



Planning Teacher Training for the fields of Home Economics

Collection of practical needs, tools, materials and recommendations



Erasmus+



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CISME
Società Cooperativa



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This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



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**Focus on Sustainability -
Education for Professionals
in Household and Guest-orientated Businesses**

August 2017

Content	Page
Introduction: Aim of this publication	3
1. Understanding and Significance of Sustainable Resource Management in the Processes of Sustainable Consumption and Production (SCP)	4
1.1 General Aspects to Highlight the Most Important Approaches and Principles to support SCP	5
1.1.1 Social responsibility	5
1.1.2 The Economic Dimension	6
1.1.3 The Environmental Dimension	6
1.1.4 Dimension of Culture	8
2 Home Economics and related Businesses - Significant for Sustainable Consumption and Production	8
2.1 Sustainable Consumption and Production in Family Households	9
2.2 Food Preparation, Food Processing and Food Security	9
2.3 Clothes and Textiles	10
2.4 Furniture Management and Room design	11
2.5 Home Appliances – Household Technology	11
2.6 Services for Household Members and Guests	12
3 Capacity Building to Improve Sustainable Consumption and Production	13
3.1 Integration of Sustainability in Higher Education	14
3.2 Sustainability Pedagogies	14
3.2.1 Sustainability Education	14
3.2.2 Green Pedagogy- Approach for Sustainable Development	16
3.3 Aspects of Learning and the Role of Teachers	17
3.4 Operationalising Competencies in ESD	18
3.5 Aspects to Develop the Curriculum	21
3.6 ESD Training of Trainers TRAINING MANUAL	24
Reference to the Online Course of the UNESCO Link to online sources	

Introduction

The general objective of the ERASMUS+ Project ProfESus is to contribute through digital and innovative lifelong learning for professionals, to the improvement of ecological, economic and social sustainability in the EU.

Main Tasks

The main tasks of the project are to develop a curriculum and an innovative blended learning course. The project aims to ensure that sustainable measures and processes are an area of focus already at the stage of vocational education, and not reserved for the context of continuing education and training later in the careers of professionals. As soon as sustainability processes are firmly embedded within one's own as well as company actions, courses taking place within the context of further professional education can focus on their actual task, which is to reflect on and optimise the individual steps of work procedures as well as operational systems within the company in order to guarantee comprehensive sustainability management.

Target Groups

The outcomes of the project are primarily directed at the following target groups:
Vocational educators and trainers in home economics and guest-orientated fields (Food preparation & security, laundry care, cleaning and housework, home appliances, services)

Context of this Paper

Based on the Project application this publication includes:

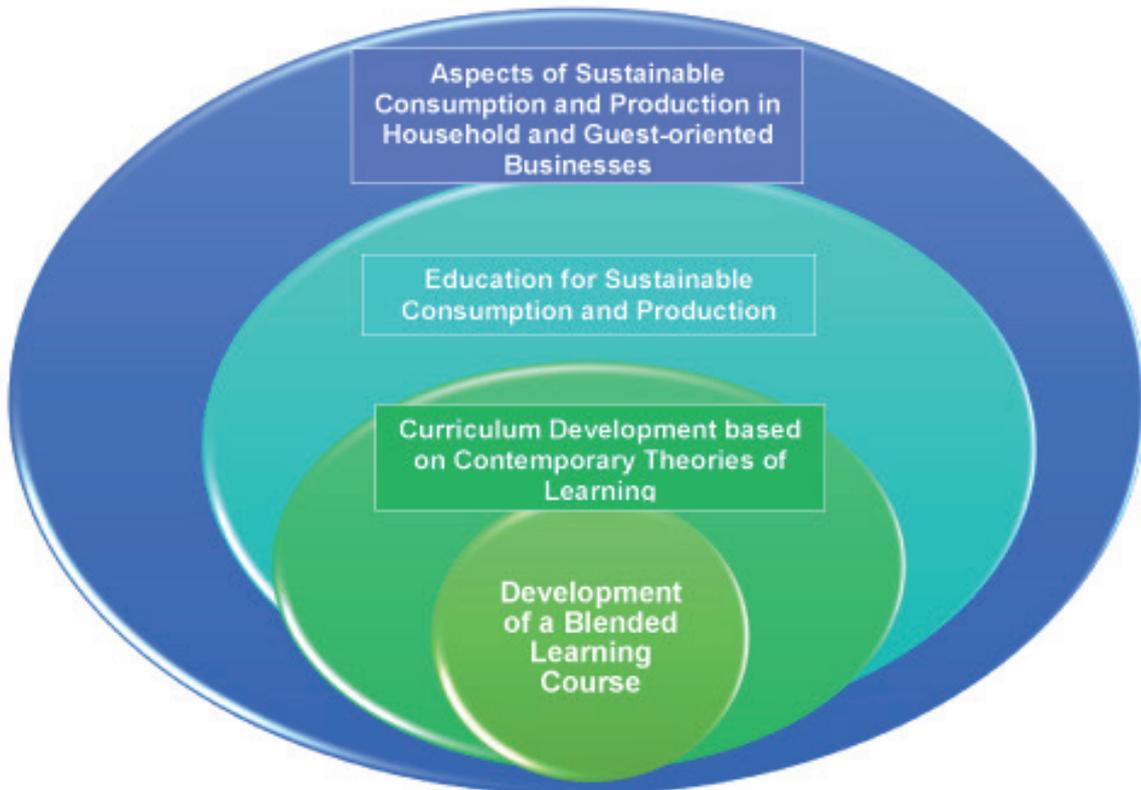
1: Collection of practical needs, tools, materials and recommendations to arrange professional learning processes to improve education for sustainability. This collection can be found as an attachment in OI and as an online tool on <http://profesus.eu/resource-directory>.

