs. Dr. Klimm analyzes the newest climate data and annual average values which arrived in her email last night. She notices that this data about major climate-components confirms the trends observed for several years. The current year could become a record-breaking year after the record of 1880.

Because the measurements confirm the trend of the last years, the May Family is worried that Florian could have fallen ill with a dangerous fever and because of the same reason the Merk Family bothers its' head about what would be the right investment.

Why is it like that?

Card 1

Dr Klimm starts her working day by analysing the e-mail she received yesterday evening with the latest climate data, including average annual temperatures. She notes that this data confirms the trends she has observed over a period of several years. This year could be the warmest since records began in 1880.

Card 2



The mosquito species is called tiger mosquito because of the stripes on its back. It originally comes from South-East Asia and transmits viruses causing the dangerous Dengue fever and Chikungunya virus which are usually found in India and South-East Asia.

Source: Gathany, James (2019): Asiatische Tiegermücke (accessed at 08 June 2020) <https://www.umweltbundesamt.de/asiatische-tigermuecke>

Photo: Centers for Disease Control and Prevention, wikimedia commons

Card 3

After the big excitement and the sorrows of the last few days, slowly the usual happy state and adventurous attitude of the May family returns. Florian, the youngest son of the family, was bitten by a mosquito on the boat ride through the branches of the Altrhein last weekend. He described the mosquito as 'striped and beautiful'. He had a fever and everyone was worried that he might have Dengue, a life-threatening tropical fever. However, the blood analysis report from the Tropical Institute removed all such concerns.

Card 4

Due to climate change, this mosquito species is finding increasingly attractive habitats in Central and Western Europe, as conditions become hotter and more humid. It's chances of survival in other parts of Europe, which are also becoming warmer, but drier, are less good.

Card 5

Photo: pixabay (2020): Ski area

For many generations, the Merk family have been farmers in the southern Black Forest. The altitude makes arable farming almost impossible, but it is good for dairy cattle. Since they cannot live on the income generated by their dairy herd alone, the Merk family, like all other mountain farmers, has to find other sources of income. In earlier times farming families sold carved shingles or wooden spoons. More recently they have rented out rooms to tourists or operated ski-lifts.

Card 6

Photo: Karl-Heinz Liebisch/pixelio.de

In the 19th century, the Balsam, native to the Himalayas, was brought as a decorative plant to Europe where it first spread in botanical gardens. Today, it is found along rivers and streams where it degrades the banks. The plant forms seed pods which explode when disturbed scattering the seeds up to seven meters and sending them up to two meters into the air. Because of its rich nectar, bees prefer it especially in seasons when many other flowers do not bloom. Native plants cannot compete with this species which rapidly covers the land and prevents local plants from growing. Source: <https://www.bund.net/themen/tiere-pflanzen/invasive-arten/neophyten/>

Card 7

The old Rhine arms along the Rhine were created by the straightening of the river. At the beginning of the 19th century the engineer J.G. Tulla from Baden wanted to reduce the danger of flooding along the Rhine river and at the same time make the Rhine navigable.

To achieve this, he had the many loops of the Rhine pierced. This shortened the course of the Rhine and at the same time created the old Rhine arms. These have a very low, or often no flow velocity at all and thus provide ideal breeding grounds for mosquitoes. With the warming of the climate also tropical insects, like the tiger mosquito, survive and spread.

Card 8

The Merk family is facing the problem of increasingly irregular snowfall, and is considering two options. They could invest in snow cannons to produce artificial snow if needed. Alternatively they could lay out a mountain-bike course on their land and abandon the winter sport business.

Card 9

They come by land, sea and air. Hidden in wooden packaging, mixed in crops and other imported goods, they reach new bio-geographic regions. As people become increasingly mobile and globalisation progresses, organisms are being freighted from their original habitat to other parts of the world. Many of them are unable to survive in their new environment, but some establish themselves and even flourish. Some spread and cause major damage. Given sufficient food, suitable climatic conditions and often the absence of any natural enemies, adaptable species have excellent chances of spreading in a new environment – especially if they have high multiplication rates.

Source: https://www.bmel-forschung.de/fileadmin/SITE_MASTER/content/bilder/ForschungsReport/Archiv/fr-2003-2.pdf

Card 10

As average temperatures rise, snow cover is no longer an axiomatic part of winter in parts of Europe at altitudes below 900 or 1000 meters. Even when snow does fall it is lying for shorter and shorter time intervals. This is true of the Merk family's land, which is situated at 850 meters.

Card 11

The first decade of the new millennium was the warmest decade Germany had seen in at least 130 years. In Baden-Württemberg, a state in south-western Germany, the average annual temperature has risen by more than 1° C to 9° C. At a global level, however, it has increased by around 0.7° C (reference period 1906-2005). The sharpest rise has been recorded since 1980. The city of Karlsruhe in Baden-Württemberg today enjoys the temperatures that Lyon in southern France used to have 75 years ago. On average, above normal temperatures can be seen more often during the winter months (November to April) than in summer.

Source: Klimawandel in Baden-Württemberg 2014, p. 6,7, Klimawandel im Süden Deutschlands

Card 12

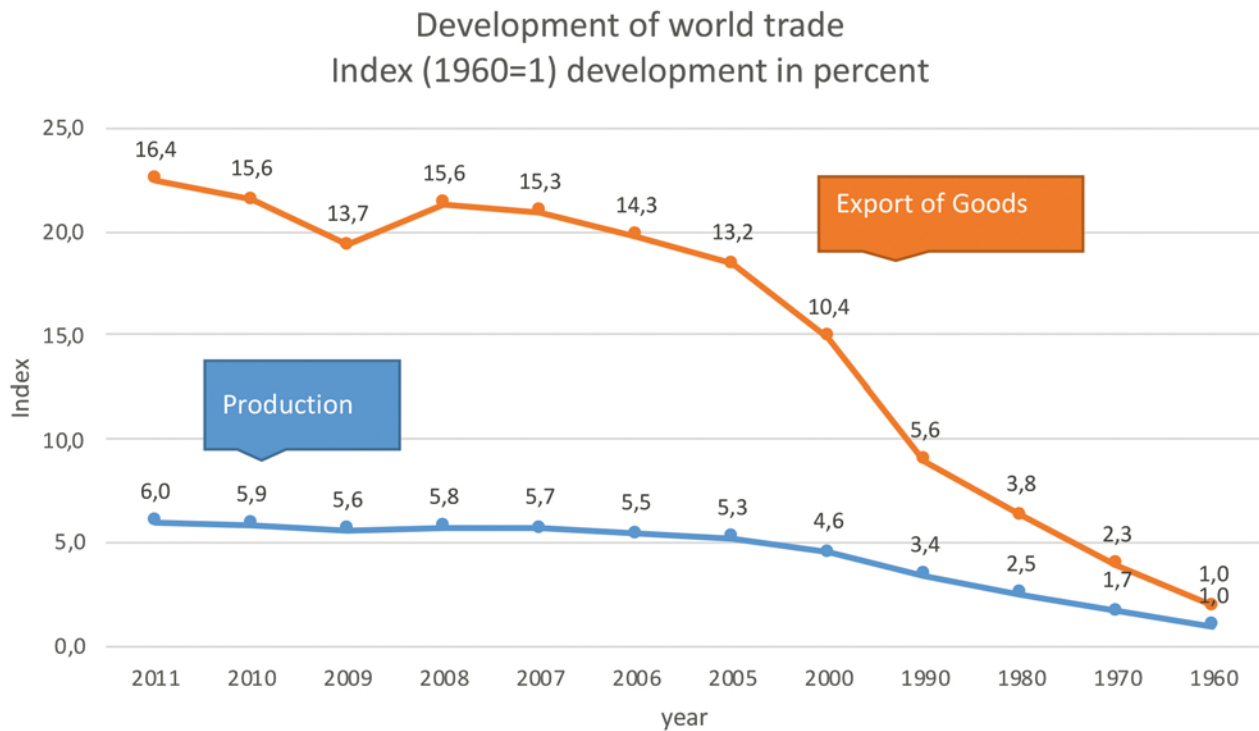
Rainfall patterns in south-west Germany are changing:

- Increase in average precipitation during the winter months, change significantly less marked in summer
- Significant increase in the frequency of heavy precipitation, especially in winter, less distinct in summer
- Despite the observed increase, the frequency of heavy precipitation and total precipitation levels in winter have not yet reached the summer levels
- These changes are more evident at higher altitudes
- No increase has yet been recorded in the absolute highest values per year of the daily precipitation measured in any one region

Source: Arbeitskreis KLIWA (ed.): 4. KLIWA-Symposium am 3. und 4. Dezember 2009 in Mainz, KLIWA-Bericht, Heft 15, p. 99.

Card 13

Development of World Trade

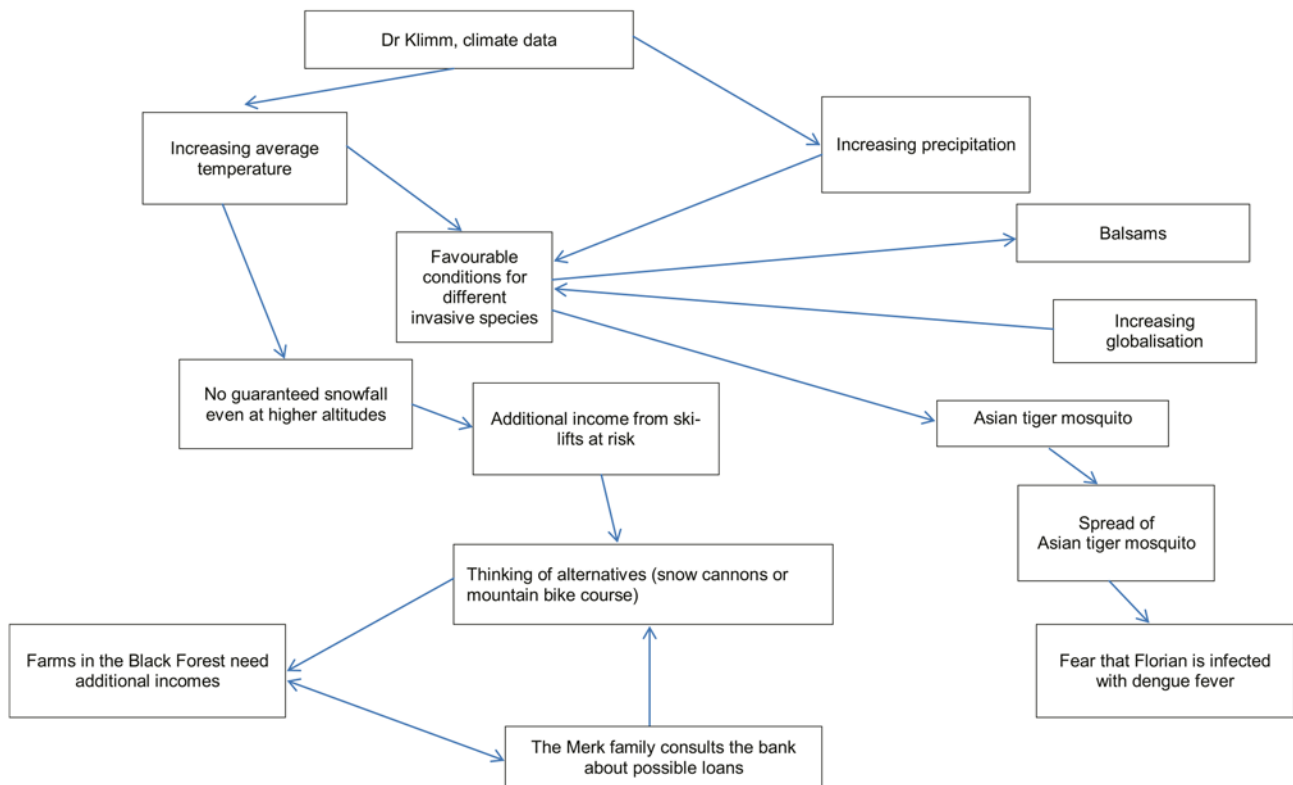


Source: Bundeszentrale für politische Bildung 2012, adapted, based on World Trade Organization (WTO): World Trade Statistical Review 2013

Card 14

It can't go on like this. Everyone agrees on that. But what is the best way forward? For a long time the Merk family discussed what could be a good investment alongside the dairy farming as a second economic pillar. Many alternatives were examined and pros and cons were weighed. Now, before this difficult question is finally settled, the couple wants to discuss in detail possible support measures and lending rates. Tomorrow's appointment with the bank should finally clarify this.

Proposed solution of the mystery



Source: Hoffmann, Thomas: Klimawandel in Baden-Württemberg, Stuttgart 2014, S. 1/5 – 1/13 (accessed 2020)

https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/Dokumente/2_Presse_und_Service/Publikationen/Klima/UE_Klimawandel_BW.pdf

Notes

Module 2

Education for Sustainable Development (ESD)

Unit 2.1

What is Education for Sustainable Development?

Instructor's Guide

Unit 2.1 explains the contribution of education to sustainable development.

In particular, the unit focuses on

- the evolution of ESD from “adjectival educations” to an umbrella concept,
- the link between ESD and the SDGs, and in particular SDG target 4.7, and the related global indicator,
- mainstreaming and embedding of ESD (Global Indicator 4.7),
- the definition of ESD.

The objectives of the unit are to

1. provide an understanding of ESD as an umbrella concept, including other education approaches such as Environmental Education,
2. bring understanding of connect between education and sustainable development and the SDGs, including 4.7 and the Global Indicator,
3. reflect on definitions of ESD.

Participants will be able to

- reflect on ESD and its significance/relevance for SD,
- develop an understanding of the concept of ESD,
- apply the concept of ESD in their own training programmes.

Approach, Methods and Activities

Participants will need to engage with the concepts and principles of ESD. Help learners to ask questions, analyse, think critically and come to conclusions.

It is proposed to address the objectives 1, 2 and 3 consecutively. One definition is given for objective 3 (UNECE) in the thematic overview. If you want to discuss different definitions of ESD, compare this definition with others given in the optional activity 2.1.3.

Activity 2.1.1: Link the SDGs

Group work: 4–6 learners per group

Hand out Learning Material 2.1.1, the handbook “Teaching the SDGs”, 17 cards/SDGs, paper and markers.

While working on this activity, the participants get familiar with the relevance of the interlinkages between the dimensions of sustainable development and are able to recognise the interlinkages (sometimes conflicting relationships between the dimensions of sustainable development (here: ecology, economics, social dimension and governance (politics))) and the SDGs on the basis of real examples. They realise that ESD must not focus on one dimension only, as some adjectival educations as predecessors to ESD did.

Activity 2.1.2: Link the SDGs with your Work as a Trainer

With this follow-up activity the trainers are elaborating linkages to mainstream ESD into the curriculum. Background materials are: “Textbooks for Sustainable Development. A Guide to Embedding”, “Curriculum Framework. Education for Sustainable Development” (see material for instructor).

Discuss the following questions on the basis of the given example (see activity 2.1.1) with your group:

- Which (school-)subjects can pick up any of the examples you have used in activity 2.1.1 as learning content?
- Which core competencies are being tackled when using this example with your learners?
- Compare to “your” (subjects you are teaching, topics you are teaching) curriculum framework, and point out where the example(s) can be used as learning content.
- Explain why this task should not be seen as an add-on activity, but as mainstreamed in the curriculum.

Activity 2.1.3: Defining ESD (see material for learners)

Let participants discuss definitions of ESD using material 2.1.3.

Duration: 4 hours

Thematic Overview

What is Education for Sustainable Development?

Unit 2.1 focuses on the contribution of education to sustainable development.

In an instrumental meaning education is a tool to support sustainable development processes. In this sense ESD covers various educational concepts, steps and processes which are suitable to foster individual and/or collective contributions towards sustainable development. Here we encounter several “adjectival educations”, such as environmental education, development education, climate change education, global citizenship education, education for peace etc. Some of these have been included in SDG target 4.7, but the main focus of 4.7 is the development of knowledge and skills for a sustainable development.

SDG target 4.7 reads: “by 2030 ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture’s contribution to sustainable development” (UN: About the Sustainable Development Goals).

The global indicator for SDG target 4.7 calls for ESD and GCED to be mainstreamed in curricula, teacher education, assessment and education policy.

SDG target 4.7 indicates that ESD generally focuses on the development and strengthening of individual competencies (acquire knowledge and skills), enabling individuals to contribute to and participate in sustainable development processes with its various dimensions. With this, basic competencies and skills such as reading, writing and numeracy are being covered. Higher level competencies such as creativity, solution orientated, critical and analytical thinking and actionability are fundamental for ESD. These (and of course further) competencies are crucial to enable individuals to find ways and techniques to act according to and contribute to sustainable development.

UNESCO describes those competencies as follows:

“Systems thinking competency: the abilities to recognise and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.

Anticipatory competency: the abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one’s own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.

Normative competency: the abilities to understand and reflect on the norms and values that underlie one’s actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.

Strategic competency: the abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.

Collaboration competency: the abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.

Critical thinking competency: the ability to question norms, practices and opinions; to reflect on own one’s values, perceptions and actions; and to take a position in the sustainability discourse.

Self-awareness competency: the ability to reflect on one’s own role in the local community and (global) society; to continually evaluate and further motivate one’s actions; and to deal with one’s feelings and desires.

Integrated problem-solving competency: the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the abovementioned competences.”

(see UNESCO (2017), p. 10)

[The competency approach is explained with more detail in unit 2.3.]

However, similar to the basic competencies reading, writing and numeracy most of these competencies mentioned above are only necessary prerequisites for learners to find sustainable solutions, but are not sufficient to achieve them. For example the systems thinking competency can be exercised for many different purposes, possibly even for effectively waging war.

Thus, in addition to the above, for achieving sustainable development one needs to learn about sustainability and sustainable development in the learning process.

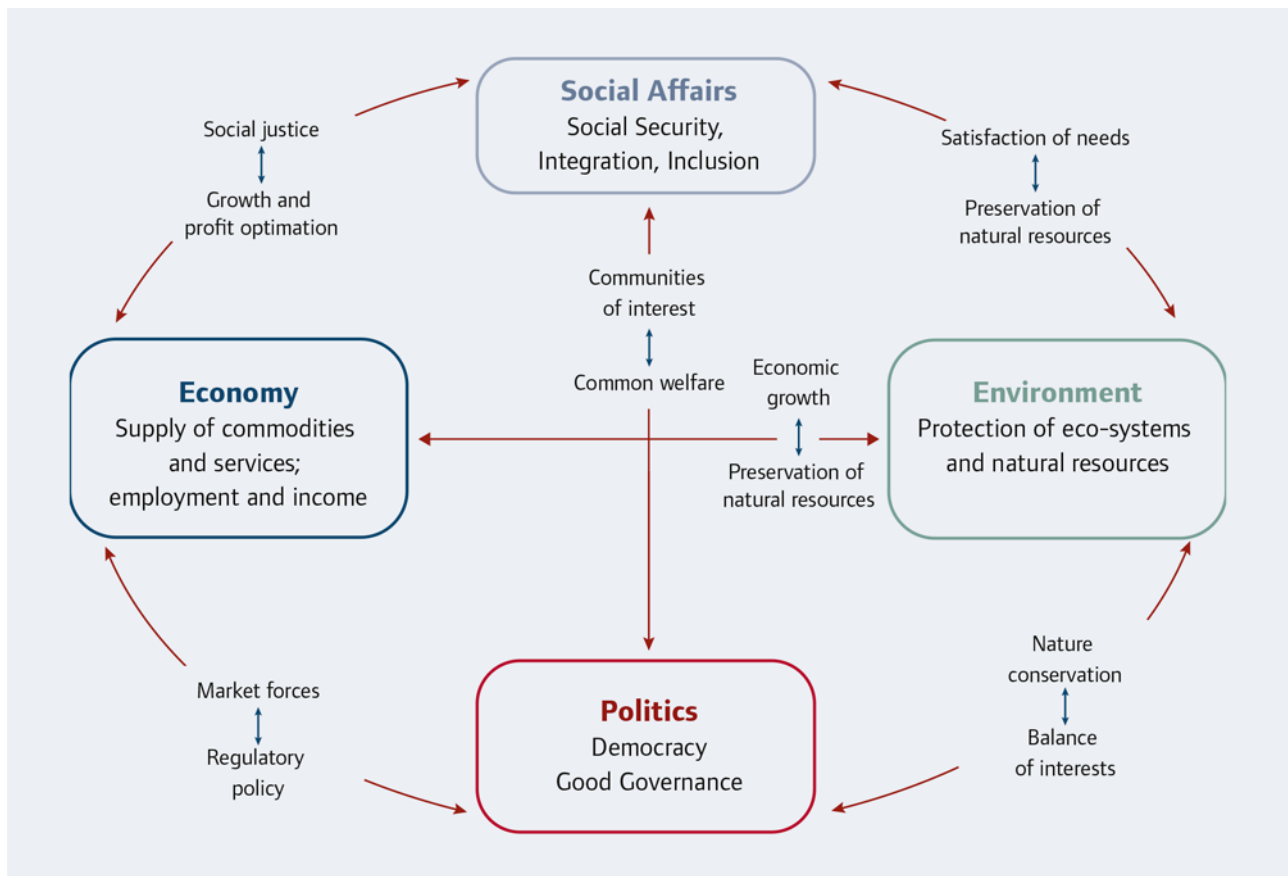
Referring to the description of sustainable development in module 1, it becomes evident that the range of content reaches from economic via social to ecological aspects, which are usually interconnected, often interdependent. The “Curriculum Framework. Education for Sustainable Development” lists thematic areas such as diversity of values, cultures and living conditions, globalisation of religious and ethical guiding principles, food and agriculture, health, education, protection and use of natural resources and generation of energy, global environmental change, poverty and social security or global governance, just to mention a few. This type of content lends itself easily to be included in teaching subjects, thus prompting activities such as mainstreaming, embedding of ESD in education policies and curricula, as the global indicator for SDG target 4.7 tries to measure.

However, in the education process, specifically in school education, ESD cannot prescribe specific solutions to sustainability problems or promote or inculcate certain actions. Instead, it is directed towards promoting self-determined decision making of learners, based, of course, on the concept of universal human rights.

Long before the concept of ESD was designed, environmental education made its way into the curricula of schools around the world. In the 1970s, two United Nations conferences (the Belgrade Workshop in 1975 and the Intergovernmental Conference on Environmental Education in Tbilisi in 1977) established the main cornerstones of this concept, which already contained some key elements of ESD. Environmental education is usually considered to be one of the forerunners of ESD – in addition to global learning, consumer awareness and development education, but ESD has a much broader scope by simultaneously taking into account economy, environment, society (and politics/culture). In 1992, the Agenda 21 identified education as a major driver for promoting sustainable development and called for existing education programmes to be stronger reoriented towards sustainable development. In 2004, the United Nations launched the UN Decade of Education for Sustainable Development. It aims to promote changes in education systems to allow the implementation of ESD worldwide. The UN Decade then became a major driver for ESD. After the ESD Decade, UNESCO launched the Global Action Programme on ESD (2015–2019) which is being implemented at present.

The evolution of the concept of ESD from its predeceasing adjectival education focused mainly on integrating those under the umbrella of the tree pillar model of sustainable development. With its multidimensional approach ESD has a much broader focus than its predecessors. Figure A can be used to select content for ESD in the learning process and avoid the pitfalls of reducing ESD by only focusing on single dimensions of sustainable development.

Figure A: Target Conflicts between the dimensions of the sustainable development paradigm



Source: KMK, BMZ (2017): Curriculum Framework for Education for Sustainable Development, Cornelsen, Berlin, p. 43

Literature, Media and Links

ESD – WWF-India (2018): Introduction to Education for sustainable Development. (accessed at 11 December 2018)

<https://www.youtube.com/watch?v=WHBjbQ9fJUo>

McKeown, Rosalyn (2002): Education for Sustainable Development. (accessed at 11 December 2018)

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Learning material 2.1.1

Step 1: With these methods the participants are requested to assign any good practice example (choose example from material "Teaching the SDG") to the dimensions shown in the figure (1 and 2) and explain why they have allocated the good practice example to certain dimension.

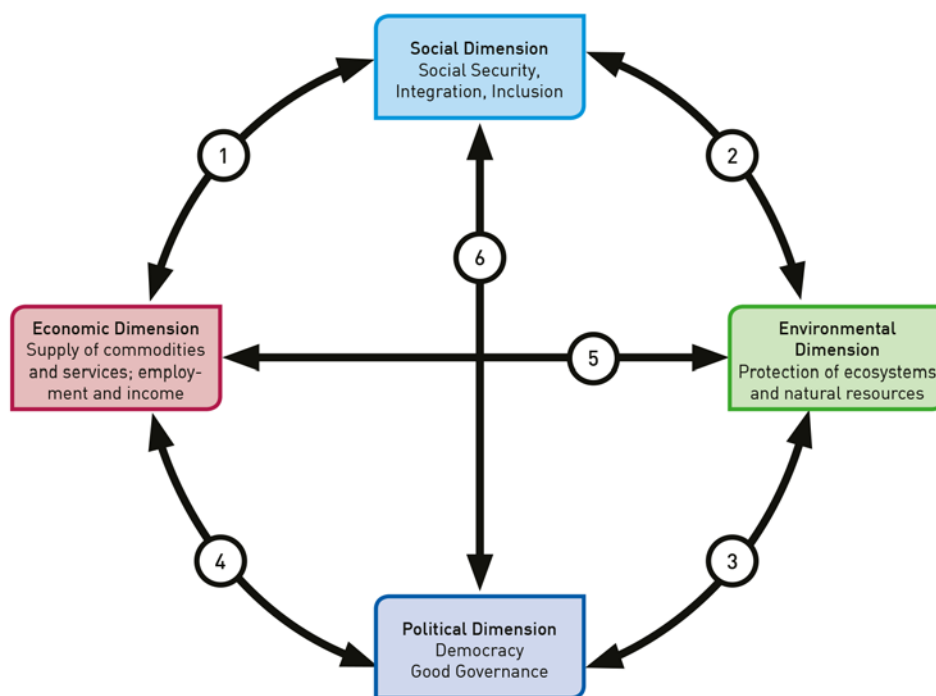
https://esd-expert.net/files/ESD-Expert/pdf/Was_wir_tun/Lehr-%20und%20Lernmaterialien/Broschuere_DE-SDG-Barrierefrei-web.pdf

Step 2: Discuss, in which ways the other dimensions are being reflected/tackled within the given example. Draw lines between the dimensions, which are related resp. in conflict with each other on the basis of the given example.

Step 3: Place the SDGs you have chosen next to the place to which the example is related directly. Further, place these SDGs where indirect relations exist (-which SDGs are not being tackled directly/indirectly). Discuss your result and present to the other groups.

Step 4: Compare what you have prepared with the figure shown in 1 and 2. Discuss the relationships between the SDGs as shown. They are probably partly complementary, partly conflicting.

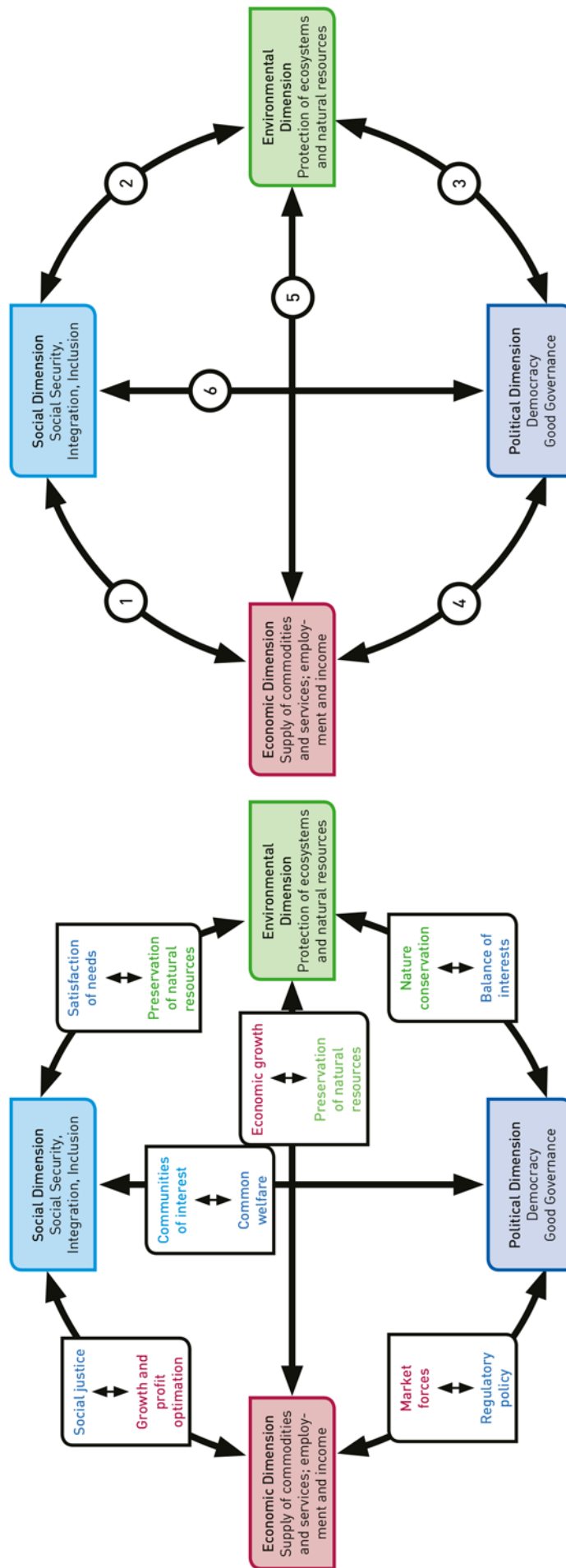
Figure 1: Basic model for analysing development conflicts and finding synergetic sustainable solutions



Source: UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) (2017): Textbook for Sustainable Development: A Guide to Embedding (accessed at 08 June 2020)

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Figure 2: Conflicting development dimensions



Source: UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) (2017): Textbook for Sustainable Development: A Guide to Embedding (accessed at 08 June 2020) <https://bangkok.unesco.org/content/textbooks-sustainable-development-guide-embedding>

Learning Material 2.1.3

The objective of the activity is to increase understanding of ESD and help/guide them to create a definition which they will understand better and apply on ground.

Divide the learners into groups of 5.

Ask them to read the 3 definitions, discuss, give their opinion and reasons for their conclusion. Let each group read it to the whole group and debate their findings.

Write down the final outcome – a definition of ESD that the group thinks suits them the best.

Q: Analyse the following three definitions of ESD to give your opinion of the balance of emphasis on the desired educational and sustainability outcomes of each one.

Definition 1: Education for Sustainability is a lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and co-operative actions. These actions will help ensure an environmentally sound and economically prosperous future. Education for Sustainability has the potential to serve as a tool for building stronger bridges between the classroom and business, and between schools and communities.
Opinion
Reason

Definition 2: Education for Sustainable Development (ESD) promotes sustainable thinking and acting. It enables children and adults to make decisions and at the same time understand how those decisions affect future generations and the life of others.
Opinion
Reason

Definition 3: Education for sustainable development is about the learning needed to maintain and improve our quality of life and the quality of life for generations to come. It is about equipping individuals, communities, groups, businesses and governments to live and act sustainably; as well as giving them an understanding of the environmental, social and economic issues involved. It is about preparing for the world in which we will live in the next century, and making sure that we are not found wanting.
Opinion
Reason

Notes

Module 2

Education for Sustainable Development (ESD)

Unit 2.2

Introducing Global Citizenship Education

Instructor's Guide

The unit focuses on Global Citizenship Education – a global education agenda pointed out together with ESD in target 4.7 of the SDGs – and illustrates fundamental understanding of GCED including critical voices.

The objectives of the unit are to

1. give participants the opportunity to become more familiar with the idea of GCED and ESD,
2. provide a basic understanding of the main orientation and goals of GCED,
3. encourage learners to discuss and reflect on GCED in comparison with ESD.

Participants will be able to

- discover how GCED may contribute to raising awareness about global social responsibility,
- reflect about relationships between self, other, local and global settings,
- recognise different ways of how to work on topics/contents with an emphasis on GCED or ESD.

Approach, Methods and Activities

Choose a participatory approach and connect learning activities to the participants' daily life and their educational and everyday life experiences. Try to find and use opportunities for hands-on experience that will enable the learners to link theory with practice and action with reflection – including the time-related dimension of linking past, present and future; look at how local contexts are interwoven with global condition, reflect on social/global justice approaches in the communities of the learners, find out political approaches to acquire more justice and equality; facilitate reflection on the broad concept of GCED by linking it to concrete topics close to the participants' personal and educational reality. In order to find out what learners might need, it is important to work out what they already know about GCED and what they can do or feel about this topic. Give space for communication and critical thinking about the approaches to GCED and ESD.

Get inspired by the proposed activities, change them according to regional and national contexts or make your choice depending on the participants' learning wants and needs.

Activity 2.2.1: Do you need a Passport?

The group is divided into small groups (4–6 persons), depending on the number of participants. Each group is asked to discuss and reflect on some questions (if time is short, reduce the number of questions); if possible, the group can use online information for the discussion and reflexion. Main discussion results can be visualised on flipchart paper.

The objectives of the activity are to

- reflect on individual legal rights,
- explore the partiality of personal knowledge and personal rights,
- find valid information of legal rights of people from selected other countries,
- discuss consequences of labour markets of people's life and work in different regions of the world,
- stimulate critical reflection.

Material: Learning Material 2.2.1 for the working groups, flipchart paper, markers

Duration: 50–80 minutes (including discussion with the whole group)

Activity 2.2.2: Respecting Diversity – The World Train

Participants are divided into small groups (4–6 persons).

This exercise addresses issues concerning prejudices and the limits of tolerance as well as images and stereotypes about different minorities. The aim of this exercise is to challenge the participants' own stereotypes and prejudices about other people and about the images and associations reproduced and influenced e.g. by mainstream media. At the same time the participants experience a challenge of coming to a consensus as a group in a given situation and to reflect on reasons for this. Moreover, you can use the exercise for further discussion on how to prevent prejudices and stereotypes.

Depending on the world region the exercise is practised in, feel free to change some of the proposed characters and adapt them to the learners' specific socio-cultural contexts.

The objectives of the activity are to

- critically reflect about stereotypes and prejudices,
- become aware of and foster competencies for dealing with diversity.

Material: Learning Material 2.2.2 for participants, flipchart paper, markers

Duration: 60–90 minutes (including discussion with the whole group)

Activity adapted from: Directorate of Youth and Sport, Council of Europe (2004): All different – all equal, p. 78-80.

<https://rm.coe.int/1680700aac> (accessed 14 March 2019)

Activity 2.2.3: Promoting Dialogue and Understanding of GCED and ESD

The participants walk around and read selected citations about GCED. Participants divide into small groups and work on a selected topic/issue under the perspective of GCED and the connections to ESD.

The objectives of the activity are to

- get to know and critically reflect on GCED and connection(s) to ESD,
- foster cooperative learning processes and create spaces for meaningful and deep exchange.

Material: handout for participants, flipchart paper, markers

Duration: 70–90 minutes (including discussion with the whole group and depending on the number of working groups)

Thematic Overview

Introducing Global Citizenship Education

This unit refers to SDG 4 (especially to target 4.7 and its global indicator) and the two global education agendas mentioned – Global Citizenship Education (GCED) and Education for Sustainable Development (ESD). Internationally, GCED is a key priority (along with access and quality of education) of the UN Secretary General's Global Education First Initiative launched in 2012. That these two agendas (GCED and ESD) are being implemented by UNESCO alongside each other without distinct definitions, is cause for concern for many education practitioners and teachers and multipliers in different learning environments. Questions posed in this context often focus on a possible overarching role of one of these agendas over the other. The latest definitions of GCED and ESD published by UNESCO still leave the reader mostly unguided, when it comes to differentiate between the two agendas.

"ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning and is an integral part of quality education.

GCED nurtures respect for all, building a sense of belonging to a common humanity and helping learners become responsible and active global citizens. GCED aims to empower learners to assume active roles to face and resolve global challenges and to become proactive contributors to a more peaceful, tolerant, inclusive and secure world" (see UNESCO Institute for Statistics).

Questions like the following come to mind: Would GCED not be part of quality education? Does GCED not empower learners to assume roles to face **local** challenges?

Older publications are even less distinctive. For example UNESCO's definition of GCED from 2015 includes **local** and global roles and become proactive for a **sustainable** world. The goal of GCED is "to empower learners to engage and assume active roles both locally and globally to face and resolve global challenges and ultimately to become proactive contributors to a more just, peaceful, tolerant, inclusive, secure and sustainable world" (see UNESCO (2016), Q5–A5).

Recently, the OECD (Organisation for Economic Co-operation and Development) decided to include global competencies as a field of the 2018 Programme for International Student Assessment (PISA). The OECD definition of global competence outlines four target dimensions that are strongly interdependent and overlapping: "Global competence is the capacity to examine local, global and intercultural issues, to understand and appreciate the perspectives and world views of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for collective well-being and sustainable development" (see OECD, p. 7).

There are critical voices pointing out the need for a more complex theory of global citizenship education, calling for more explicit attention to the assumptions about the citizen subject student, the 'who' of global citizenship education, and demanding to recognise unequal power relations (see Pashby 2011; Koyama 2015). Andreotti and Pashby note that GCED initiatives "are very often blind to historical power inequalities embedded in global issues and international relations, as well as the (re)production of knowledge and identities. Thus, despite claims of inclusion and globality, the lack of analyses of power relations and knowledge production in GCED often results in educational practices that unintentionally repeat the historical patterns that maintain conditions of inequality and injustice" (see Andreotti/Pashby, pp. 422–423).

Taking account of the above approaches to ESD and GCED, how can we address both agendas?

Our proposal is as follows:

GCED and ESD can be recognised as mutually reinforcing approaches, with commonalities and specificities. Both prioritise the relevance of education in order to build a peaceful and sustainable world. Both also emphasise the need to foster knowledge, skills, values, attitudes and behaviours. Nevertheless, since sustainable development seems to be the overarching focus of both agendas, it seems safe to see GCED as an approach to strengthen ESD.

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Learning Material 2.2.1

Do you need a passport?

Handout to be copied for the working groups

1. **Please discuss and reflect in your group on the following questions:**
 - How many countries can one visit with one's passport?
 - Also try to find out how many countries a person from Pakistan, Cameroon, Peru or Sweden can visit with their passports? Does this mean one who has greater travel rights is more of a global citizen?
 - What is the difference between being a legal citizen and the experience of being a complete citizen?
 - Does a person of certain ethnicity become a somewhat less of a citizen in certain contexts within the same country?
 - Labour and Citizens: What do different labour market reforms in developing and developed countries mean for people's movement from the developing to the developed world and vice versa?
2. **Please visualise main discussion results on flipchart paper before presenting and reflecting them in plenary.**

Duration: 50–80 minutes (including discussion in the plenary and depending on the number of participants)

Learning Material 2.2.2

The World Train Handout to be copied for the participants
(adapted from: Directorate of Youth and Sport, Council of Europe)

Scenario:

You are boarding a train for a week-long ride. You are travelling in a sleeper cabin which you have to share with three other passengers. With whom of the following persons would you prefer to share the cabin:

1. A shy elderly European woman who looks scared.
2. A policeman from Mexico.
3. An overweight Swiss financial broker.
4. An African DJ who seems to have a lot of money.
5. A skinhead from Sweden apparently under the influence of alcohol.
6. A young artist who is HIV positive.
7. A Roma man from Hungary just released from jail.
8. A German rapper living a very alternative life-style.
9. A blind accordion player from Austria.
10. A Mexican female student who doesn't want to return home.
11. A middle-aged Romanian woman with a 1-year old child in her arms.
12. A German impulsive and quite aggressive feminist.
13. An African woman selling leather products.
14. A wrestler from Belfast apparently coming from a football match.
15. A Polish prostitute from Berlin.
16. A French farmer who speaks only French and has a basket full of strong cheese.
17. A Myanmar refugee living in Germany who is on the way to see some family members.
18. An Indian volunteer of an NGO who has lost his money.

Instructions:

1. Please select individually your three first choices of the people you would most like to travel with and the three you would least want to travel with. You have 10 minutes to do this.
2. Share your choices in your small group and discuss the reasons which led to your decisions.
3. Come to a consensus for your group: Agree on a list with the three most wanted and the three least favoured passengers. Discuss the reasons for the group choice. (You have up to 35 minutes for this part of the activity.)
4. Each group presents its conclusions and the reasons for the options chosen in plenary. Please mention points on which disagreement within the group was particularly strong.
5. Evaluate the exercise in plenary.

Duration for the activity in total: 60 – 90 minutes (depending on the number of participants and the discussion and reflexion in plenary)

Module 2

Education for Sustainable Development (ESD)

Unit 2.3

ESD Competencies

Instructor's Guide

The unit introduces the competency concept of learning, reflects on what ESD competencies are and shows what competency-based learning means in the context of schools.

The objectives of the unit are to

1. provide a basic understanding of the competency concept,
2. initiate a reflection on the concept of ESD competencies,
3. show how the concept of ESD competencies relates to schools.

Participants will be able to understand that competencies are dispositions to act and that they can be acquired,

- recognising the specific characteristics of ESD competencies and their relation to content and issues of sustainable development,
- assessing ESD competencies in a school context in relation to subjects,
- developing the ability to use the ESD competency approach in their own teaching practices.

Approach, Methods and Activities

Activity 2.3.1: Classroom Scenarios

1. Show the three classroom scenarios (see Learning Material 2.3.1) by which certain competencies can be developed respectively and have already been developed.
2. Discuss the following leading questions with the group:
 - Which thematic areas are shown in the examples?
 - Which are the issues behind the topics/content?
 - Which areas of competencies are addressed in the three examples?
3. Show slides 4 and 5 and discuss whether the group agrees with the statements made.
4. Discuss which of the issues of the three examples can be found in figure 2 on slide 6.

(The material can be adapted to different audiences by choosing situated examples.)

Activity 2.3.2: The Competency Approach

1. Introduce the competency approach by handing out Learning Material 2.3.2. Let the group read Learning Material 2.3.2.
2. Guide the discussion on the concept of competencies and its application. Guiding questions could be:
 - Can you agree with Weinert's definition of competencies?
 - Are such competencies (see definition) a useful basis for designing learning environments for ESD?
 - What is the relationship between the content/issues and competency based learning? Refer to activity 2.3.1 and figure B and figure A.

Duration: 2 hours

Thematic Overview

What are Competencies?

The discussion about competencies is a discussion about the aims of education. Is the aim of education only to transfer information? That would mean that teachers confront learners with a collection of facts, which are more or less interlinked and form the individual basis of understanding. Or should education empower individuals to cope with current and future challenges of life, putting them into situations in which they have to act and find solutions to the given problems much more on their own.

While these questions are widely important, responses in the education systems are diverse. Some national curricula focus on content and learning objectives, others on competencies, while some countries are differentiating between cognitive, social and practical skills to describe abilities to be acquired at school. Fundamental ethical principles, attitudes and values are often referred to in preambles and rarely explicitly integrated into curricula. Knowledge is sometimes reduced to declarative knowledge and sometimes used as an all-encompassing term for the outcome of learning and research.