Collecting possible options and strategies for recycling, resource conservation, environmental protection and sustainability in relevant action fields of home economics related to vocational education. Thus, we aim to connect the most relevant topics of this project, i.e. environmental and climate change, with research and innovation focused on project related teaching considering regional dimensions and regional co-operations from teacher participants' students with businesses and communities. The core aim is to implement a sustainable mindset of the teacher participants' students for a future-oriented lifestyle.

This document "Planning Teacher Training for the fields of Home economics" of the ProfESus Project intends to build the background and frame for the development of the curriculum and the blended learning course for a teacher training.

The curriculum of the ProfESus-Project is based on the basic understanding of the following areas:

Basic Aspects for the Development of the Curriculum



1. Understanding and Significance of Sustainable Resource Management in the Processes of Sustainable Consumption and Production (SCP)

Working Definition of Sustainable Consumption and Production, SCP

“The use of services and related products, which respond to basic needs and bring better quality of life while minimising the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the services or products so as not to jeopardise the needs of future generations” Norwegian Ministry of Environment, Oslo Symposium, 1994

Source: ABC of SCP, Clarifying Concepts on Sustainable Consumption and Production, United Nations Environment Programme, 2010

We urgently have to move beyond the less sustainable



Source: Brunner & Urenje, SWEDES

Context of Sustainable Consumption and Production (SCP)



<http://web.unep.org/resourceefficiency/what-we-do/overview>

1.1 General Aspects to Highlight the Most Important Approaches and Principles to Support SCP

Sustainability has a societal, economic, and environmental pillar.

1.1.1 Social Responsibility

The society dimension refers to the role institutions play in change and development, with a focus on full, informed participation in these institutions leading to sustainable development. In addition it aims to reach well-being and sufficient living conditions for all without poverty and hunger, access to health care and prevention, decent work, social security and basic housing. Workers and workers capacities as well as the work-life balance have to be considered to support the social aspects of sustainability.

Social Responsibility includes the responsibility of an organisation for the impact of its decisions and activities on society and the environment, through transparent and ethical behaviour that:

- Contributes to sustainable development, including health and the welfare of society;
- Takes into account the expectations of stakeholders
- Is in compliance with applicable law and consistent with international norms and behaviour and
- Is integrated throughout the organisation and practiced in its relationships
- Activities include goods, services and processes, and relationships refer to an organisation`s activities within its sphere of influence.

1.1.2 Economic Dimension

The economic dimension touches on people's sensitivity to the potential but also the limits of economic growth (especially consumption), and its impact on the other two dimensions. To achieve the transformation to a sustainable consumption and production different economic concepts are considered "Developing an Ecological Macroeconomics", "Green Economy" including a new understanding of prosperity, "Sharing Economy" and "Solidarity Economy", Steady State Economy and Degrowth Economy. The question how the different economic concepts impact sustainable lifestyles, is not yet convincingly answered.

Continuous Improvement (in the context of SCP)

Continuous improvement is an ongoing systematic effort seeking small improvements in processes and products, with the objective of increasing quality and reducing waste, as well as reducing footprints and minimising environmental and socio-economic burdens, while maximising economic and social values. Continuous improvement is one of the tools that underpins the philosophies of total quality management and clean production. Through constant study and revision of processes, a better product can result in reduced costs.