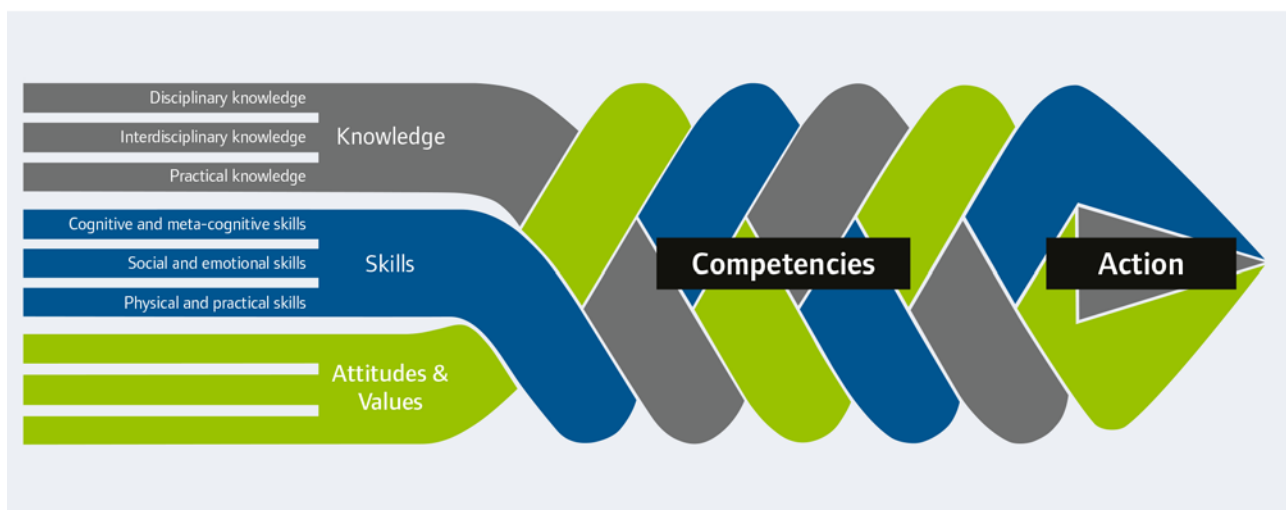
These thoughts bring up the question: What is the role of schools in society? Schools have to help each generation acquire basic knowledge and understanding of their present time and life based on a collective history and on traditions, scientific reasoning, values and cultures. Similarly, education and school have to prepare each generation for its future. The concept of competencies addresses these challenges, which schools worldwide face.

A widely accepted and useful definition of “competencies” by Franz Weinert is that they are “cognitive capacities and skills that individuals have or can acquire in order to solve specific problems and to successfully and responsibly use connected motivational, volitional and social readiness and abilities for solving problems in variable situations” (see Weinert). The definition underlines that competencies can be learned. It corresponds to the fundamental experience that we need knowledge, skills, motivation, readiness and an attitude based on reflected values to responsibly solve problems. Motivation and volition are to a large extent determined by emotions and self-esteem. Put simply, they are dispositions for meeting certain requirements. ESD competencies, once acquired, can help to face present and future individual and societal challenges in variable situations in a sustainable way.

Competencies for a Sustainable Future

The framework of the new OECD Programme for International Student Assessment (PISA) “Global competency for an inclusive world” (see OECD Programme for International Student Assessment) from 2016 provides a helpful overview of the instruments and concepts to be used in the PISA 2018.

Figure A: OECD 2030 Framework



Source: Organisation for Economic Cooperation and Development (OECD) (2016): Global Competency for an inclusive world [accessed at 08 June 2020 <http://www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf>]

The background and purpose of the new PISA assessment – to be applied in addition to the traditional PISA assessment of cognitive competencies – are complementary to the SDGs as shown in the following OECD statement.

“The driving ideas are that global trends are complex and require careful investigation, that cross-cultural engagement should balance clear communication with sensitivity to multiple perspectives and that global competence should equip young people not just to understand but to act. These objectives already feature in the curricula of many countries. But they now need further evolution, in response to changing imperatives. The greatest of these is the need to find a new concept of growth” (see OECD Programme for International Student Assessment, p. 1).

ESD Competencies and Issues

ESD concepts have identified a considerable number of key competencies. As they are transversal in character, they can and should be linked to subject-related competencies and other basic (supra-disciplinary) competencies, such as creativity, media competency or self-confidence. Considering the relative newness of ESD and its conceptual extension in recent years, it is not surprising that educationalists have put forward divergent competency sets (see , OECD, Roth, Schreiber/Siege, Wiek et al.).

Indicative List of ESD Competencies:

“Systems thinking competency: the abilities to recognise and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.

Anticipatory competency: the abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one’s own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.

Normative competency: the abilities to understand and reflect on the norms and values that underlie one’s actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.

Strategic competency: the abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.

Collaboration competency: the abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.

Critical thinking competency: the ability to question norms, practices and opinions; to reflect on own one’s values, perceptions and actions; and to take a position in the sustainability discourse.

Self-awareness competency: the ability to reflect on one’s own role in the local community and (global) society; to continually evaluate and further motivate one’s actions; and to deal with one’s feelings and desires.

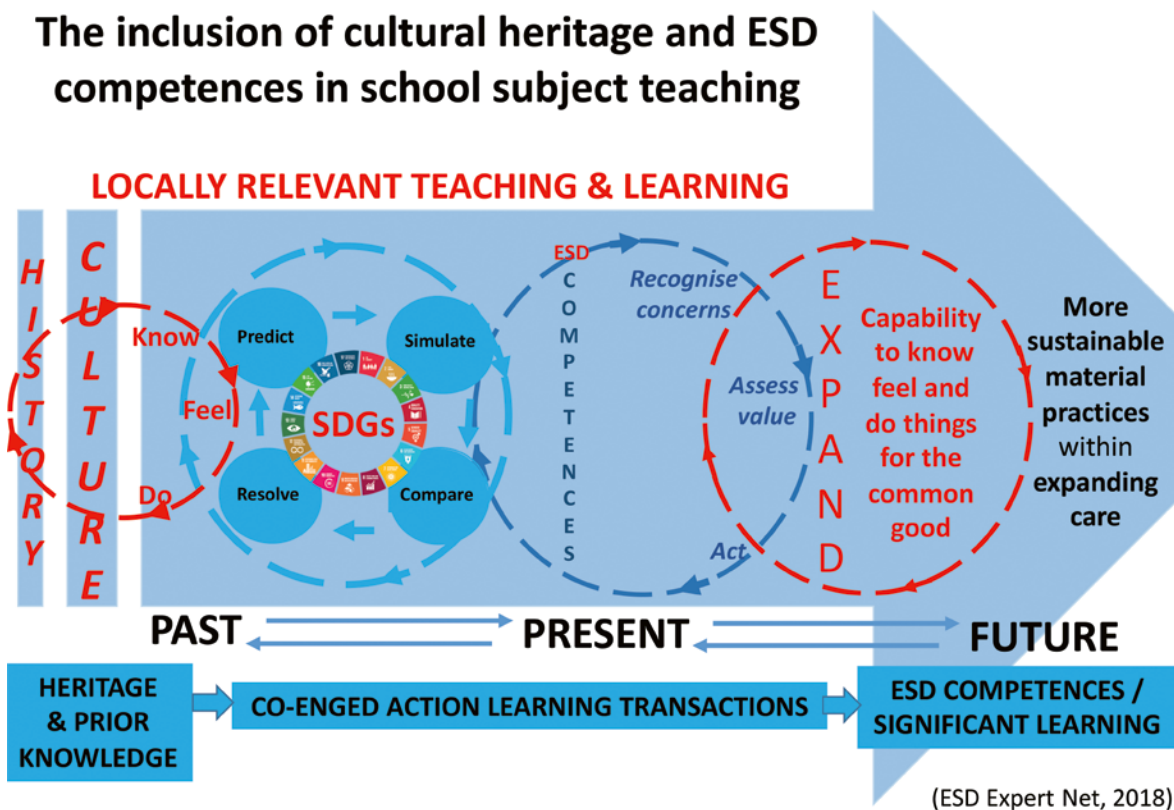
Integrated problem-solving competency: the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the abovementioned competences.”

(see UNESCO 2017, p. 10)

1. These listed competencies can be grouped into three areas.
2. **Analysing situations from various perspectives (recognition):** This includes a future-oriented and global approach, accepting that any action here and now may have consequences for sustainability elsewhere around the globe and for future generations.
3. **Judging situations and options for action (assessment):** These competencies include reconsidering values and traditional action patterns and arriving at individual conclusions.
4. **Acting with the aim of promoting sustainability (action):** ESD-related recognition and action both have a strong participatory component.

As Rob O’Donoghue shows in figure B, these areas of competencies (recognition, assessment, action) can be seen as basic steps in an ESD learning process based on neuroscience research.

Figure B: Prediction Loop – how Emotions are made



Source: O'Donoghue, Rob, unpublished

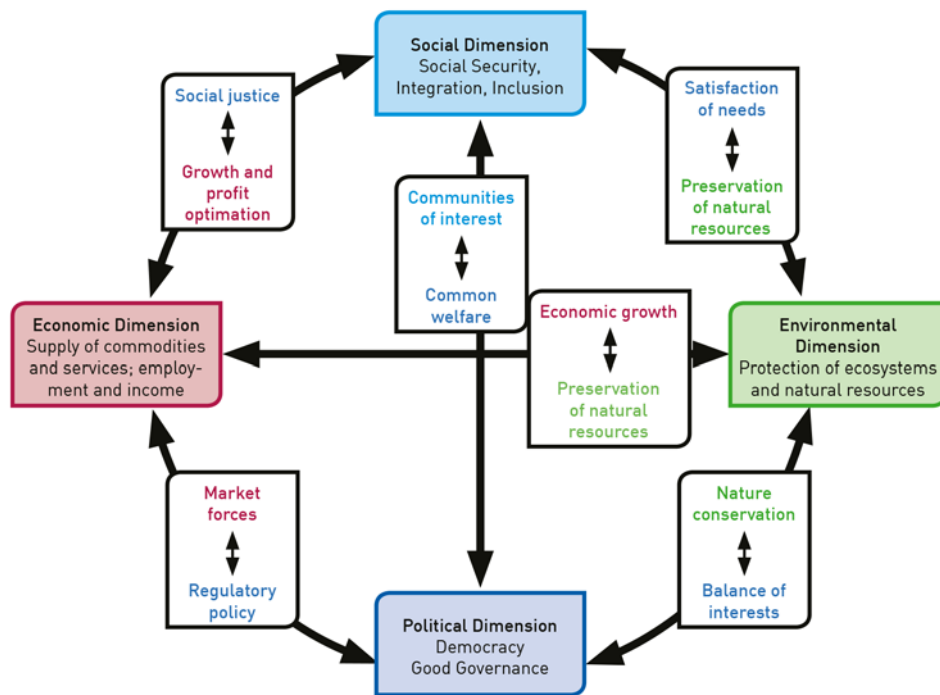
ESD Competencies, Content, Issues and School Education

In the context of school education, competencies describe "dispositions for meeting certain requirements" which are defined for subjects or learning areas and need to be acquired by dealing with content. Learning expectations for learners therefore have to be defined as competencies which should be fully developed at specific stages of a school career. This task is closely related to the role of the subjects at school. If ESD is mainstreamed/embedded in the curricula of school subjects, it must also be related to subject-specific content. And if ESD is mainstreamed/embedded in cross-curricular approaches as the whole school approach (see module 4), then content, which is common to several subjects and is related to sustainable development, can be chosen.

Teachers and trainers are used to group content in thematic fields. "The Curriculum Framework. Education for Sustainable Development" (2016) identifies 21 thematic fields for ESD based on an analysis of curricula and educational media. They range from "peace and conflict" to "food and agriculture" or "protection and use of natural resources" (see Schreiber/Siege). The question whether ESD topics are different from topics of established subjects, can be answered with yes and no. The topic "children at war" in English as a Foreign Language is certainly a potential ESD topic, whereas "famous places in London" probably is not. Any content that is referred to as an "issue" has the potential of becoming ESD content, as issues refer to problems about which there is significant disagreement among people affected by the problem as to the appropriate solution.

Figure C shows areas from which issues and content in ESD can be selected (see also unit 1.2). Issues are found in the areas between the dimensions. They mark areas where ESD learning content, representing conflicts between the specific goals connected to the dimensions of SD, can be found.

Figure C: Conflicting Sustainable Development Dimensions



Source: UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) (2017): Textbook for Sustainable Development: A Guide to Embedding (accessed at 08 June 2020)

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Learning Material 2.3.1

Classroom scenario 1: **Economics**

- Teacher (in Germany):
Before judging VW's decision to produce in Manila, we need to acquire some data first. This is a chart of labour costs here and in the Philippines.
- Student:
Yes, and we also need statistics about living costs here and there.
And we need help in processing all those data!

Classroom scenario 2: **Geography**

- Student:
Really, I don't understand why Tanzania wants to build a dam in the world heritage site "Selous Game Reserve" at Stiegler's Gorge on the Rufiji.
- Teacher:
Because they think ahead! The dam will provide 2,100MW of electricity to a country that is currently extremely undersupplied: It'll be of great use for poverty reduction.
- Student:
Well... maybe, but still I think that... we need to go into more detail, if we want to make a fair judgement and see the pros and cons. The Game Reserve protects wild animals through photographic and hunting safaris.

Classroom scenario 3: **Biology**

- Student:
If tuna has to be protected, because it is not sustainably caught, we shouldn't eat pizza tonno anymore!
I'll ask the pizza joint if they can do away with tuna.
- Teacher:
Good idea! Get active, maybe you are lucky! At least, you make them think about it!

Students treated **thematic areas** like

- the globalisation of the economy and labour
- mobility, urban development and traffic
- commodities from around the world: production, trade and consumption

in the context of their **school subjects**.

All those topics / content mentioned are "issues". They can be looked at from different viewpoints.

These students will be able to...

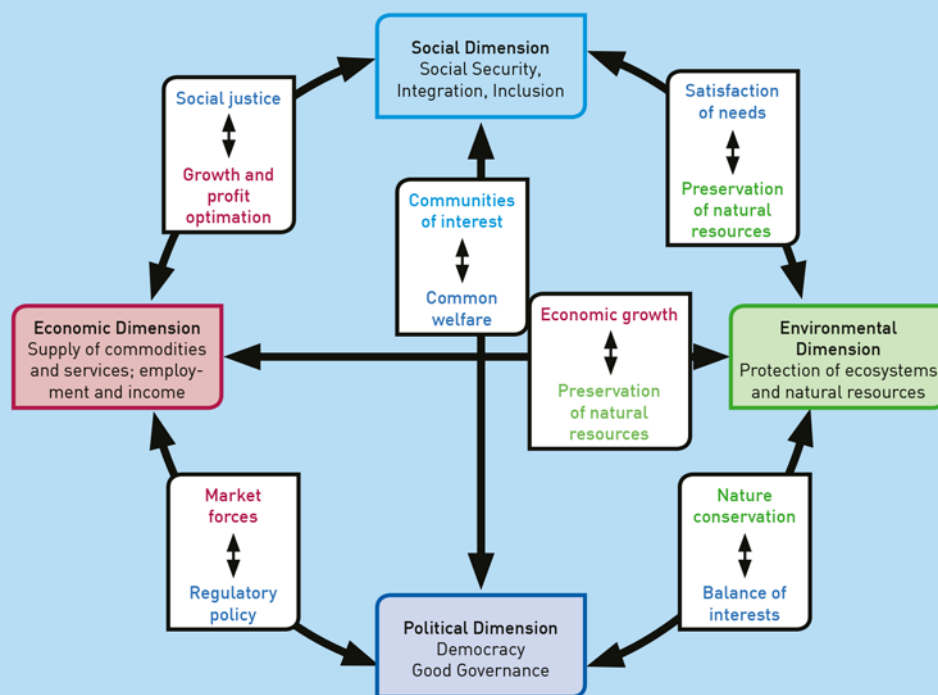
core competency

- ...acquire and process information
- ...assess development measures
- ...participate and get actively involved

competency domain

- recognition
- assessment
- action

Figure 2: Which of the issues on the slides can be found in the figure?



Source: UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) (2017): Textbook for Sustainable Development: A Guide to Embedding (accessed at 08 June 2020)

<https://bangkok.unesco.org/content/textbooks-sustainable-development-guide-embedding>

Learning Material 2.3.2

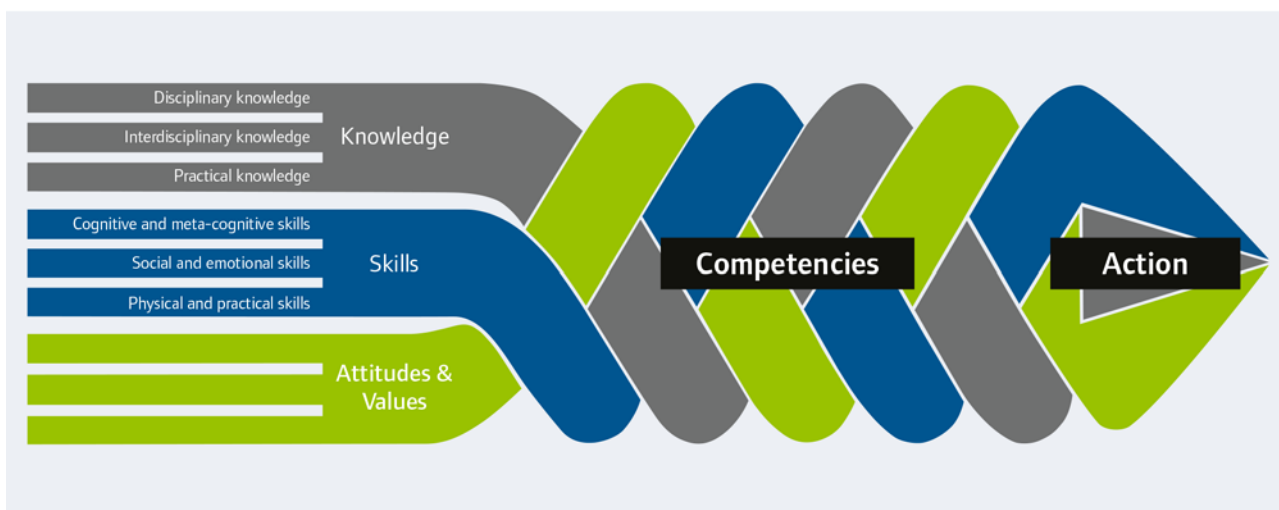
What are competencies?

A widely accepted and useful definition of “competencies” by Franz Weinert is that they are “cognitive capacities and skills that individuals have or can acquire in order to solve specific problems and to successfully and responsibly use connected motivational, volitional and social readiness and abilities for solving problems in variable situations” (2001). The definition underlines that competencies can be learned. It corresponds to the fundamental experience that we need knowledge, skills, motivation, readiness and an attitude based on reflected values to responsibly solve problems. Motivation and volition are determined to a large extent by emotions and self-esteem. Put simply, they are dispositions for meeting certain requirements. ESD competencies, once acquired, can help to face present and future challenges in variable situations.

Competencies for a sustainable future

The framework of the new Programme for International Student Assessment (PISA) – “Global competency for an inclusive world” (OECD 2016) – provides a helpful overview on the instruments and concepts that will be used in the PISA 2018.

Figure 3: OECD 2030 framework



Source: Organisation for Economic Cooperation and Development (OECD) (2016): Global Competency for an inclusive world [accessed at 08 June 2020 <http://www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf>]

The background and purpose of the new PISA assessment – to be applied in addition to the traditional PISA assessment of cognitive competencies – are complementary to the Agenda 2030 SDGs:

“The driving ideas are that global trends are complex and require careful investigation, that cross-cultural engagement should balance clear communication with sensitivity to multiple perspectives and that global competence should equip young people not just to understand but to act. These objectives already feature in the curricula of many countries. But they now need further evolution, in response to changing imperatives. The greatest of these is the need to find a new concept of growth...” (OECD 2016, p. 1).

ESD – Competencies and Issues

ESD concepts have identified a considerable number of key competencies. These are complementary components of a holistic idea of competency. As they are transversal in character, they can and should be linked to subject-related competencies and other basic (supra-disciplinary) competencies, such as creativity, media competency or self-confidence. Considering the relative newness of ESD and its conceptual extension in recent years, it is not surprising that educationalists have put forward divergent competency sets (see de Haan, OECD, Roth, Schreiber/Siege, Wiek et.al.).

Core elements of these listed competencies are 3 steps

Analysing situations from various perspectives (recognition)

This includes a future-oriented and global approach, accepting that any action here and now may have consequences for sustainability elsewhere around the globe and for future generations.

Judging the situations and options for action (assessment)

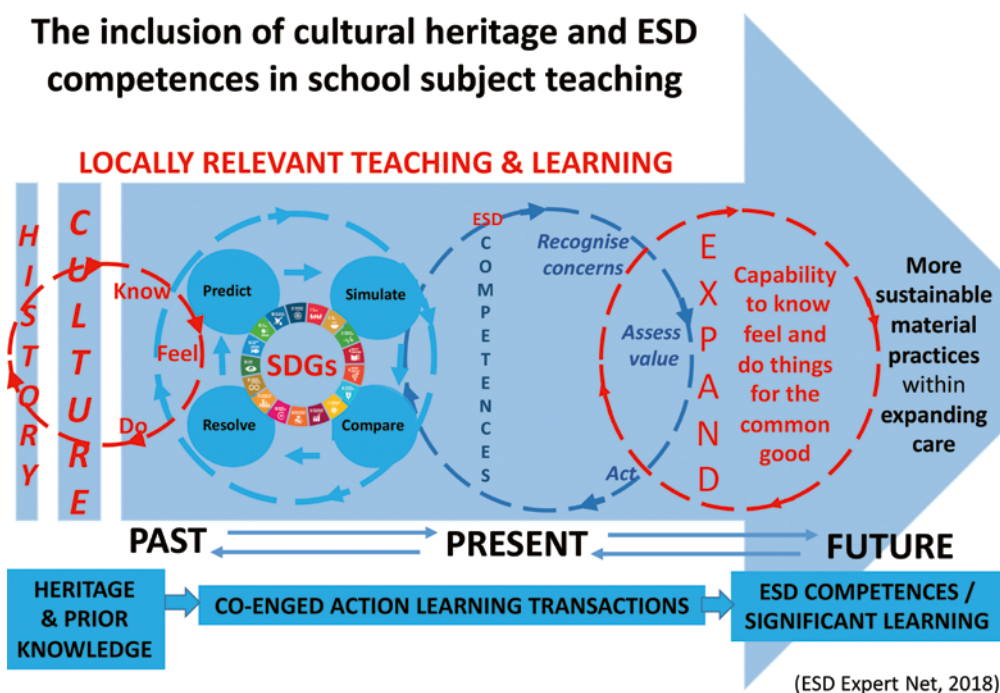
These competencies include reconsidering values and traditional action pattern and arriving at individual conclusions.

Acting with the aim of promoting sustainability (action)

ESD-related recognition and action both have a strong participatory component.

As Rob O'Donoghue shows in Figure Figure , these areas of competencies (recognition, assessment, action) can be seen as basic steps in an ESD learning process based on neuroscience research.

Figure 4: Prediction Loop – how Emotions are made



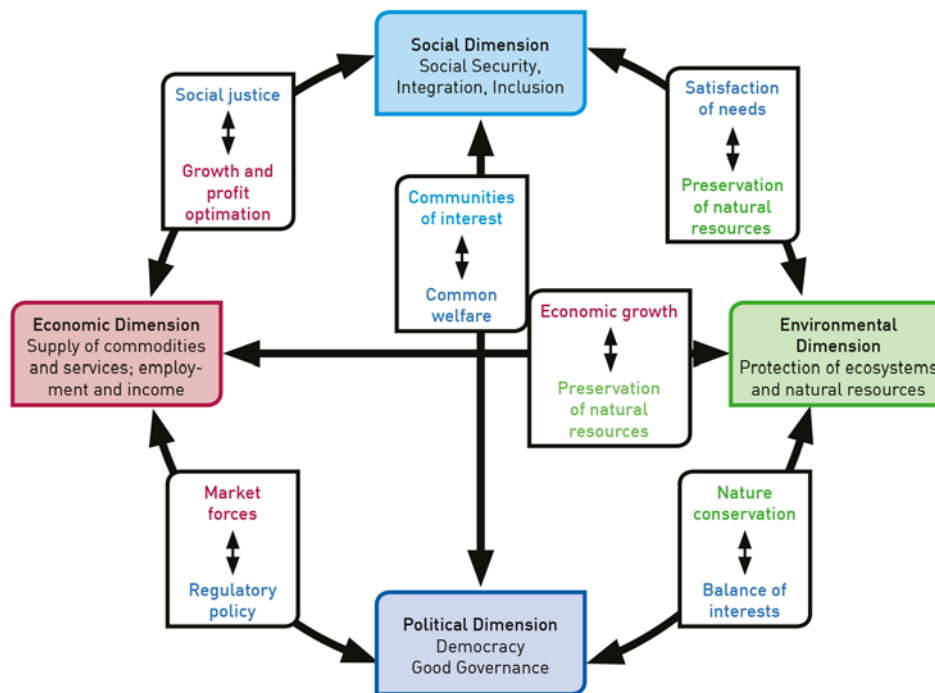
Source: O'Donoghue, Rob (2020): unpublished

ESD competencies, content and school education

In the context of school education, competencies describe “dispositions for meeting certain requirements” that are defined for subjects or learning areas and need to be acquired by dealing with contents. For that one has to define the learning expectations for students as competencies that should be fully developed at specific stages of their school career. This task is closely related to the role of the subjects at school. If ESD is mainstreamed / embedded in the curricula of school subjects, it must be also related to subject specific content. If ESD is mainstreamed / embedded in cross-curricular approaches as in WSA (see module 4) then content, which is common to several subjects and is SD related.

We are used to group content in thematic fields due to their connectedness. The Curriculum Framework ESD (2016) has identified 21 thematic fields for ESD by analysing curricula and educational media. They range from “Peace and Conflict” to “Food and Agriculture” or “Protection and use of natural resources”. The question whether ESD topics are different from topics of established subjects, can be answered with yes and no. The topic “Children at War” in English (as a foreign language) certainly is an ESD topic, whereas “Famous places in London” is probably not. Any content that is referred to as “issue” has the potential of becoming ESD content, as issues refer to problems about which there is significant disagreement among people affected by the problem as to the appropriate solution.

Figure 5: The figure as follows shows areas from which issues and content in ESD can be selected. (see also unit 1.2)



Source: UNESCO Mahatma Gandhi Institute of Education for Peace and Sustainable Development (MGIEP) (2017): Textbook for Sustainable Development: A Guide to Embedding (accessed at 08 June 2020)

<https://bangkok.unesco.org/content/textbooks-sustainable-development-guide-embedding>

Notes

Module 2

Education for Sustainable Development (ESD)

Unit 2.4

Forms of Teaching and Learning – Professional Competencies of Multipliers

Instructor's Guide

This unit focuses on pedagogical approaches of teaching and learning that are associated with ESD as well as on the role of teachers/multipliers and those of students. The unit illustrates that ESD should be aligned with active, participatory processes characterised by reflection and dialogue. This requires teachers and multipliers to facilitate learning processes, partly shifting power and responsibility to the learners and supporting critical reflection and self-reflection. Furthermore the unit indicates methods/pedagogical strategies on how to encourage learners to strengthen their sustainable development competencies and refers to ways of how to assist multipliers to enhance their professional competencies.

The objectives of the unit are to

1. support participants to reflect on required professional competencies for designing, moderating and reflecting learning processes,
2. equip participants with the knowledge necessary to design learning settings (including matching contents to methods) that allow participants to develop sustainable development competencies,
3. strengthen the participants' self-esteem, self-confidence and their ability to focus on practical learning,
4. help the group unearth its collective creativity and intelligence through alternative and collaborative strategies.

Participants will be able to

- identify and discuss crucial educational approaches/design criteria for ESD learning environments,
- identify appropriate content and corresponding methods to support learners in developing their sustainable development competencies,
- choose fitting combinations of competencies, pedagogical approaches and methods to use them and develop and reflect learning environments for ESD,
- reflect professional competencies and recognise needs for professional training.

Approach, Methods and Activities

We suggest a participatory approach integrating the participants' prior knowledge and connecting learning with practical and real-life situations.

Together with the group the teacher/moderator should compile and visualise important characteristics of pedagogical approaches including methods that are associated with ESD. Add or deepen specific terms whenever necessary. Following this common work, participants should reflect concrete examples of ESD lessons/learning environments, discussing ways of matching methods and content and developing lesson plans/methods. Furthermore, a deep reflection of professional competencies and personal needs for a professional training is essential: What should teachers/multipliers be capable of? What are their strengths and their challenges? The trainer/educator should support, add and visualise important aspects before starting working with the group. Educators should stimulate and support reflections.

Get inspired by the proposed activities, but please feel free to make changes according to regional and national contexts or make your choice depending on the participants' learning wants and needs.

Activity 2.4.1: How to Create Learning environments for Supporting Learners Building up Competencies?!

The group is divided into small groups (4–5), depending on the number of participants. Each group is asked to plan a learning lesson/learning environment which would help participants to build up and/or strengthen (some selected) sustainable development competencies. The main discussion results can be visualised on flipchart paper.

The objectives of the unit are to

- select a topic and develop a commonly approved learning environment which will help students to build up sustainable development competencies,
- reflect and decide on how to match content and methods,
- discuss different methods of ESD for active and transformative learning processes,
- stimulate critical reflection about meaning-making learning processes.

Material: Learning Material 2.4.1 for working groups, flipchart paper, markers

A compilation of “methods of ESD” can support the working groups.

Duration: 60–90 minutes (including discussion with the whole group; depending on the number of participants more time may be needed)

Activity 2.4.2: Reflecting professional capacities of educators and trainers

In small groups participants reflect on professional competencies and crucial skills multipliers should be capable of for implementing ESD learning activities. They also reflect on personal strengths and feasible challenges and strategies for supporting the development of self-confidence and professional competencies.

The objectives of the unit are to

- critically reflect on professional competencies,
- become aware of personal strengths and personal challenges,
- discuss strategies for (professional) self-development.

Material: Learning Material 2.4.2 for participants, flipchart paper, markers

Duration: 60–90 minutes (including discussion with the whole group; depending on the number of participants more time may be needed)

Thematic Overview

Forms of Teaching and Learning – Professional Competencies of Multipliers

The Global Action Programme (GAP) on Education for Sustainable Development calls for empowering “learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity” (see UNESCO (2014), p. 12). In order to achieve these aims “by transforming the society” (see UNESCO (2014), p. 12), education and learning processes have to be reoriented so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes needed to contribute to a (more and more) sustainable future. This implies new learning arrangements.

Education for sustainable development proposes a transformation of educational approaches in terms of teaching methods and learning environments (Table modified according to Tilbury, p. 25, and Pearson/Bäckman/Grenni/Moriggi/Pisters/de Vrieze, p. 4).

From	To
Passing on knowledge	Understanding and getting to the root of issues, supporting participants asking critical questions and finding proper ways for answering them
Teaching attitudes and values	Encouraging values clarification on the basis of human rights
Seeing people as a problem	Seeing people as facilitators of change
Sending messages and preaching	Dialogue, negotiation and action, generating participants' own ideas
Behaving as expert – formal & authoritarian	Acting as partners – informal and egalitarian
Raising awareness	Changing the mental models which influence decisions and actions, evoking transformative mindsets (cognitive lenses or frames that are helpful for orienting and motivating people towards societal change)
Changing behaviour	More focus on structural and institutional change

The pedagogical approaches should be participant-centred, action-oriented and transformative (see below, Rieckmann, p. 49):

- **Learner-centred pedagogy** emphasises the active development of knowledge rather than its mere transfer and/or passive learning experiences. The learners' prior knowledge as well as their experiences in the social context are the starting points for stimulating learning processes in which the learners construct their own knowledge base. Learner-centred approaches require learners to reflect on their own knowledge and learning processes in order to manage and monitor them.
- **According to action-oriented learning**, learners engage in action and reflect on their experiences in relation to the intended learning process and personal development. Action-learning increases knowledge acquisition, competency development and values clarification by linking rather abstract concepts to personal experience and the learners' life.
- **Transformative learning** is a basis for identity development and capacity building. It aims at empowering participants to question and change their ways of seeing and thinking about the world, in order to further develop their understanding of it. Transformative learning involves critical reflection around premises about oneself, it reflects “sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)” (see Mezirow, p. 58).

Changing concepts of learning are connected with changing roles of students and of teachers/multipliers: Learners are understood to be active, engaged participants in the learning process, learning together, co-creating or constructing what it is, they learn as they learn. The role of a multiplier/an educator changes from being an expert who transfers structured knowledge to being a facilitator of learning processes, partly shifting power, responsibility and decision-making to the

learners. Teaching and planning are framed from the perspective of participants, their life contexts and learning experiences. The role of a multiplier is to create learning environments supporting dialogue and reflection, prompting learners' experiences and reflexive thought processes, empowering and challenging learners to change their worldviews and to build up competencies.

Multipliers should develop an open and reflection-oriented attitude as well as required competencies for leading, moderating and sharing sustainable development related learning settings. There are some crucial skills and competencies multipliers should be capable of for implementing ESD learning activities (List below modified according Cebrián/Junyent):

Competence for Contextualising: taking into account the different dimensions of a problem or action, the spatial dimension (local – global), the temporal dimension (past, present and future), the interconnections between sustainable development dimensions (environmental, social, economic, ...) and individual and/or group context(s).

Competence for working and living with complexity: working transversally from different perspectives and areas of a situation or problem and interrelating them and inspiring participants to do the same; supporting participants to deal with uncertainties.

Competence for establishing a dialogue between disciplines and different social groups: developing learning settings that foster working in an interdisciplinary and transdisciplinary manner.

Competence for thinking critically: creating the conditions for critical thinking, for deconstructing existing ways of knowing and understanding, for critical reflection on values, beliefs, media and ICT, worldviews or individual and cultural concepts that underpin them and to co-construct new shared meanings that can contribute to sustainability; recognise and respect different trends and views in different situations; guide participants to deeper process and knowledge levels.

Competence to clarify values: values clarification and strengthening behaviour towards sustainability thinking, mutual respect and understanding of other values.

Competence to manage emotions and concerns: promoting reflection on one's own emotions and as a means to reach a deeper understanding of problems and situations.

Competence for visioning alternative future scenarios: thinking about different scenarios or alternatives to a situation or problem at a local and global scale; help participants to think in a forward-looking manner, to deal with uncertainty; promoting participants' work with different visions and scenarios for alternative and future changes.

Competence for participation, decision-making and acting for change: supporting participatory learning, entering into dialogue with the participants and sharing responsibilities; asking questions for exploring shared understanding(s); creating a learning environment in which action competence(s) can be developed and practiced; supporting open-minded perception, trans-cultural understanding and cooperation.

There are different pedagogical strategies including arts-based methods (see Rosenberg/O'Donoghue/Olvitt; Meisterheim/Cretney/Cretney 2011; Pearson/Bäckman/Grenni/Moriggi/Pisters/de Vrieze) for supporting processes of active and participatory learning and collaboration, e.g.: group discussions, role-plays and simulations, critical reading and writing, debates, case studies, reflexive accounts, problem-based learning, fieldwork and outdoor learning, storytelling, modelling good practice.

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Learning Material 2.4.1

How to create learning environments for supporting learners building up competencies?!

1. Please build working groups (4–5 persons).
2. Start working in your groups by taking relevant material from your contexts or starting with a local problem or project. Plan a learning lesson / learning environment which would help participants to develop (some selected) SD competencies (see material unit 2.3.) in a learner-centred and active way. Keep inclusive learning in mind. Discuss different ways of matching methods and content.
3. Please visualise your results on flipchart before presenting them in the whole group.

Reflect in the entire group different ways of creating learning environments supporting learners to strengthen their SD competencies.

Duration: 60–90 minutes (including discussion in the plenary and depending on the chosen topics and the number of participants)

Learning Material 2.4.2

Reflecting professional capacities of trainers and educators

1. Please build working groups (4–5 persons).
2. Start with the designed learning lesson (activity 1) or take a local problem or project. Think about at least four professional competencies that you would need to mobilise as a multiplier. Justify why you have chosen these competencies? What do you think you should actively promote in this lesson / project?

The attached list of some crucial skills and competencies multipliers should be capable of for implementing ESD learning activities can support your discussions and reflections – feel free to add (modified according Cebrián & Junyent 2015):

Competence for Contextualising: Taking into account the different dimensions of a problem or action, the spatial dimension (local – global), the temporal dimension (past, present and future), the interconnections between SD dimensions (environmental, social, economic, ...) and individual and/or group context(s).

Competence for working and living with complexity: Working transversally from different perspectives and areas of a situation or problem and interrelating them and inspiring participants to do the same; supporting participants to deal with uncertainties.

Competence for establishing a dialogue between disciplines and different social groups: Developing learning settings that foster to work in an interdisciplinary and transdisciplinary manner.

Competence for thinking critically: Creating the conditions for critical thinking, for deconstructing existing ways of knowing and understanding, for critical reflection on values, beliefs, media and ICT, worldviews or individual and cultural concepts that underpin them and to co-construct new shared meanings that can contribute to sustainability; recognise and respect different trends and views in different situations; guide participants to deeper process and knowledge levels.

Competence to clarify values: Values clarification and strengthening behaviour towards sustainability thinking, mutual respect and understanding of other values.

Competence to manage emotions and concerns: Promoting reflection on one's own emotions and as a means to reach a deeper understanding of problems and situations.

Competence for Visioning alternative future scenarios: Thinking about different scenarios or alternatives to a situation or problem at a local and global scale; help participants to think in a forward-looking manner, to deal with uncertainty; promoting participants' work with different visions and scenarios for alternative and future changes.

Competence for participation, decision-making and acting for change: Supporting participatory learning, entering into dialogue with the participants and sharing responsibilities; asking questions for exploring shared understanding(s); creating a learning environment in which action competence(s) can be developed and practiced; supporting open-minded perception, trans-cultural understanding and cooperation.

1. Reflect your personal strengths and feasible challenges? Discuss cooperative strategies for supporting the development of self-confidence and professional competencies.
2. Share main discussion results with the whole group.

Duration: 60–90 minutes (including discussion in the plenary and depending on the number of participants)

Module 2, Unit 2.4

BOX: Methods of ESD (modified according sources mentioned below)

Talks and presentations	Presenting a body of knowledge or selection of information through a structured verbal and visual presentation. Talks and presentation can be useful at the start or within a learning process when it may be necessary to provide background information, clarify concepts or introduce a specific focus. Talks and presentations are less time consuming than participatory methods but are some pitfalls. One-way communications can cause or reinforce power imbalances as the power is usually with the presenter. They don't support active and social learning unless complemented by more interactive and participatory methods, e. g. guided questioning, projects, case studies, fieldwork, field trip. However, one-directional, focused learning can be used very effectively in participatory or active learning frameworks when used in conjunction with other methods and tools. It is important to value the input of new knowledge.
Group discussions	The use of discussion is an attempt to counteract the risk of the teacher/multiplier taking a transmissive or authoritarian approach, thereby enabling the learners group to explore their own and others' views. Group discussions encourage active listening, self-reflection, and the exchange of different cultural narratives, worldviews and attitudes.
Role-plays	This technique provides an opportunity for participants taking on different identities (roles) and acting these out with or for others, in a scenario depicting some sustainability issues or event, so that both participants and spectators can empathise with (put themselves in the shoes of) others, and understand their perspective, experiences and contexts, or issue, better.
Guided questioning	Using probing and often quite structured questions, for example during fieldwork or on an interpretive walk, to direct learners' thinking about particular aspects of their experience.
Interpretive trails	A guided walk or a trail with interpretive signage, through an area where much can be learnt about the environment, either natural or built. There are different ways in which the interpretation can take place, for instance through signs, poster boards or plaques along the way, a booklet with a map and additional information, a knowledgeable guide and/or digital technologies. Many nature reserves and botanical gardens, for example, lay out walks through interesting sections of the area, that illustrate different ecosystems, archeological sites, places of cultural interest etc.
Music, poetry and visual Art	People learn differently. There are different ways of accessing and expressing knowledge. Art can provide a better outlet for some people's ideas and experiences than more formal types of expression. Opportunities for people (children and adults) to give creative expression to their ideas and to reflect their experiences and feelings about sustainability matters in open-ended and creative ways. Many art forms are not language-based so they have much potential in contexts where language might be a barrier to learning. Music can help bridge barriers between very different people and hence facilitate social learning deliberations.
Scenario planning and backward mapping	Scenario planning is a structured process of thinking about and anticipating the unknown future, without pretence of being able to predict the future or influence the environment in a major way. Related to scenario planning, backward mapping begins by asking learners to envisage their desired transformative future scenario. The group then works backwards from this desired endpoint to map out the key decisions or practices required to achieve this vision. The group ends with a clear plan of what needs to be done – starting today – to achieve the desired future.
Stimulus activities	A stimulus activity might involve watching a video or looking at photos, poems or newspaper extracts to initiate reflection or discussion. Learners may even be involved in producing their own work such as photos taken to stimulate a discussion. Use of videos or externally produced documents enables the multipliers to bring in a wide range of viewpoints for critical analysis.

Critical incidents	Learners are given an example and asked what they would do, what they could do and what they should do. This allows them to consider their personal perspectives and actions in the light of an ethical stance. The approach can also be used with groups to promote awareness and deep reflection about multiple perspectives on sustainable development path.
Case studies	Case studies provide learners with in-depth information (with varying amounts of detail and formality) about a particular issue in a particular context. Case studies can bring ESD into areas of the curriculum that had not traditionally involved a clear focus on sustainability and to promote the learners group with a holistic view of an issue. Case studies enable students to investigate that affect their local area, to work with community groups, NGOs or private enterprises and to work together in finding solutions for local issues.
Reflexive accounts	Considering their own position in relation to new knowledge about sustainable development can help learners understand how individual actions contribute to sustainability. This pedagogical approach provides opportunities for learners to reflect on personal roles, attitudes and responsibilities in relation to a range of sustainability issues.
Critical reading and writing	Reading and writing are important social practices and a key for promoting literacy. Learners can gain from de-constructing discourses to identify the possible motivation of the author. They may also be able to envisage alternative futures and write a contrasting account based on different perspectives.
Problem-based learning	Problem-based learning is an iterative learning process that is used to teach a whole range of subject matter. In the context of ESD, a sustainability-related issue may be identified and students asked to investigate this to generate a body of knowledge. They can then develop a vision of alternative actions and potential solutions to the problem, which they use to devise a plan of action. The action may then be carried out, followed by a period of reflection and evaluation. This process promotes both the conceptual and practical aspects of sustainability literacy.
Solution-based learning – learning from successful examples for implementing the SDGs	ESD wants to advance the idea of sustainable development, wants to bring it to life and to action. Therefore, it is important to work with and get inspired from positive examples for promoting positive emotions and motivation for active participation in the communities and institutions. Try to find and work together with change agents.
Fieldwork and outdoor learning	Fieldwork is an example of experiential pedagogy that can influence students' emotions and help develop the critical thinking skills so essential to understanding the complexity of sustainability. Fieldwork for sustainability is often based on issues in the local community and environments, linking theory to real-world examples. Outdoor experience is an important precursor to understanding sustainability and promotes learning by encouraging active learning.
Storytelling	Telling stories is an engaging and effective form of teaching and learning. Storytelling is currently experiencing a considerable revival of interest, since folktales about the relationship between the Earth and its human inhabitants have been at the heart of storytelling since earliest times. Storytelling also draws on the oral traditions of indigenous societies and folk art and has been practised for generations as a means of entertainment, education or cultural preservation. Storytelling makes ideas, theories and concepts come alive, offers a source of inspiration and provides us with practical insight into approaches to our most persistent environmental, social and economic difficulties and helps to impart respect for cultural heritage as well as the environment. This enables teachers to better reflect sustainable development information, principles and values with the group of learners.