1.1.3 Environmental dimension

The environmental dimension involves people's awareness of the fragility and finiteness of the physical environment, respecting the limits and leading to a commitment to favour environmental concerns in social institutions, and economic policy.

Natural resources obtainment (Water, Soil, Oil, Food etc.)

The naturally occurring assets that provide use benefits through the provision of raw materials and energy used in economic activity (or that may provide such benefits one day) and that are subject primarily to quantitative depletion through human use. They are subdivided in four categories; mineral and energy resources, soil resources, water resources and biological resources.

Resource efficiency is about ensuring that natural resources are produced, processed and consumed in a more sustainable way, reducing the environmental impact from consumption and production of products over their full life cycle. By producing more wellbeing with less material consumption, resource efficiency enhances the means to meet human needs while respecting the ecological carrying capacity of the earth.

1.1.3.1 Energy Efficiency

Energy Efficiency (EE) encompasses all changes that result in a reduction in the energy used for a given energy service (heating, lighting etc.) or level of activity. The reduction in energy consumption is not necessarily associated with technical changes, since it can also result from a better organisation and management or improved economic efficiency in the sector (e.g. overall gains of productivity).

1.1.3.2 Reduce-Reuse-Recycling (3R)

The 3R Initiative aims to promote the “3R” (reduce, reuse and recycle) globally so as to build a sound-material-cycle society through the effective use of resources and materials. Agreed upon at the G8 Sea Island Summit 2004, it was formally launched at a ministerial meeting in Japan in spring 2005. Please see the presentations related to the 3R under <https://www.slideshare.net/prathameshbagre/3rpptfinal>



Reducing means choosing to use things with care to reduce the amount of waste generated. Reusing involves the repeated use of items or parts of items which still have usable aspects. Recycling means the use of waste itself as resources. Waste minimisation can be achieved in an effective way by focusing primarily on the first of the “3Rs”, “reduce”, followed by “reuse” and then “recycle”.

1.1.3.3 Waste Prevention, Waste Treatment

The Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal defines wastes as “substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law. Wastes may be generated during the extraction of raw materials, the consumption of final products, and other human activities. Residuals recycled or reused at the place of generation are excluded.

Integrated solid waste management refers to the strategic approach to sustainable management of solid wastes, covering all sources and all aspects, including generation, segregation, transfer, sorting, treatment, recovering and disposal in an integrated manner, with an emphasis on maximising resource efficiency.

1.1.4 Dimension of Culture

“The basis and foundation for inter linkages of these three areas and sustainable development is provided through the dimension of culture.

Culture – ways of being, relating, behaving, believing and acting that differ according to context, history and tradition, and within which human beings live out their lives.

This is to recognise that practices, identity and values – the software of human development – play a big role in setting directions and building common commitments” (UNESCO 2005).

Thus sustainable consumption and production is key to establishing the fundamentals for increasing quality of life for all (United Nations Environmental Program [UNEP], 2015, p. 8).

2. Home economics and Related Businesses – Significant for Sustainable Consumption and Production

Home economics can be clarified by four dimensions or areas of practice:

- as an academic discipline
- as an arena for everyday living in households, families and communities for developing human growth potential and human necessities or basic needs to be met
- as a curriculum area that facilitates students to discover and further develop their own resources and capabilities to be used in their personal life, by directing their professional decisions and actions or preparing them for life
- as a societal arena to influence and develop policy

All Home economics areas especially Home Economics education subjects aim to promote and support Sustainable Lifestyles and Sustainable Consumption and Production.

Based on the types of households and guest orientated businesses, the management areas and tasks differ from household to household or from business to business.

Beside the multi-faceted

- **family households** with different number of household members and their capacities, with different resources such as income and assets or diverse living conditions in a home of one’s own or a rented flat, there are
- **institutional households** for special target groups such as nursing homes, guest houses, boarding schools, hospitals and so on.
- in addition there are **household related or guest-orientated businesses** for example catering services, meals on wheels, cleaning services for family households, elderly care services, all kinds of restaurants, hotels.

They all have to fulfil their tasks to improve the well-being of the household members, guests and clients considering the aims of sustainable consumption and production to promote sustainable lifestyles.

2.1 Sustainable Consumption and Production in Family Households

A “sustainable lifestyle”

- is a way of living enabled both by efficient infrastructures, goods and services, and by individual choices and actions that minimise the use of natural resources, and generation of emissions, wastes and pollution, while supporting equitable socio-economic development and progress for all.
- Creating sustainably means rethinking our way of living, how we buy and how we organise our everyday life. It is also about altering how we socialise, exchange, share, educate and build identities.
- It is about transforming our societies and living in balance with our natural environment. As citizens, at home and at work, many of our choices on energy use, transport, food waste, communication and solidarity contribute to building sustainable lifestyles.