Notes

Module 3

Digitalisation and ESD

Unit 3.1: Digitalisation and Sustainable Development

Instructor's Guide

This unit offers an overview of the connections between digital and sustainable development.

The objectives of the unit are to

1. provide a basic understanding of opportunities and challenges of digitalisation for sustainable development and the implementation of the Sustainable Development Goals,
2. initiate a reflection on the use of digital technologies in relation to sustainability,
3. demonstrate possibilities for using digital media in terms of sustainable development.

Participants will be able to

- understand the positive and negative impacts of digitalisation on sustainable development,
- determine and assess the influence of digital technologies on their own lifestyles and reflect their usage behaviour in the context of sustainable development,
- recognise the opportunities of digital media to contribute to the implementation of the SDGs.

Approach, Activities and Methods

The activities of this unit should build on the participants' previous knowledge of digitalisation / digital media and take into account the existing technical requirements. Not all proposed activities need to be implemented, but participants should in any case address the links between digitisation and sustainable development.

Activity 3.1.1: Starting with a Short Film

To introduce the topic, show one of the following short films (see Learning Material 3.1.1).

- Jiminy (20 minutes): <https://www.youtube.com/watch?v=O0A7x5YwFLk>
- The iMom (14 minutes): <https://vimeo.com/157977103>

Discuss:

- How do digital technologies influence our daily lives and the world we live in?
- Why is it important to handle digital technologies in a reflective way?

Duration: 30 minutes

Activity 3.1.2: Chances and Risks of Digitalisation with regard to Sustainable Development

Discuss:

- What are the chances and risks of digitalisation with regard to a sustainable development of our society?
- Can you identify any contradictions?

The following chart will help you take notes during the discussion (see also Learning Material 3.1.2).

	Chances	Risks
Economy		
Employment		
Research & Science		
Politics		
Education		
Health		
Arts & Media		
Communication		

Further suggestion: Discuss the chances and risks of digitalisation for the environment (climate change, land use, biodiversity etc.).

Duration: 30 minutes

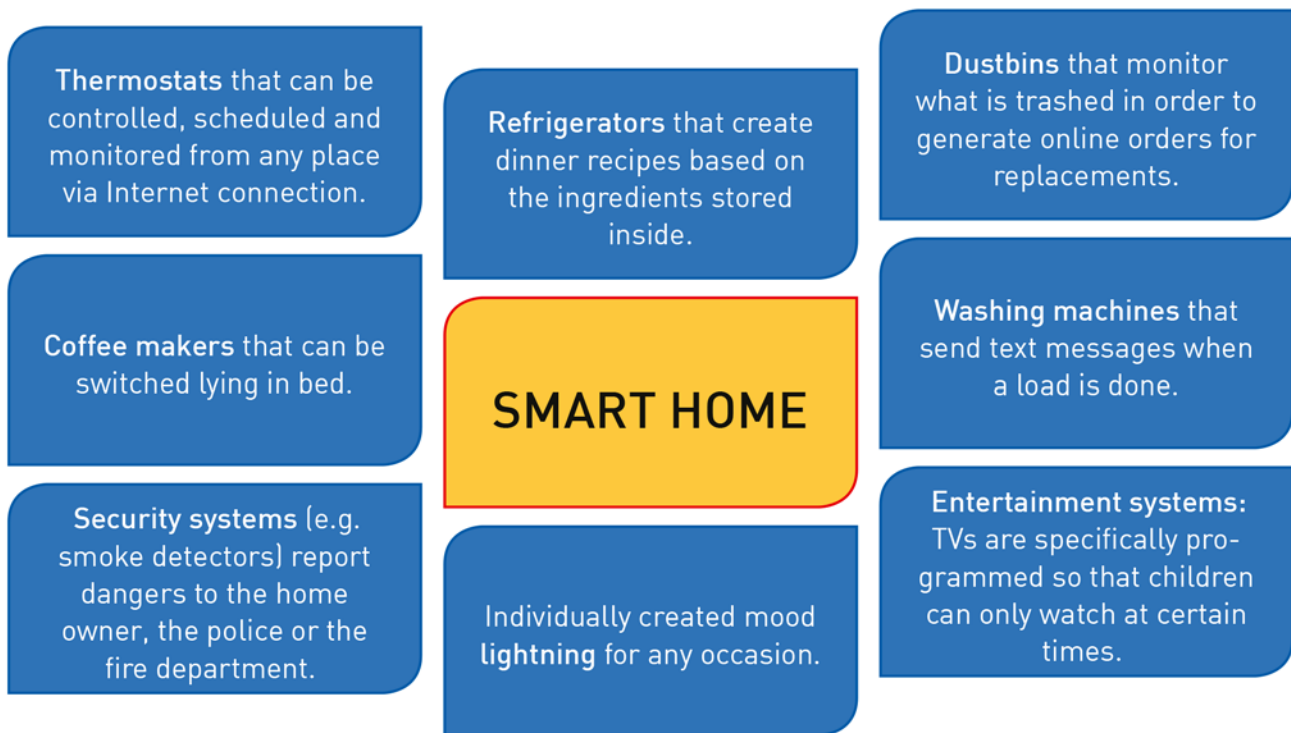
Activity 3.1.3: Home and Smart Home – Digital Technologies and Sustainable Lifestyles

When we are at home, we spend our time sleeping, eating or just being with our family. We read books, do the laundry, meet friends, work or watch TV. In short: We spend a lot of time in our dwellings. Every house or flat is equipped with a range of (potentially) electronic devices. Some examples are listed in figure A.

A “Smart Home” connects all devices and appliances, so that they can communicate with each other and with their users. The users can control the devices for example by voice, tablet or smartphone (“the Internet of Things”).

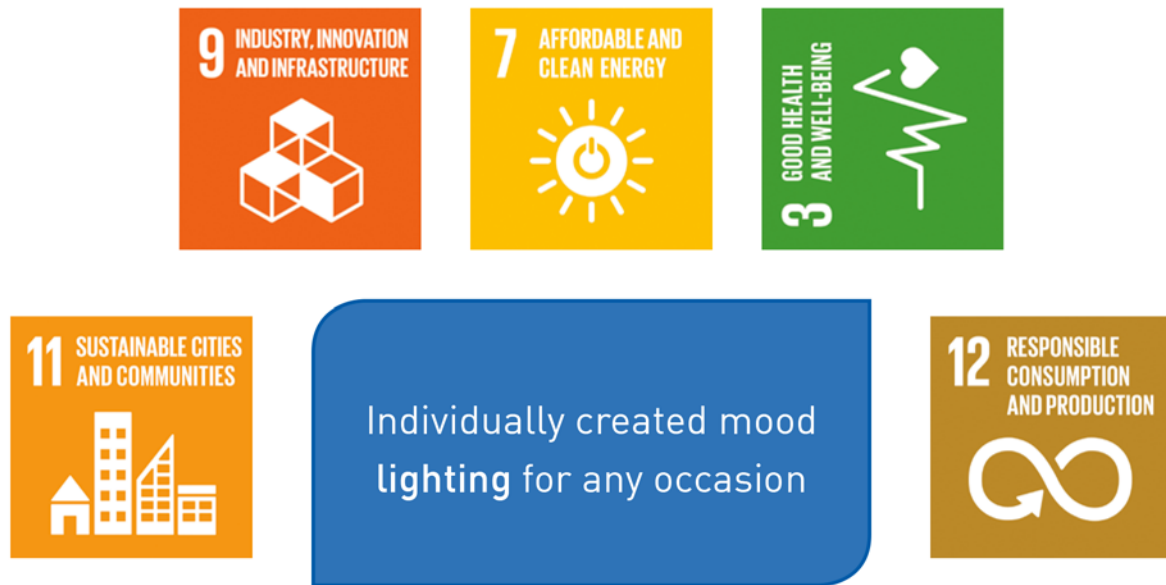
1. Divide the participants into groups to work on the following task:
Which (electronic) devices do you use in your own home? Take notes and present your results on the board or on a flipchart.
2. Let participants break into smaller groups. Based on their result concerning task 1 they should discuss the following questions and again take notes on the board or a flipchart:
 - a. How does digitalisation influence the way we live at home today and how will digitalisation influence us in the future?
 - b. How do and will objects of utility develop?

Figure A: A Smart Home



Source: Widholm, Stephanie (2018): unpublished

3. Talk about the potential of digitalisation for a sustainable lifestyle and the implementation of the SDGs. Discuss the following questions:
 - How are the SDGs related to our own usage of digital technologies?
 - How can we use digital devices in our everyday life in order to implement the SDGs?
 - What does that mean for educational programmes?



Source: Widholm, Stephanie (2018): unpublished

Duration: 90 minutes

Activity 3.1.4: Digital Media – Filter Bubble

Let each participant look for a keyword the group has agreed on (e.g. “clean energy”, “climate change”) by using his or her favourite search engine:

- Which results do they get?
- Who are the authors of the respective websites or pages?
- Who is the domain owner? Check: <https://whois.net/>

Compare the results. Look for the keyword by using another search engine. How do the results differ?

Choose one of the websites or pages: Which content does it provide? Which message does it convey?

Search for other opinions on other websites.

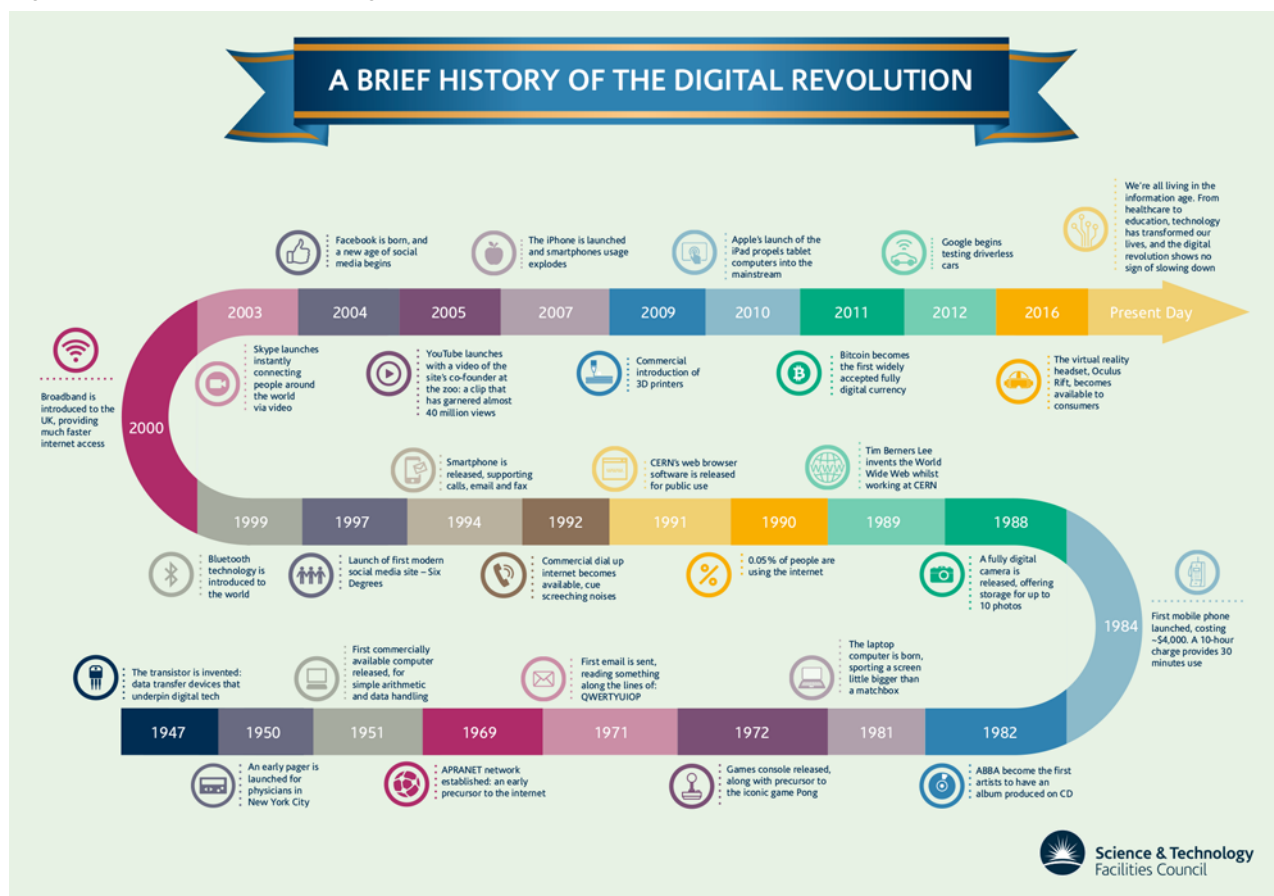
Duration: 45 minutes

Thematic Overview

Digitalisation and Sustainable Development

The rise of digital technologies and particularly the arrival of the Internet at the end of the 20th century have significantly altered the lives of people, who have regular access to digital devices and the virtual world. They have made communication faster and led to the rise of a whole new industry. They have created new communication and participation possibilities, requirements for professional skills and changing social codes, all of which are sources for new opportunities and for new challenges. Similar to the Agricultural Revolution and the Industrial Revolution, this Digital Revolution has fundamentally changed all spheres of life and it will continue to do so. Since the beginning of the 21st century the development has taken an even more diverse direction by merging technologies; the lines between the physical, digital and biological sphere become more and more blurred.

Figure C: A Brief History of the Digital Revolution



Source: Science & Technology Facilities Council (2018): A Brief History of Digital Revolution (accessed at 08 June 2020) <https://stfc.ukri.org/files/digital-revolution-infographic/>

One important aspect of the Digital Revolution is the creation of “Big Data”. Today, data or information equal to 2.5 quintillion bytes can be generated every day. The collection rate is so fast that 90% of today’s data has been created in the last two years alone. Algorithms analyse the data we leave and store as soon as we connect to the virtual world and let borders between the public and the private spheres blur. Moreover, due to the application of these algorithms, websites and mobile apps tend to show the user only the information that corresponds with his or her previous opinions, usually referred to as filter bubbles or echo chambers.

The technological possibilities for global communication have strongly increased. The Internet improved the terms for individuals and groups to participate in society and created new educational opportunities for learners with less dependency on their geographical and social background. However, Internet access alone does not guarantee (political) participation or discourses and “[...] that people from different cultural backgrounds will also be more understanding of each other [...]” (see Khan/Gilani/Nawaz). The potential of digital technologies must not be confused with reality. Social media does not necessarily mean participatory media.

Digitalisation has changed many people's everyday reality. Online and offline, digital and analogue steadily merge in all aspects of life. We call taxis or share cars via mobile apps, transfer money online or arrange appointments with government agencies via service websites. We control entertainment systems by voice or check on displays of baby-phones whether our children are sleeping.

Figure D: The Digital Disruption has already happened

The Digital Disruption Has Already Happened

World's largest taxi company owns no taxis (Uber)

Largest accommodation provider owns no real estate (Airbnb)

Largest phone companies own no telco infra (Skype, WeChat)

World's most valuable retailer has no inventory (Alibaba)

Most popular media owner creates no content (Facebook)

Fastest growing banks have no actual money (SocietyOne)

World's largest movie house owns no cinemas (Netflix)

Largest software vendors don't write the apps (Apple & Google)

Source: Sandy Carter, www.ibmforentrepeneurs.com

The question is not whether we want digitalisation, but how we want to shape it and on which values the development should be based on. In principle, digitalisation can help to find solutions for global problems and it provides a lot of opportunities to improve the standard and quality of life throughout the world. The potential of digital technologies for sustainable development in all its dimensions is significant. Smart solutions for instance offer opportunities to conserve resources and use them more efficiently. Online documents can replace print products and meeting technologies such as a video conference software can minimise global traffic, which produces large amounts of greenhouse gas and contributes to climate change.

However, the use of information technology challenges sustainability in many ways: Data centres consume up to 2% of global electricity; smart phone production processes pollute the environment and exploit natural resources. Therefore, we have to deal with the use of digital technologies in a differentiated manner if we want to increase societal and personal resilience and promote sustainable development. It is important for everybody to know the possibilities and operating principles of the information and communications technology (ICT) and of other digital developments to remain capable of acting and initiating change towards a sustainable development.

Society and Aspects of Digitalisation – Some Examples for Chances and Risks

	Chances	Risks
Economy	new technologies can extend the service lives of objectives	more return on capital than on labour
Employment	flexible and individual structuring of working life	computerisation and elimination of jobs
Research & Science	globally networked research	preservation of scientific research standards
Politics	increase of transparency concerning government agencies through e-government	social credit systems create the digitally transparent human.
Education	individual support of students	“digital dementia”: overuse of digital technology resulting in the breakdown of cognitive abilities
Health	better accessibility to medical care for people in rural areas (telemedicine)	unwanted cyber intrusions on medical implants, such as pacemakers
Arts & Media	diverse forms of presentation and more opportunities for cultural inclusion	erosion of copyright
Communication	intercultural dialogue	echo chambers

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Learning Material 3.1.1

Jiminy:

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(accessed 13 December 2018)

The iMom:

Martin, Ariel: The iMom: <https://vimeo.com/157977103>

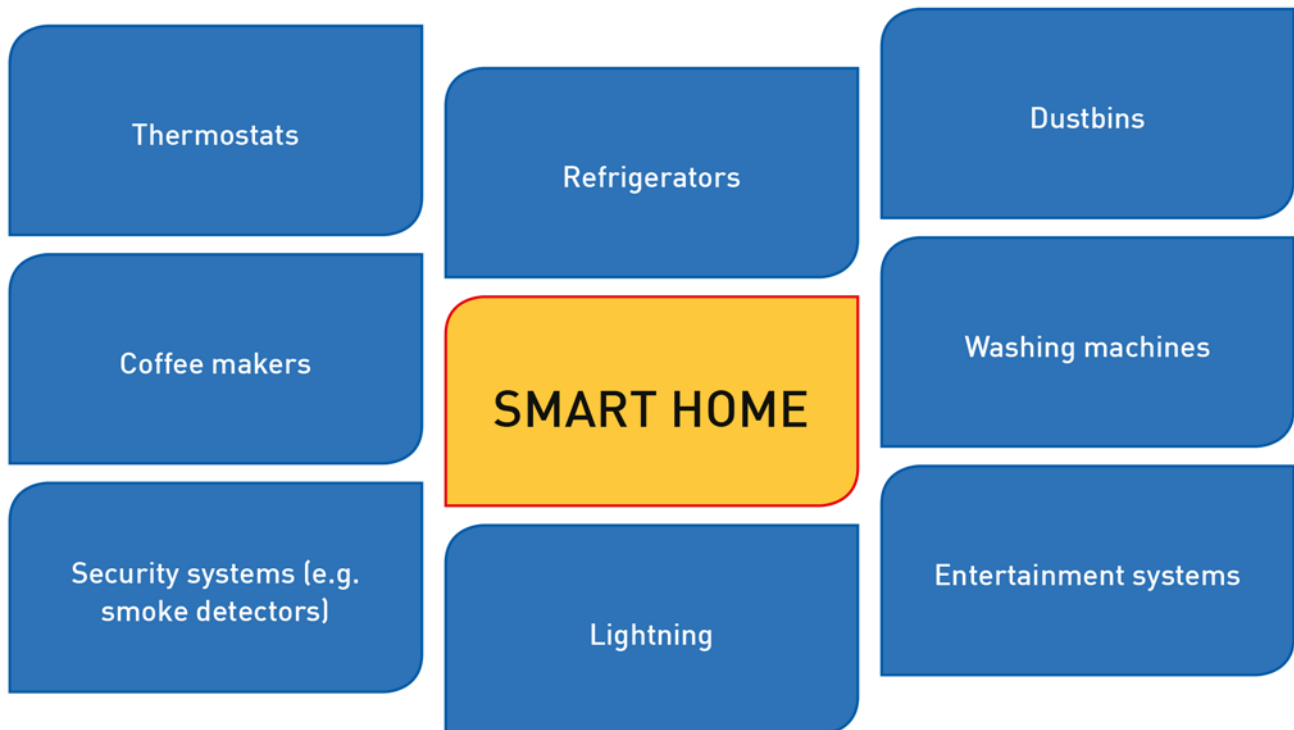
Learning Material 3.1.2

Chances and risks of digitalisation for sustainable development

Chance	Risks
Economy	
Employment	
Research & Science	
Politics	
Education	
Health	
Arts & Media	
Communication	

Learning Material 3.1.3

Figure 1: Smart Home



Source: Widholm, Stephanie (2018): unpublished

Module 3

Digitalisation and ESD

Unit 3.2

Digital Media and ESD

Instructor's Guide

This unit seeks to build up the participants' media competencies in the specific context of ESD and to enable them to reflect and use media ESD-appropriately.

The objectives of the unit are to

1. provide an overview of the concept of "media competencies" and its relevance for ESD-activities,
2. initiate a reflection on the participants use of digital media regarding ESD-activities,
3. demonstrate opportunities for an active online participation and creation of digital media in an ESD-context.

Participants will be able to

- recognise the significance of media competencies (media literacy) for sustainable development,
- understand the importance of using language and stereotypes in a sensitive way and of carefully choosing digital tools with regard to ESD-activities,
- effectively use and create media in the field of ESD and to participate actively through digital media in the context of sustainable development and the implementation of the SDGs.

Approach, Methods and Activities

The selection of activities in this unit depends on the technical requirements in the seminar room. Not all proposed activities need to be implemented, but it is recommended to carry out activity 3.2.2 in any case. Depending on the previous knowledge of the participants, it can make sense to develop a common understanding of media competence at the beginning of the unit.

Activity 3.2.1: Attributions and Stereotypes

Part 1:

Participants write a short profile about themselves (Learning Material 3.2.1):

- mother tongue,
- hobbies,
- favourite food,
- favourite music,
- favourite films and TV-series,
- favourite clothes,
- most characteristic attributes: How would you describe yourself?

Show the participants one or more websites that "characterise fellow citizens", especially the paragraphs concerning culture. Here are some examples of websites:

Mexico:

- <https://en.wikipedia.org/wiki/Mexicans>
- <http://www.facts-about-mexico.com/mexican-people.html>

India:

- https://en.wikipedia.org/wiki/Indian_people
- <https://www.britannica.com/place/India/People>

Germany:

- <https://en.wikipedia.org/wiki/Germans>

South Africa:

- <https://www.soschildrensvillages.org.uk/south-africa>

Discuss: Can you find yourself or your preferences in these descriptions?

You can also use a search engine to find pictures showing people from the respective country. Show the first page of results to the participants.

Ask: What attracts your attention? What are your feelings?

Part 2:

Participants can also test themselves for hidden bias: Project Implicit (see <https://implicit.harvard.edu/implicit/>)

Duration incl. part 2: 60–90 minutes

Activity 3.2.2: Dealing with Media in a Sustainable Manner

List different types of digital media together with the group: Which types of digital media do you use in educational, especially ESD-contexts (websites, e-books, social media channels, podcasts, computer games etc.)?

Ask the participants in which way they usually use digital media in educational, especially ESD-contexts.

Split the whole group up into groups of four. Each group chooses one media-type (group 1: websites, group 2: social media channels etc.). Hand out Learning Material 3.2.2. The groups should discuss how one can deal with the respective type of media in a sustainable manner with regard to the chart "Media Competencies and the Dimensions of Sustainability".

Possible guiding questions:

- Which knowledge about the structure and the function of your type of media is required in order to be able to assess it in terms of a sustainable development with all its dimensions?
- Which orientation knowledge is required? What are ways to acquire this orientation knowledge?
- What does this mean for the active usage and creation of media?
- Are there particular challenges regarding knowing, assessing and acting with digital media in contrast to non-digital media?
- At which point does real experience become indispensable?

Participants write down the essential outcome for each aspect of media competence and present it to the whole group:

- knowledge
- assessing
- acting

Debriefing:

- Do you see any similarities between the different types of digital media? Are there any interesting distinctions?
- Which aspect surprised you?
- What did you learn? Do you think you have used digital media in an appropriate manner so far? What would you like to maintain concerning your behaviour, what would you like to change?

Duration: 60–90 minutes

Activity 3.2.3: Online Participation

Place cards labelled with different online roles on the floor and explain what each role means by giving examples (see <https://ondigitalmarketing.com/wp-content/uploads/2012/02/types-social-media-users.jpg>):

- creator
- conversationalist/discusser
- critic
- collector
- joiner
- spectator
- inactive
- viewer
- member

Ask the participants to place themselves next to one of the cards according to how they see their role online. How do they participate online? What do they generally do online? Ask for concrete examples.

Ask the participants to place themselves next to one card again depending on what they do online with regard to promoting sustainable development and ESD.

Ask the participants to place themselves next to one card a third time according to how they would like to see their online participation one year from now when it comes to promoting sustainable development and ESD. You can also ask them why they have chosen this specific role.

Let the participants split up into smaller groups of two to four learners and ask them to come up with action items with which they would like to reach the level of participation they are aiming for.

Discuss:

- Which ideas came up to promote sustainable development regarding the different levels of participation?
- What is their link to offline participation?

Duration: 45 minutes

Activity 3.2.4: Creating Media for ESD

Show the participants the tool Actionbound, which can be used for creating digital scavenger hunts:

<https://en.actionbound.com/?setlang>

Discuss: Which opportunities does Actionbound provide for ESD in your personal context? Develop a concrete idea for a short scavenger hunt that could be applied on site and create it together:

- Which topic would make sense (consumption, food, biodiversity etc.)?
- Which aspects of the outcome of activity 3.2.2 should be taken into account?
- Which tools of Actionbound are sufficient for ESD opportunities?

Get some fresh air: Let the participants try out their ideas. Afterwards, talk about the experiences they made while trying out their ideas.

Duration: 120 minutes

Thematic Overview

Digital Media and ESD

The media provide important sources to inform societies and contribute significantly to life-long learning in the context of ESD. This applies to traditional media such as newspapers and radio channels and new media like Internet platforms and web-based applications. Therefore the media is part of learners' social reality. It influences our acquisition of knowledge and information and the process of constructing reality.

Understanding Media

Traditionally the media's role to inform society was a one-way street. The possibilities for consumers to engage with media were limited. The media played a very important role for governments and the corporate world. Therefore, the media's independence has always been a great concern for civil society. While some countries' regulations ensured that the media remained free of corporate and government control, other countries never allowed free media, keeping a tight reign on what got printed or broadcasted. The media in its traditional sense and especially through its journalistic role, was defined as the fourth pillar of Democracy; the first three being the Executive, the Legislative and the Judiciary. The media's role was that of a whistle-blower.

From their earliest days in the 17th century onwards, when newspapers were still evolving, it has been a challenge for the media to keep fact and fiction separate. Sellers have always found it easier to sell 'rumours' and 'fantasies'. This applies to serious broadsheet newspapers like "The Star" (South Africa), "The Indian Express" (India), "El Universal" (Mexico), "Die Zeit" (Germany) and tabloids: "Daily Sun" (South Africa), "Mid-Day" (India), "El Nuevo Alarma!" (Mexico), "Bild" (Germany). Corporate control over media and cartelisation are on the rise across the world. Many of these media outlets (news channels, newspapers, radio channels and Internet shows) do not necessarily take a balanced perspective or choose to only report on a certain kind of issue and ignore the rest. Such editorial policies become very evident on platforms like Fox News (USA). On several other you will find covert and overt biases, but such editorial guidelines are not explicitly available to the average citizen. Today there are many such online platforms as well websites and video channels. Recent research suggests that when it comes to their ideological or political beliefs, people are unlikely to change them even when presented with facts. This naturally increases the danger caused by misleading websites, TV or online video channels.

Taking into account the way modern capitalist economies are organised, 'workers' and 'professionals' are far too integrated in their work and family life to bother about questioning any of these aspects. Many of us take much of this information at face value.

Some of the key aspects to enable ESD are to foster democracy and equitable sharing and to generate a general planetary conscience. Corporate interests are not necessarily tied to many of these ideas – quite the contrary, they rather oppose these ideas. Even in democratic countries corporate groups can overtly and covertly fund political parties or media houses across the spectrum to influence and maintain a status quo on the ideas being brought forward and discussed in the media. This regulation is not just limited to traditional media, but also to Internet enabled platforms and interactions.

To be a dedicated learner, one would have to learn to separate facts from fiction – and to be critical of many of these dominant narratives. With technological advancement, it is possible to easily write, publish, photograph or make videos for many people – such knowledge can be used to create and promote narratives that are in line with our own political and ideological beliefs. Although, such an act needs to be done after a careful engagement with the subject at hand so that we don't overlook what the traditional media was supposed to do in the first place – to provide a balanced perspective, a report that is authentic to the context it is set in.

Figure A: Who Owns Who in Global Media?



Company	Media Properties
21st Century Fox (USA)	Fox News (Fox News Channel, Fox Business Network) Fox Television Group Fox Sports Net, Inc. FX National Geographic Channels (partial)
Axel Springer SE (Germany)	BILD WELT FAKT
CBS (USA)	CBS Television Network CBS News CBS Radio Showtime Networks Inc. Simon & Schuster
Comcast (USA)	NBC Universal (MSNBC, CNBC) Telemundo
Gannett Co. Inc. (USA)	USA Today
News Corp (USA)	Dow Jones (Wall Street Journal, Barron's) News Corp Australia (The Australian) News UK (The Sun, The Times)
Nikkei (Japan)	The Financial Times* Nihon Keizai Shimbun
Time Warner (USA)	Home Box Office (HBO) Turner Broadcasting System (CNN, TNT, TBS, Turner Sports) Warner Bros.
The Walt Disney Company (USA)	Disney-ABC Television Group (ABC News) ESPN

*Subject to final regulatory approvals, deal is expected to close Q4 2015

Source: Clementi, Laura (2015): Who owns who in global media? (accessed at 08 June 2020)

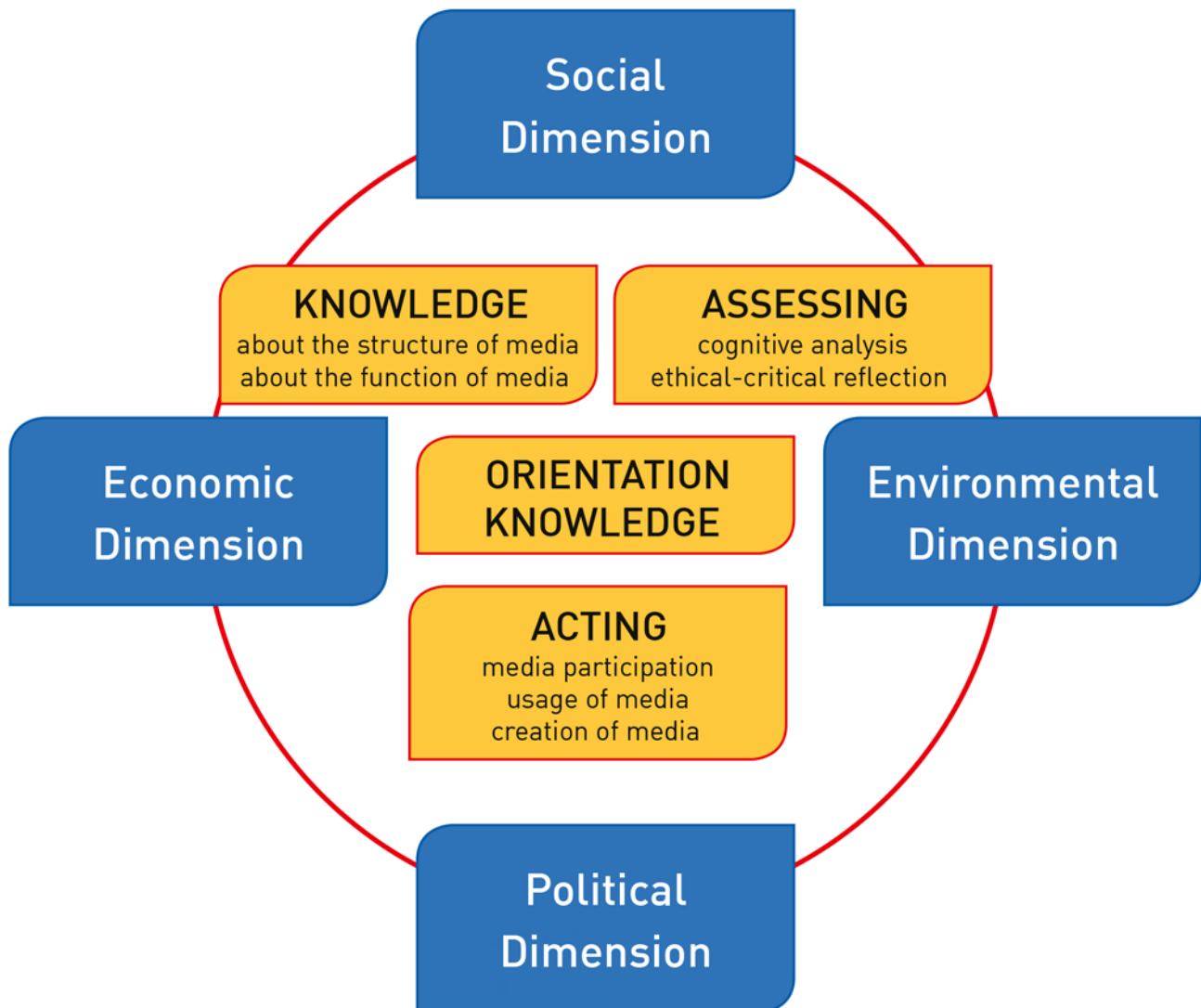
Dieter Baacke developed the concept of media competency in the 1970s based on Jürgen Habermas' theory of communicative competence. The idea is that communication is not a value in itself, but that communication always aims at the organisation and development of human cohabitation. This means that the use of media in education must focus on bringing up active, responsible and critical citizens. It also has to take into account all dimensions of media competence – from being able to handle a computer to reflecting on the media.

Against this background, it becomes apparent how necessary media competence is in order to implement sustainable development. If you want to make an impact, you have to consider communication and information structures and the possibilities for participation. And if you want to make an impact in the sense of sustainable development, you have to be able to reflect on media according to sustainability criteria and values. Also the Agenda 2030 with its Sustainable Development Goals emphasises the role of “digital literacy” for Quality Education and Sustainable Development (see Global Alliance to Monitor Learning).

Regarding ESD, the reflection of media in terms of an action-oriented media education seems particularly useful. Following Baacke, other educationalists have extended his concept and applied it to the digital age (Bernd Schorb et al.). Besides the dimensions of media knowledge and acting, the critical reflection of media is named as crucial ability (see figure C). An important condition for assessing media is the acquisition of orientation knowledge, particularly the knowledge of ethical understandings and existing action imperatives – including those that relate to sustainable development.

A particular challenge for conveying media competencies in ESD settings (and ESD competencies in media education settings) is that all dimensions of sustainable development have to be considered. For example, it is not just about the creation of media as such, but about the creation of media that takes into account the social, economic and environmental pillars of sustainability. The creation of a website seems to be more sustainable than printing the same content in a brochure, because the website uses up fewer natural resources such as wood and water for producing paper. But do all target groups of the information have access to the Internet (social sustainability)?

Figure B: Media Competencies and the Dimensions of Sustainable Development



Source: Widholm, Stephanie: unpublished

Producing media content requires mastering a range of challenges. Producing content which aims to promote sustainable development with its inclusive and global perspective must consider social diversity and various cultural backgrounds and has to recognise and respect different attitudes, external characteristics and behaviours.

Mediating Sustainable Development and ESD and “Aspirational Behaviour” – the Role of Language

Language is more than a mere tool. It holds within its structure and practice entire knowledge systems. As any other dynamic aspect of human society, language also changes over time. Terms like tagging, posting, hashtag, selfie, native content and native advertising did not exist in the English language even at the beginning of this century. While this evolution happens within certain popular languages, other languages lag behind and might therefore disappear at a faster rate in the future. As globalisation proceeds, the need for a homogeneous language is pushing us to adapt and speak the more prevalent languages.

While many of the languages dominant around the world – English, French and Spanish bear out the legacy of a colonial past – the landscape created by the big media using these languages is more complex. Context remains an important differentiator. Though it completely holds true that many of these languages remain ‘aspirational’ languages for the poor and middle class across the world. To speak in them is not just to speak a new language, but to also acquire the values and adopt the lifestyle that the media supposedly preaches when talking in these ‘aspirational’ languages. Over time, such imagery and the implied values can also filter into the media practice of the ‘native’ languages.

Some of the questions that may broadly be relevant in the context of education are: Who is a good student? What does he or she look like? What is good or acceptable behaviour? What is aspirational behaviour? Who is modern and who represents the old? The answers do keep changing with time depending on the state of the economy and the direction that it may be taking (the underlying assumption being that we are working in a largely capitalist society). Though the role and the power of media that speaks through the colonial or dominant languages cannot be denied in shaping what has remained 'aspirational' globally in the past century.

If one were to follow some of these images today, there would be a clear association of the good life with the urban, well-travelled individual who would probably work either in finance, banking or the information sector. Such images guide all of us in not just demanding these lifestyle choices from our own selves but even those who are associated with us – a parent from a child, a sibling from his or her siblings, a friend who may give up on his or her innate aspirations due to peer pressure.

For example, only a few advertisements and barely any mainstream visual media communication show manual labour as an aspirational activity or farming as a chosen profession. Tourism as an industry has doubled in size in the last ten years and social media plays an important role in encouraging one to travel. It is seen as another 'aspirational' activity with the result that people travel, experience a new culture and most importantly share their pictures online, stoking other's interest in either travelling to the same or other destinations. Such homogeneity in behaviour is a boon for the market – similar consumption patterns can be catered in similar ways. Though it is notable that Europe remains the biggest destination and the biggest generator of tourists across the world. Is the behaviour aspirational?

In depicting educational settings in advertisements and television shows, even if the image does not directly depict waste or high-energy consumption, our minds are attuned to make certain correlations – that of a high-end western lifestyle with a certain degree of wastefulness, due to past associations. If the image is aspirational, the waste that comes along with it becomes inconsequential until we consciously choose to alter our behaviour.

Thus, the language we use is not just our own. While we add to the vocabulary, we are also subject to the knowledge system and the cultural notions that have already been created in its existing structure. Media loves simplification and often alludes to clichés and stereotypes that can further reinforce the said notions.

How will this aspect play out when it comes to an idea like sustainability? What would transition to sustainability mean? How will behaviour change become aspirational? What terms and phrases would emerge if entire communities were to take up a change? Can the media help us build reference points for it? And most importantly how does one educate oneself to not just buy into these images, but to learn to critically engage with them?

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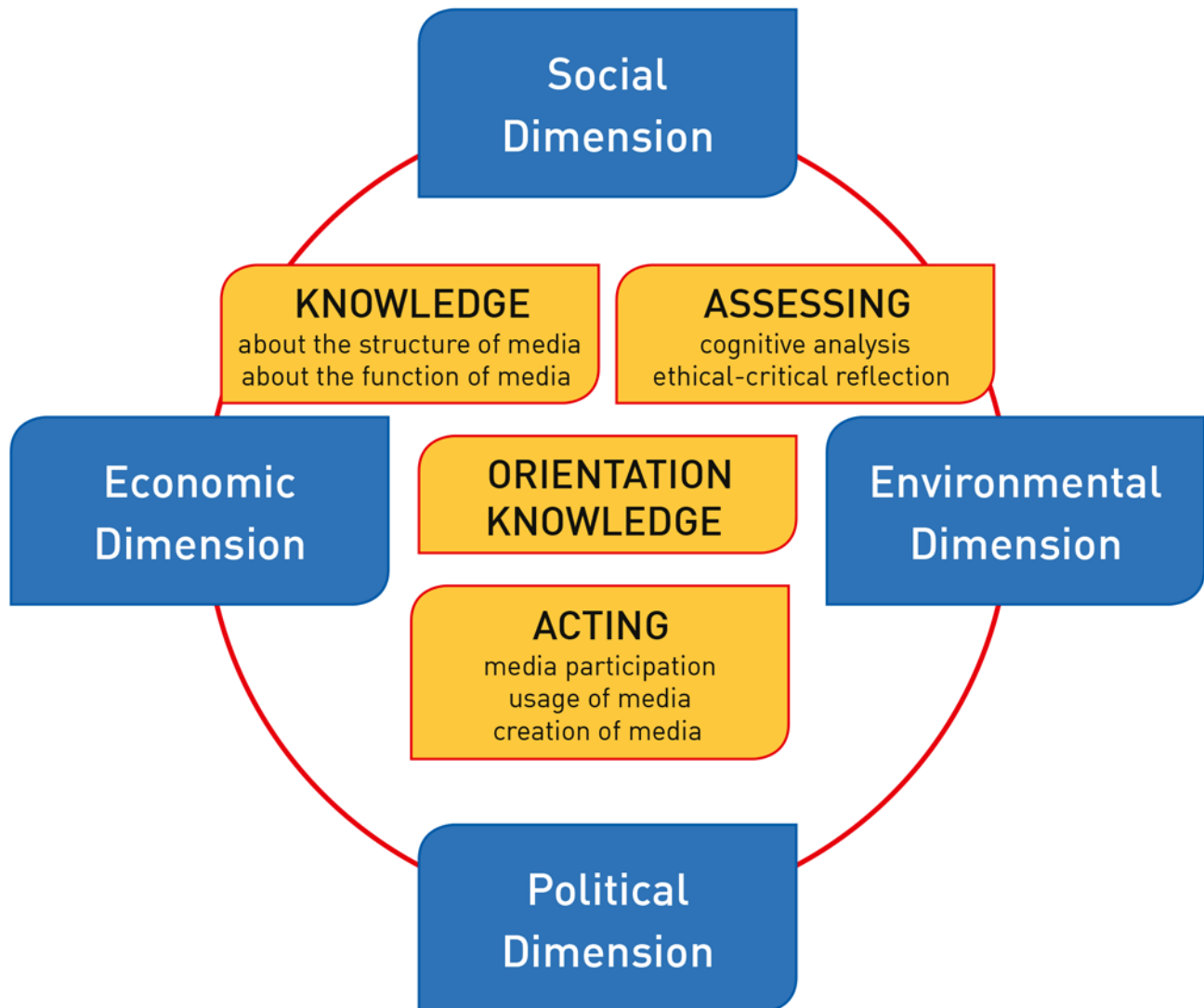
Learning Material 3.2.1

Work Sheet – Profile

Item	Your answers	Thoughts after reading the text
Mother tongue		
Hobbies		
Favourite food		
Favourite music		
Favourite films and TV-series		
Favourite clothes		
Most characteristic attributes: How would you describe yourself? (max. 3 attributes)		

Learning Material 3.2.2

Figure 1: Media Competencies and the Dimensions of Sustainable Development



Source: Widholm, Stephanie: unpublished

Figure 2: For deepening the discussion also the following approaches could be useful:
Digital Intelligence (DQ)



Source: ©2020 DQ Institute. All rights reserved. (accessed at 06 June 2020)

<https://www.weforum.org/agenda/2016/06/8-digital-skills-we-must-teach-our-children/>

Digital identity: The ability to create and manage one's online identity and reputation. This includes an awareness of one's online persona and management of the short-term and long-term impact of one's online presence.