Governments have a key role to play by creating the appropriate frameworks and infrastructures (regulatory instruments, technological innovations, new public services) to enable citizens to change. Information and education are essential, as well as the full participation of civil society in the movement and the involvement of the business sector that can develop innovative solutions for sustain-able lifestyles”.

Sufficiency is a concept, which has emerged over the years in planning and development circles as well as transnational civil society movements as an alternative economic model to

It is a philosophical ideal that offers the possibility of a higher quality of life while simultaneously reducing the human impact of the natural world. Sufficiency challenges the notion that, if “some” is good, than more must be better, instead it emphasises “enoughness”. Sufficiency is not about sacrifice, denial, asceticism or doing without. It is about well-being and being well.

In all households the principles and approaches of sustainable consumption and production have to be considered in all home economics areas.

2.2 Food Preparation, Food Processing and Food Security

One of the most important basic needs of household members is food. In all kind of households some steps of food preparation or food processing is necessary.

The most basic definition of food processing is “a variety of operations by which raw foodstuffs are made suitable for consumption, cooking, or storage”. Food processing includes any action that changes or converts raw plant or animal materials into safe, edible and more enjoyable, palatable foodstuffs. In large-scale food manufacture, processing involves applying scientific and technological principles to preserve foods by slowing down or stopping the natural processes of decay. It also allows changes to the eating quality of foods to be made in a predictable and controlled way. Food processing also uses the creative potential of the processor to change basic raw materials into a range of tasty attractive foods that provide interesting variety in the diets of consumers. Without food processing it would not be possible to sustain the needs of modern urban populations, and the choice of foods would be limited by seasonality.

<http://www.eufic.org/article/en/food-technology/food-processing/expid/benefits-processed-food-review/>

Examples for best practices for sustainable food processing in family households are available on the following website
<http://he.ifhe.org/857/>

“YOUR GUIDE TO SUSTAINABLE BUSINESS IN FOOD” published by the Government of South Australia can found under the following link

<http://www.zerowaste.sa.gov.au/upload/resource-centre/publications/food-waste/zwsa%20sustainable%20food%20guide.pdf>
For more sources see attached link list.

2.3 Clothes and Textiles

Clothes and textiles do have many functions based on social or cultural backgrounds. Most of all clothes are needed to protect household members against negative influences through climate and weather. Household Textiles are important for hygienic issues.

Sustainable consumption of clothes and textiles is an important issue. Before a new item of clothing or textile is bought the “3Rs” should be considered first. Before clothes or textiles are bought most important aspects and information related to sustainability should be taken into consideration. During the lifetime of an item of clothing or textile it has to be washed, which causes a large amount of water and energy consumption. There are different options to reduce water and energy consumption, which can be found under the following link:

https://www.google.de/search?q=sustainable+laundry&ie=utf-8&oe=utf-8&client=firefox-b&gfe_rd=cr&ei=065WWLmJJ-HM8geY1LroCg

For family households there are tools available to support the “3Rs” principle for laundry processes to reduce energy use and water use see Best Practice Posters <http://he.ifhe.org/857/>



Source: http://sustainability.tufts.edu/wp-content/uploads/sustain__524.jpg

Institutional Households can find **Training Modules on the Sustainability of Industrial Laundering Processes** on the following website <http://www.laundry-sustainability.eu/en/>

Family Households can find **Best Practices for hand washing and automatic washing under the following link** <http://he.ifhe.org/857.html>

2.4 Furnishing Management and Room Design

Family households and institutional households have to be furnished and fittings have to be purchased to fulfil the many tasks for its members.

The above mentioned aspects for sustainable lifestyles as well as for sustainable consumption and production have to be thought about. Information about labels which guarantee sustainable production of materials and sustainable production processes as well as the options to follow the 3Rs should be available.

Special Guidelines should be followed. See www.greeningtheblue.org

Sustainable Procurement Guidelines FURNITURE PRODUCT SHEET
UNSP_Product Sheet_Furniture_Basic and Advanced_all regions

2.5 Home Appliances – Household Technology

We observe following facts:

- the use of various technological devices is increasing in households all around the world,
- these devices consume resources by providing support for daily living,
- these devices may be more efficient than doing the same job by hand,

Independent of how the work at home is done, it takes a considerable amount of resources and contributes to harmful changes of our environment. But there are many ways to do the same job with less impact. The Best Practices Posters of the International Federation for Home Economics were developed based on scientific research which qualified and quantified environmental effects coming from the use of technical devices in households. to identify sustainable technological solutions for daily household work.