Digital use: The ability to use digital devices and media, including the mastery of control in order to achieve a healthy balance between life online and offline.

Digital safety: The ability to manage risks online (e.g. cyberbullying, grooming, radicalisation) as well as problematic content (e.g. violence and obscenity) and to avoid and limit these risks.

Digital security: The ability to detect cyber threats (e.g. hacking, scams, malware), to understand best practices and to use suitable security tools for data protection.

Digital emotional intelligence: The ability to be empathetic and build good relationships with others online.

Digital communication: The ability to communicate and collaborate with others using digital technologies and media.

Digital literacy: The ability to find, evaluate, utilise, share and create content as well as competency in computational thinking.

Digital rights: The ability to understand and uphold personal and legal rights, including the rights to privacy, intellectual property, freedom of speech and protection from hate speech.

Figure 3: Global Alliance to Monitor Learning (GAML:) Recommended digital literacy competence areas and competences for further consultation

Competence area	Competences
0. Hardware and software operations	0.1 Physical operations of digital technologies 0.2 Identifying data, information and digital content to operate digital technologies
1. Information and data literacy	1.1 Browsing, searching and filtering data, information and digital content 1.2 Evaluating data, information and digital content 1.3 Managing data, information and digital content
2. Communication and collaboration	2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digital technologies 2.4 Collaborating through digital technologies 2.5 Netiquette 2.6 Managing digital identity
3. Digital content creation	3.1 Developing digital content 3.2 Integrating and re-elaborating digital content 3.3 Copyright and licences 3.4 Programming
4. Safety	4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment
5. Problem solving	5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps 5.5 Computational thinking
6. Career-related competences	6.1 Operating specialised digital technologies for a particular field

Source: UNESCO Institute for Statistics (UIS) (2018): A global framework of reference on digital literacy skills for indicator 4.4.1: Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills (accessed at 06 June 2020)

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Notes

Module 3

Digitalisation and ESD

Unit 3.3

Digital Media in Learning Arrangements (ESD, GCED)

Instructor's Guide

Unit 3.3 supplies you with an overview of different digital media as part of learning arrangements for ESD: Media as part of ESD/examples and reflection on challenges and chances:

The objectives of the unit are to

1. provide a basic understanding of learning arrangements specifically linked to ESD,
2. reflect different areas of media adaptation in ESD settings,
3. provide concrete examples on how to deal with challenges in the future,
4. provide digital and online tools to work with the SDGs.

Participants will be able to

- understand the concept of the specific learning arrangements within the ESD,
- support schools to integrate digital media in their practice,
- reflect on the function and challenges of digital media within the context of the SDGs,
- reflect on inclusive education and the challenges and chances by using digital media.

Approach, Methods and Activities

As the concept of learning arrangement has specific elements closely linked to ESD as an open process, the learning setting should be participatory and it should integrate the participants' experiences and opinions. The setting should help the learners to ask questions, reflect on their experiences and develop next steps to provide schools with support for their further development.

Activity 3.3.1:

Start by introducing and presenting good examples for the use of digital media with regard to the ESD:

- Which elements of ESD are already inherited?
- Are there links to the topics of different SDGs?
- Who is involved and which activities concerning civil society are integrated?

Activity 3.3.2:

Practice the use of digital media in ESD settings such as: my organisation, my learning environment in 20 years etc. The participants work in small groups presenting the visions and ideas on cards/with drawings, by giving scenarios etc. to the whole group.

Discuss: In which way is the adaptation of digital media linked to different cultural backgrounds?

Duration: 2 hours (including presentation and reflecting)

Thematic Overview

Digital Media in Learning Arrangements (ESD, GCED)

This unit will introduce and reflect on the use of digital media within ESD and it will dwell on its challenges and chances.

Learning Arrangements in ESD

- should help to develop a concrete understanding of nature and environment,
- should offer the possibility of different perspectives,
- should be based on the concrete living situation of the students,
- should be based on the experiences of the students,
- must offer real participation,
- must offer the possibility for students to act,
- must integrate partners from outside school,
- must integrate international frameworks and programmes on sustainable development like the Agenda 2030, SDGs and e.g. Earth-Charta.

Using digital media within education for sustainable development in general has been tested and implemented in many contexts for many years. Different approaches on simulation of sustainable and unsustainable development are omnipresent when working in the field of education and digital media is of course also used for international exchange and communication concerning ESD. Programmes like „Chat der Welten“ (engl. Chat of the Worlds) are a regular part of ESD work at schools and within cooperation with NGOs. School partnerships use Skype or similar communication tools to run and maintain the partnership. Today, schools arrange parallel lessons across continents (see Go! Global: <http://esd-expert.net/go-global-virtual-school-exchange.html>).

Modern applications (apps) are part of ESD as well. They offer information and knowledge, often replacing dictionaries and maps, assist international and topic based cooperation and are used as calculators for footprint and virtual waters.

Figure: App Sustainable Development Goals



Sources: The Goals (2018): Application for iOS

The use of ICT and the possibilities different ICT tools offer contain great challenges and chances for ESD: Smart phones and other web-based facilities have become part of everyday life. Using Clouds to share knowledge has become one of these possibilities, even for universities and official authorities. Even Facebook offers an increasing number of ESD groups and provides users with other future orientated topics.

Examples for different tools that can be used in the context of ESD:

Tools with a focus on communication:

- E-Mail
- Messenger (WhatsApp, Telegram, Facebook etc.)
- Tools for video conferencing (Zoom, Skype etc.)
- etc.

Tools with a focus on information:

- Websites
- Newsletter
- etc

Social Media:

- Internet forums
- Instagram
- Twitter
- Facebook
- Pinterest
- YouTube
- etc.

The use of ICT within education and schools is linked to different cultural backgrounds. Within the German context for example parents are often against an extended use of smartphones or other devices. Most schools even ban these devices from school. In India for example introducing smartphones is seen as a big change to improve education even in rural contexts. ESD with focus on international cooperation must take this into account and reflect on the different cultural approaches to ICT.

Figure C: Digital life skills



Source: ©2020 DQ Institute. All rights reserved, [accessed at 06 June 2020]

<https://www.weforum.org/agenda/2016/09/8-digital-life-skills-all-children-need-and-a-plan-for-teaching-them/>

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Module 4

ESD in and as Whole School Development

Unit 4.1

Why Whole School Approach to Education for Sustainable Development?

Instructor's Guide

Unit 4.1 provides you with the rationale of the concept of the Whole School Approach. It shows that main aims of the WSA are increasing effectiveness and relevance of teaching and learning through an inter- and multidisciplinary curricular approach and developing school as a place of extracurricular learning.

The objectives of the unit are to

1. provide an understanding of the rationale for the WSA,
2. provide a basic understanding of the elements of the WSA beyond subjects.

Participants will be able to

- understand the advantages of the WSA for ESD over teaching ESD in “traditional” school settings.

Approach, Activities and Methods

The participants should get the opportunity to compare their own experiences concerning daily practice in schools with regard to teaching and managing the basic concept of WSA for ESD.

Activity 4.1.1:

Give input about the concept of Whole School Approach using figure 1 of the WSA (see Learning Material 4.1.1).

Discuss which elements of WSA show that there are common or emerging practices with the participants.

Let the participants work in groups on ranking WSA elements shown in figure 1 (see Learning Material 4.1.1):

- according to the importance for ESD teaching,
- according to the achievability (where are obstacles, where are less difficult pathways for whole school development?).

Ask the groups to discuss which approaches they would priorities in their working environment.

Discuss the outcome of the group work with the whole group.

Duration: 2 hours

Thematic Overview

Why a Whole School Approach to Education for Sustainable Development?

Mainstreaming ESD in schools must not end with subject teaching. Although the teaching of subjects is the “core business” of teachers and schools, effective and relevant embedding of ESD reaches beyond subjects and into the areas of the Whole School Approach (WSA) including cross-curricular approaches.

The WSA takes into account that there are skills and competencies which are transversal by nature, but central to ESD. That means that there are limitations to approaching them by single subjects and in isolation only. Among these skills and competencies are: critical thinking, systems thinking, empathy, conflict resolution, solidarity, civic responsibility, appreciating diversity, ability to change and adopt new perspectives (open-mindedness), ability to interact respectfully, appropriately and effectively (see OECD).

In addition, there is relevant ESD-content which is common between subjects. Cross-curricular topics can for example be: diversity of values, cultures and living conditions, globalisation of economy and labour, peace and conflict, global environmental changes. Such topics can be the focus of multi- and interdisciplinary issue based teaching and learning. They can hardly be taught meaningfully from the exclusive perspective of one school subject, perhaps with the exception of Geography, which allows more easily than other subjects to integrate social and natural science perspectives. One can safely assume that teaching effectiveness increases if more than one subject aims at the acquisition of a similar set of skills and competencies and uses common thematic areas and content which can be cross-referenced from the respective subjects' angles.

Likewise we can assume that the relevance of teaching and learning ESD content increases if the construction of knowledge takes place in a multidisciplinary context and in an environment, where the school offers perspectives and experiences transcending the classroom.

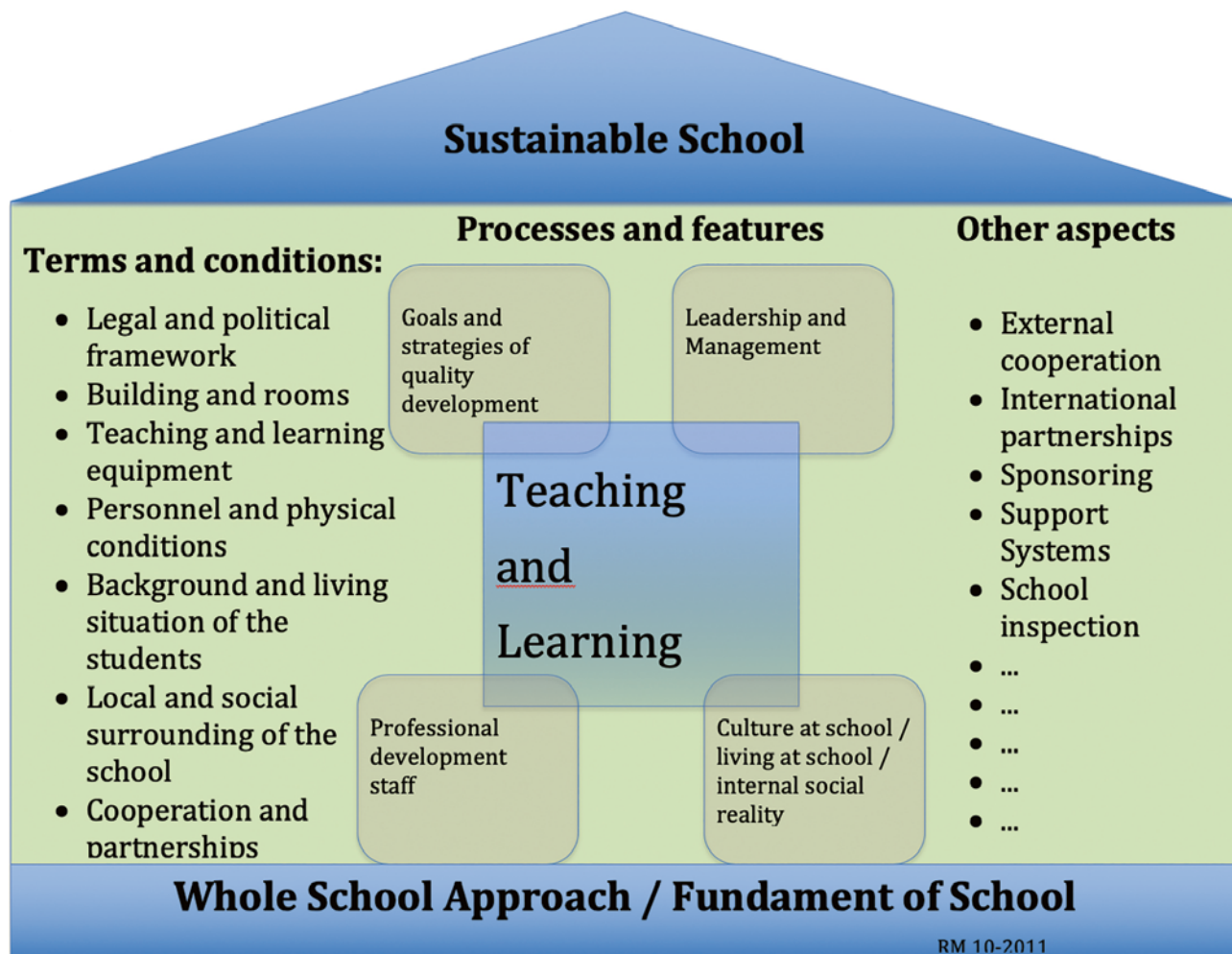
Pupils and students stay an increasing part of their lives at school, thus schools have more time and free space to offer real live experiences. These include for example food, energy use and waste management. The school is a perfect place to reach a whole generation in a protected environment. Young people can try out and develop important life skills, develop their own lifestyle and take responsibilities while acting.

Linking subjects or introducing project elements into the school curriculum cannot be achieved by one teacher alone. On the one hand it requires decision making by the school management and on the other hand it requires a certain degree of freedom for the school management to act accordingly. This refers to the varying degrees of autonomy schools have. But in many cases headteachers can manoeuvre within their limits and facilitate mainstreaming ESD in a cross-curricular approach.

But the role of the school in mainstreaming ESD should also refer to making the school itself a “microcosm of sustainable society” (see Chhokar). Schools are institutions dealing with similar challenges as do other institutions, too. Among these are: responsible utilisation of resources, waste management, energy use, democratic participation, facility management, dealing with external partners, procurement etc. Unfortunately quite often teaching at a school does not refer to the learning opportunities the school itself provides. Yet these learning opportunities can provide relevant and meaningful context especially for ESD teaching and learning. In the WSA schools are asked to reflect upon their own activities against the background of the principle of sustainable development and to identify opportunities for an (increased) embedding of sustainable development in their specific areas. The development of a sustainable “whole school”, which integrates sustainable development at all levels, requires – apart from the curricular implementation of ESD – the development of the school as an organisation. “Apart from a closer coordination of the various school subjects with one another and their alignment towards sustainable development, the structural integration of sustainability in school as an organisation is important” (see Mathar [2016]).

Figure A illustrates how elements of the sustainable institutional management of a school can be linked to teaching and learning. In the centre, the “teaching and learning” area describes the activities referring to the curriculum and to the subjects being taught. The four squares around the “teaching and learning” area describe areas which influence the teaching and learning process and are open to management decisions at school level. “Terms and conditions” describes areas which are often set for the school and thus mark boundaries for management decisions.

Figure A: Sustainable School



Source: Mathar, Reiner (2011): unpublished

Literature, Media and Links

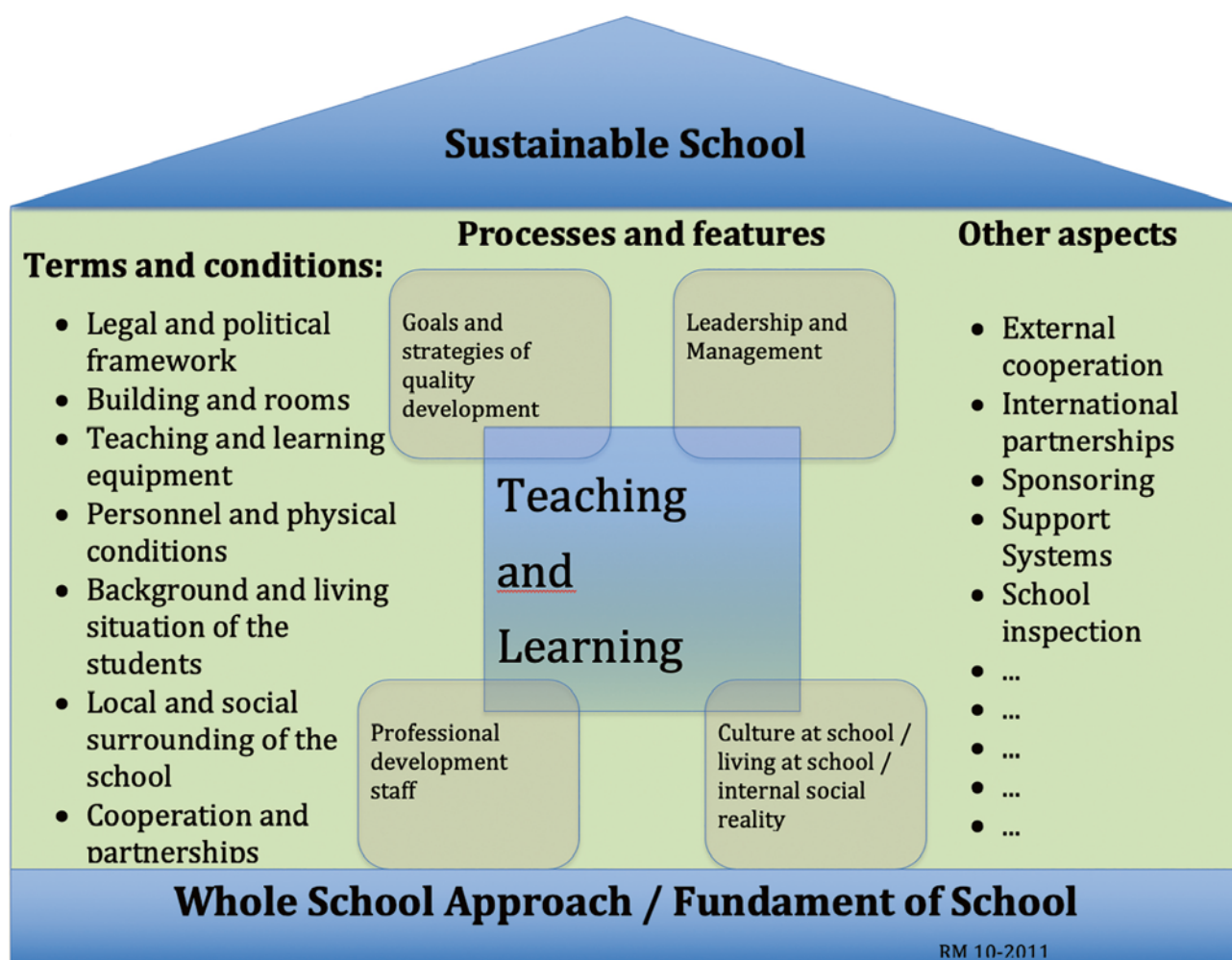
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Learning Material 4.1.1

The figure below illustrates, how elements of the sustainable institutional management of a school can be linked to teaching and learning.

In the centre, the teaching and learning area describes the activities referring to the curriculum and to the subjects being taught. The 4 squares around describe areas which are influencing the teaching and learning process, and generally are open to management decisions at school level. Terms and conditions describe areas, which are often set for the school and thus mark boundaries for management decisions. Other aspects is an open list of processes and features, and terms and conditions, which can be amended, included or discarded.

Figure 1: Sustainable School



Source: Mathar, Reiner (2011): unpublished

Notes

Module 4: ESD in and as Whole School Development

Unit 4.2 How to Implement the Whole School Approach to ESD?

Instructor's Guide

Unit 4.2 supplies you with an overview of different doorways to ESD and examples of good practice. It uses a mind map which shows an almost complete list of possible areas to profile the Whole School Approach to ESD.

The objectives of the unit are to

1. provide a basic understanding of school as an organisation which can have an ESD-profile,
2. reflect on school as a microcosm of a sustainable institution,
3. provide concrete examples of how to implement the concept of the Whole School Approach in the everyday practice of schools.

Participants will be able to

- understand the concept of different doorways to ESD within schools,
- reflect on the roles of different players within a school to achieve the profile of a sustainable school.

Approach, Activities and Methods

The participants will be asked to work on case studies of schools which have implemented elements of WSA for ESD. They will then work on a mind map, systematising the findings of the case studies into a more comprehensive description of possible implementation strategies.

Activity 4.2.1:

Start in small groups with a short reflection on the ESD practice using school examples – either from ones own school or from the presentation of school examples (see Learning Material 4.2.1), personal or via material (school plans, school programmes, project examples).

- Which elements of ESD have been implemented?
- Which players at school level and outside of the school (i.e. school owners) have possibly been involved?
- Which step could be the next one on the way to the Whole School Approach?

Activity 4.2.2:

Distribute (show) the mind map (Learning Material 4.2.2).

Reflect on possible doorways to establishing school profiles for ESD as presented in the mind map with the whole group.

Duration: 3 hours

Thematic Overview

How to implement the Whole School Approach to ESD? – Managing the Whole School Approach

Curriculum by Linking Subjects

The approach to link subjects requires the cooperation of teachers, the coordination of timetables or the project-oriented reorganisation of the school day. All of this is not common practice, but should be recommended and supported when striving for mainstreaming ESD. There are many good practice examples, which can illustrate how interdisciplinary and project work can be used in this context.

For the students of the Sophie Scholl Gesamtschule (comprehensive school) Wennigsen (SSGS) near Hannover (Germany) it is just natural to learn in contexts. The concept: To work in thematic teaching projects (TTPs) implies teaching in interdisciplinary contexts. All students in one grade work on at least one TTP topic per school year. These topics are determined in a comprehensive conference for the respective grades, e.g. desert (life in extreme regions), water, forest, I and all – wherefrom and whereto? India, fascism / neo-fascism. The contents are closely related to the subjects' core curricula; three to five of the subjects are included in the TTP. Many topics relate to the field of global development. At the end of the TTP period – after up to eight weeks – the work will be acknowledged in a joint presentation in order to appreciate the diversity and quality of the results. All classes of the respective grade participate in this project. Extra-curricular partners (e.g. "Welt:Klasse Wennigsen", Education meets development) are included in ESD at school. One reference point is the partnership with the Heritage School in Kolkata/India (school exchange and "German-Indian classroom").

Other Areas of Managing the School

Increasingly, the expectations for schools reach beyond the boundaries of the curriculum itself. In this context, new kinds of local cooperation, changing requirements for the school owners, the school board and closer cooperation with the local school environment are important. Apart from the coordination of thematic references in subjects and learning areas, the educational institution as a whole becomes increasingly important with regard to connecting its different elements. The principle of sustainable development should also be relevant for the school management and for school life in general, so that schools can become models for a sustainable lifestyle. This is where other fields of action – **apart from the central task of teaching and learning** – increasingly come into focus:

- school management and the steering of school development,
- democratic division of tasks and cooperation of stakeholders,
- social work at school,
- school life and culture,
- networks, cooperations and partnerships,
- the management of the school, cycles of matter and resource management,
- design, construction and furnishing,
- quality development and measurement of results.

The "S3-concept" implemented by the British school inspection offers an interesting self-evaluation instrument. It presents the opportunity to interlink different aspects of sustainable development and ESD by identifying different doorways to ESD-practice at school:

- focus on food and drink,
- focus on energy,
- focus on water,
- focus on travel and traffic,
- focus on procurement and waste,
- focus on school buildings,
- focus on school grounds,
- focus on inclusion and participation,
- focus on local well-being,
- focus on the global dimension.

As you can see in the following example, schools have the opportunity to use doorways to WSA for example through subscribing to a school network – in this case Fair Trade Schools – and adapt their school profile accordingly.

Figure A: School Profile



Carl-von-Linné-Schule

In 2013, the Carl-von-Linné School was among the first schools of Berlin which were rewarded the Fair School prize. To receive this prize, schools meet criteria from the areas

- Being fair to people at school/democratic school culture
- Being fair to the environment and climate/ecological responsibility
- Being fair to people around the globe/Global learning

Furthermore, Global Learning has to be integrated within the school programme. The Fair School offers a guideline for the diverse activities in different subjects and learning areas.

Being fair to people at school/democratic school culture
Participation in the U18 poll – Fairness scores at the school sports event – very high degree of satisfaction of students and teachers regarding their interaction (school inspection report)

Being fair to the environment and climate/ecological responsibility
Team for bio-breaktime snack – creative upcycling and utilisation of used things in the learning workshops

Being fair to people around the globe/Global learning
Global Learning has an important role in lessons and leisure time activities:

- Design of a “Global classroom”
- Cross-curricular education
- Fairtrade-Team
- School newsletter on Global Learning
- Annual school theme “Fair School”
- School partnership with Senegal
- Participation in school contests on Global Learning
- Cooperation with ASET e.V.

<https://linne.schule/index.php/globales-lernen>.

Source: KMK/BMZ (2016): Curriculum Framework : Education for Sustainable Development, p. 405.

The Role of the Players in Developing a School Profile for ESD

WSA for ESD requires a school development process, which includes, if possible, all stakeholders, such as teachers, students, school management, parents, support staff etc. However, the role of the school head – or the management – who will necessarily be at the helm when striving for a school profile as a sustainable school seems to be crucial.

The role of the school in an ESD-mainstreaming approach will then refer to making the school itself a “microcosm of sustainable society”. Schools are institutions and they have to deal with similar challenges as other institutions do, too, and this can provide meaningful learning opportunities especially for ESD teaching and learning. In the WSA schools are asked to reflect upon their own activities against the background of the principle of sustainable development and to identify opportunities for an (increased) embedding of sustainable development in their specific areas. The development of a sustainable “whole school”, which integrates sustainable development at all levels, requires – apart from the curricular implementation of ESD – the development of the school as an organisation. “Apart from a closer coordination of the various school subjects with one another and their alignment towards sustainable development, the structural integration of sustainability in school as an organisation is important”.

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Learning material 4.2.1

For the students of the Sophie Scholl Gesamtschule (comprehensive school) Wennigsen (SSGS) near Hannover (Germany) it is just natural to learn in contexts. The concept: To work in thematic teaching projects (TTPs) implies teaching in interdisciplinary contexts. In all school forms, each form / year works on at least one TTP topic per school year. These topics are determined in a comprehensive conference for the respective forms, e.g. desert (life in extreme regions), water, forest, I and all – wherefrom and whereto? India, fascism / neo-fascism. The contents are oriented at the subjects' core curricula; three to five of the subjects are included in the TTP. Many topics relate to the field of global development. At the end of the TTP period – after up to 8 weeks – the work will be acknowledged in a joint presentation, in order to appreciate the diversity and quality of the results. All classes of the respective form participate in this project. Extra-curricular partners (e.g. "Welt:Klasse Wennigsen", Education meets development) are included in ESD at school. One reference point is the partnership with the Heritage School in Kolkata/ India (school exchange and "German-Indian classroom") (Reiner Mathar in: Robert Schreiber, Hannes Siege, ed., Curriculum Framework ESD, Berlin 2016).

Figure 1: School Profile



Carl-von-Linné-Schule

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Team for bio-breaktime snack – creative upcycling and utilisation of used things in the learning workshops

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Global Learning has an important role in lessons and leisure time activities:

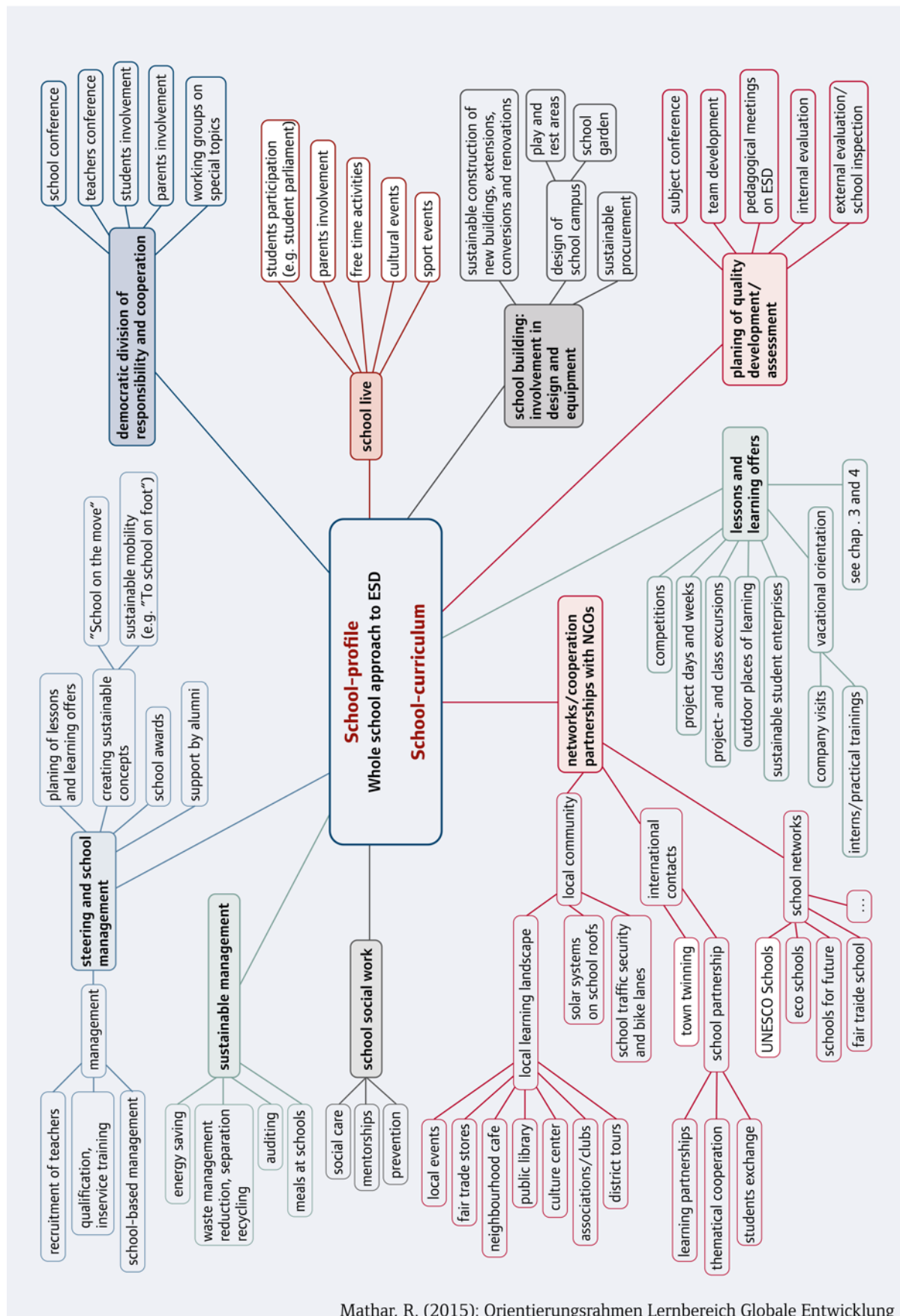
· Design of a "Global classroom"	· Annual school theme "Fair School"
· Cross-curricular education	· School partnership with Senegal
· Fairtrade-Team	· Participation in school contests on Global Learning
· School newsletter on Global Learning	· Cooperation with ASET e.V.

<https://linne.schule/index.php/globales-lernen>.

Source: KMK/BMZ (2016): Curriculum Framework : Education for Sustainable Development, p. 405.

Learning material 4.2.2

Figure 2: Whole School Approach



Mathar, R. (2015): Orientierungsrahmen Lernbereich Globale Entwicklung

Source: KMK/BMZ (2016): Curriculum Framework: Education for Sustainable Development, p.403.

Module 4

ESD in and as Whole School Development

Unit 4.3

Whole School Approach, Networking and Collaboration with External Partners

Instructor's Guide

Unit 4.3 highlights the importance of involving external partners in profiling a school in the sense of the Whole School Approach and it provides helpful examples and approaches on how to integrate them.

The objectives of the unit are to

1. demonstrate the importance and variety of possibilities of meaningful involvement of external partners within the Whole School Approach,
2. provide helpful examples on how to integrate external partners in a reasonable way,
3. clarify the didactical added value of external learning institutions for ESD.

Participants will be able to

- name different forms of collaboration and networking with external partners and their respective advantages with regard to ESD,
- understand the importance of a meaningful involvement of external partners for the profiling of schools,
- assess the quality of involving external partners in the sense of the WSA in schools and to develop future activities.

Approach, Activities and Methods

The aim of this unit is to identify the specific added value of external partners in the framework of the WSA and learning at external venues. Participatory and dialogue-based methods are ideal for this purpose. Participants benefit from the mutual exchange of experience.

Activity 4.3.1: Introduction and Discussion of Examples

Show figure 1 (Learning Material 4.3.1) and discuss it with the participants:

- Which of the possible partnerships shown are already being practiced at your own school or at schools in your surroundings?
- Is the presentation complete or are there any essential external partners missing?
- What can each of these partners contribute to the WSA in particular?

Split up in groups and assign each group one of the examples of how schools have integrated external partners (Learning Material 4.3.2).

- Which partner or partners did the school work with in this case? Where can you find such a form of cooperation in figure 1 (Learning Material 4.3.1)?
- To what extent does the collaboration address topics or approaches that are ESD-relevant?
- What special value do you see in the cooperation?
- Would such a form of collaboration also be feasible for your own school or schools in your surrounding? If not, why?

Afterwards, the groups present their discussion results to the whole group.

Duration: 2 hours

Activity 4.3.2: Cooperation with Extracurricular Learning Institutions

Discuss the didactic potentials of external partners:

- Did the participants experience helpful ways of working together with external learning venues? If so, which?
- What kind of venues/partners can be meaningfully and supportively integrated in teaching and learning/the school life in connection with ESD?

Document the different venues/institutions/partners as well as their particular “benefits” that arise during the discussion on a flipchart.

Duration: 30 minutes

Thematic Overview

Whole School Approach, Networking and Collaboration with External Partners

For each of the mentioned focuses, partners can be found to cooperate with; they cannot only professionally advise the school managers, but they also often develop proposals for cooperation which are aligned to the students' activities and to the lessons. Cooperation with external partners helps to accordingly strengthen the school profile. On the other hand, "[...] the school can communicate that it cares for local development and that it realises that their city, district or the quarter are locations for learning" (see Mathar, p. 416) by including the neighbourhood into the processes.

This unit gives an overview and opens the field for networking between schools and different external partners with the focus on implementing sustainable development throughout the whole school.

Cooperation with External Learning Institutions: Advantages for Teaching and Learning

Cooperations with external learning institutions offer enormous didactic potentials regarding ESD. Normally, there are institutions in the immediate vicinity of every school that offer educational formats on different topics and with different approaches or are willing to develop such offers together with the school (civil society organisations, environmental centres, museums, craft enterprises, student labs, farms etc.).

At such places, students can gain primary experience that cannot be replaced by any knowledge teachers, a textbook or the Internet can offer (in 1916 John Dewey already wrote in his work "Democracy and Education": "An ounce of experience is better than a ton of theory simply because it is only in experience that any theory has vital and verifiable significance. An experience, a very humble experience, is capable of generating and carrying any amount of theory (or intellectual content), but a theory apart from an experience cannot be definitely grasped even as theory.", see Dewey). The direct experience with people, things and nature show possibilities for action and how students can actively intervene in the world around them and make change in the sense of sustainable development actually happen. A mere verbal discussion of sustainable development is not sufficient to increase the students' willingness to become a morally courageous citizen.

Through participative learning in the students' surroundings, topics of sustainable development are transferred into their own lifeworld. Thus, systemic interconnections can be experienced in their regional and global perspectives and students can be made aware of the requirements of sustainable development, for example within the framework of climate protection or nature conservation.

Furthermore, places of learning outside the school offer numerous opportunities for cross-curricular and situational learning. Since the boundaries of school subjects are usually abolished at external learning venues, students can encounter the learning object in a situational context that allows very different approaches. By making the complexity of things visible, external learning offers and fosters networked thinking. The separation of school- and everyday-knowledge can also be eliminated.

Networking between Schools and International Exchange

An important tool to enhance school development in the sense of the WSA is to foster cooperation and networking between schools by joining school networks in different areas of education for sustainable development – from ECO-schools via the UNESCO school network to networks like healthy schools or schools without violence and fair trade-schools. Such networks offer a variety of opportunities to actively engage. They provide the space for practitioners to express and share knowledge as well as resources concerning their work or a certain topic and not only support the formation of professional learning communities outside, but also within the individual school.

Furthermore, international exchange and partnerships between schools of the Global North and the Global South imply a special relevance for ESD, especially with regard to its global dimension. International school exchange, in which all participants meet at eye level, can make global topics tangible and stimulate a change of perspective. Students, teachers and other persons involved can sharpen their understanding of global relationships and dependencies as well as their own position in a globally connected world. In addition, the exchange can promote the development of intercultural competences and a fundamentally deeper understanding of each other's situation. Depending on the available resources and requirements, such an exchange can also take place virtually (The ESD Expert Net has developed a digital manual that explains in detail how a virtual school exchange can be conducted on the basis of a specific topic, see The ESD Expert Net).

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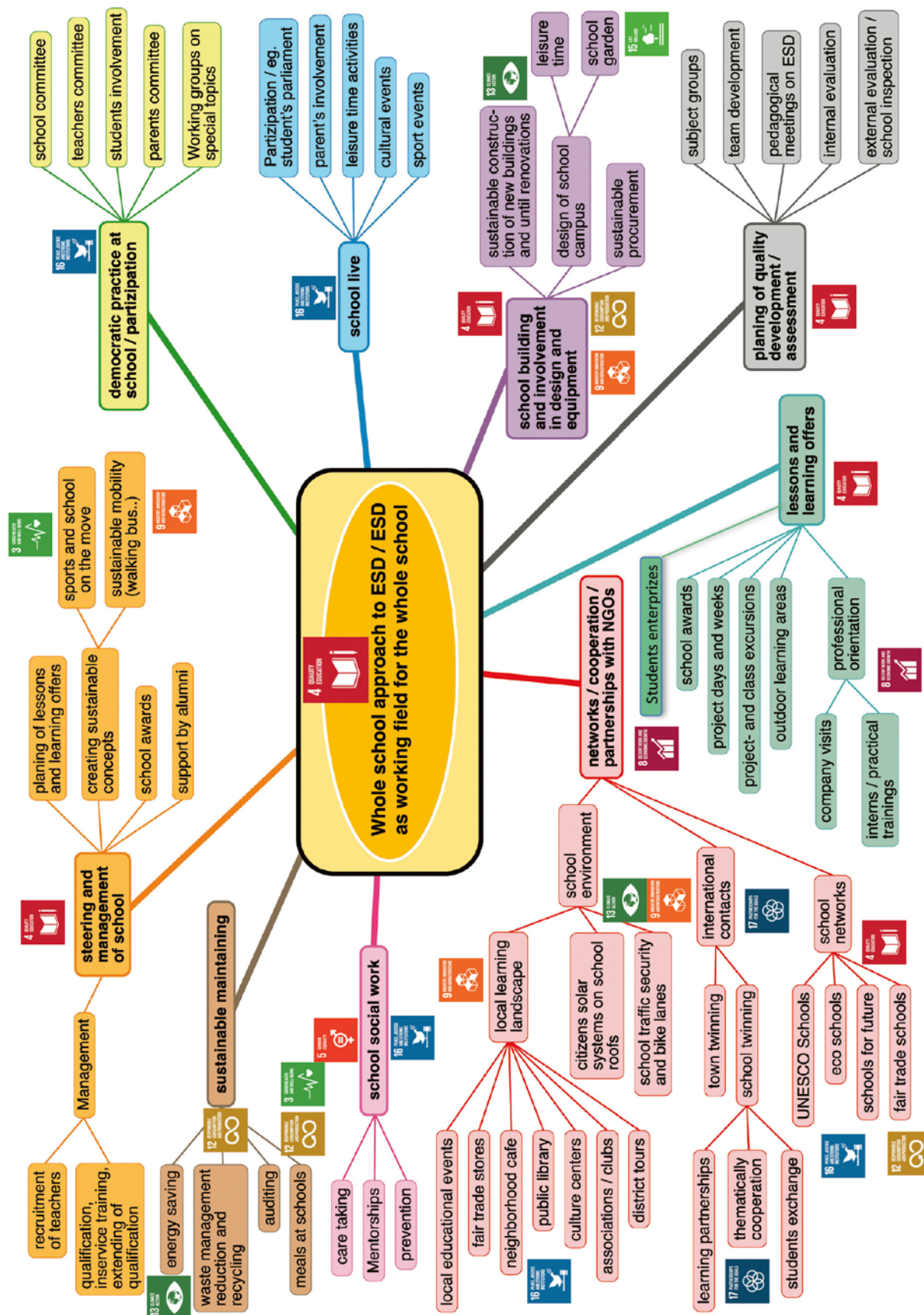
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<http://esd-expert.net/go-global-virtual-school-exchange.html>

Learning Material 4.3.1

Figure 1: Whole School Approach linked to SDG



Source: KMK/BMZ (2016): Curriculum Framework: Education for Sustainable Development, p.403.

Learning Material 4.3.2

Example 1:

School partnerships as learning partnership

In 2012 PROBONO started a partnership between the Maria-Ward-Realschule Bad Homburg and the Dr. Asha Rose Migiro Girls' Secondary School in Mwanga, Tanzania. Right from the start it was important for both schools to focus on the dialogue as means of exchange.

It was fortunate for the partnership that a high-school graduate from Bad Homburg started with a three months volunteer service at the Tanzanian girls' school the first dialogue projects:

She showed a presentation to introduce the new partner school to the Tanzanian students, compared the German and Tanzanian timetables, made a photo mosaic of the German partner school, together with the Tanzanian students and helped to install a partnership working group at the Tanzanian school, with many interested participants. The students of Maria-Ward school also showed considerable interest in the Tanzania working group: They had many more applicants than they could handle. In the meantime, the students of the working groups regularly communicated with one another. They showed particular interest in the partner's country, in comparing the languages, the religions and the role of women in Germany and Tanzania. Each school has produced a short video about themselves and sent it to the partner; at the moment, both schools work on a joint students' magazine. It compares e.g. the name patrons of the two schools, discusses the topic of school uniforms or compares German with Tanzanian proverbs. Mutual study trips are planned, but such journeys are not indispensable for a successful dialogue.

Example 2:

Dental health in Inhambane and Hamburg

At the State School Health Care W4 in Hamburg, there has been a project on dental care for many years. The trainees show primary school students how to feed and care for their teeth so that they are spared from caries.

Since 2011, the school has partnered with the Centro de Formação de Saúde de Inhambane in Mozambique, a nursing school. When the trainees from Mozambique visited Germany and looked at the local dental care project, they came up with the idea of starting something similar at home in Mozambique. In Mozambique more and more sugar is consumed and many people get caries. An early explanation of how tooth decay can be prevented becomes more and more important. The idea was quickly put into action: together, the students converted a shipping container into a dental prophylactic station. Inside the container, a treatment room and various learning stations were created. Outside, the container was provided with murals that clearly illustrate the topic of caries prevention. In building and designing, young people were actively supported by painters, carpenters, electricians and roofers trainees from other vocational schools.

Now the container is shipped to its new home. In the fall of 2016, the students met again in Mozambique and built the prophylactic ward together at the Centro de Formação de Saúde de Inhambane.

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