IFHE Best Practice Posters

A set of posters detailing the Best Practices for the sustainable use of household technology and resources are available on the following website <http://he.ifhe.org/857.html>

The posters and accompanying materials, including FAQ sheets, are designed to be used worldwide as teaching materials to help reduce energy and water consumption in households while also improving the hygiene and comfort of families. Growing population and the changing lifestyles of recent decades have made the consumption of resources and environmental pollution skyrocket worldwide. A large proportion of this resource consumption and pollution can be traced back to households and, with increasing technology and mechanisation, it is likely that this trend in the future will only intensify. This means that the responsible use of energy, water and other resources is more important today than ever before. For this reason, the best practice posters were developed on scientifically based recommendations in key areas of work in the household. In addition to food preparation, preservation and storage, the scientists examined the areas of both manual and automatic dishwashing and laundering closely in order to define globally what would be globally applicable to a variety of technology and lifestyle types.

The posters and appropriate accompanying materials are available for download at <http://he.ifhe.org/857.html>

These materials can support Home Economics professionals worldwide to educate and train consumers to change their behaviour towards a more conscious use of natural resources.

2.6 Services for Household Members and Guests

For the first time Agenda 21 explicitly mentioned the human development and social dimensions of sustainability. The OECD emphasizes the importance of human capital and social dimensions of sustainable development with respect to the worsening employment opportunities for low-skilled workers, the persistent and high unemployment in many countries and the desire to minimize the extent of poverty and social exclusion.

A central aspect of the social dimensions of sustainable development relates to social conditions and factors that shape processes of change. These “social drivers” relate to social structures and institutions that shape people’s preferences, behaviour and possibilities, and to agency, that is, the capacity of individuals and groups to influence change. Social structures include forms of socioeconomic stratification (class, ethnicity, gender and location). Institutions include the informal and formal “rules of the game” that pattern the behaviour of people and organizations in fairly predictable ways. Agency encompasses the myriad ways in which individuals and groups respond and adapt to circumstances, including how they cope, innovate, organize and mobilize in defense of their interests, identity and rights. All these core elements—that is, social structures, institutions and agency—that constitute social drivers are underpinned by social norms and values that are critical in making the transition to a sustainable future. Such values relate to human dignity and rights; sense of identity and citizenship; commitment to social justice, fairness and equality; inclusivity, tolerance and solidarity; and respect for diversity and environment. In this sense, sustainable development with its norms and values provides an ethical foundation for the global community.

Social Reproduction and Care

Despite the considerable attention that issues of gender equity and women’s empowerment have received within the international development community, limited attention has focused on the question of care for children, the elderly and infirm, as well as the key role that women play in both the reproduction of a healthy, educated labour force and in generating intangible assets such as trust, reciprocity and ethical norms. Unpaid care and care-related services constitute a fundamental aspect of social reproduction.

A growing body of evidence points to the importance of cultivating a policy environment that recognizes and values care as the foundation of economic and social development and a core component of equality.

Equality of Opportunity and Outcome

Equality matters both for its intrinsic value as a human right and for instrumental reasons linked, for example, to economic growth and social cohesion. It is also essential for enhancing people’s resilience to external crises and shocks. Inequalities are crucial for determining how people are affected by, for example, food and financial crises or climate change, and their capacities to respond and adapt to adversity and opportunity.

Gender-based wage gaps, for example, often relate to disadvantage in the workplace that derives from unequal responsibilities for care work or discriminatory forces that are embedded in labour market institutions, such as gendered definitions of “skill”.

3 Capacity Building to Improve Sustainable Consumption and Production

**Tell me - and I forget
Teach me - and I remember
Involve me and I learn**

Benjamin Franklin

https://www.brainyquote.com/slideshow/authors/top_10_benjamin_franklin_quotes.html

Education in knowledge societies needs a new dynamic, because in such societies, knowledge has changed, access to knowledge is different; learning in knowledge societies, and teaching in knowledge societies include new components, new concepts, new pedagogical approaches, and need new resources and new tools.

<http://iite.unesco.org/pics/publications/en/files/3214630.pdf>

Source: UNEVOC community

“Education for sustainable development (ESD) is not a particular programme or project, but is rather an umbrella for many forms of education that already exist, and new ones that remain to be created. ESD promotes efforts to rethink educational programmes and systems (both methods and contents) that currently support unsustainable societies. ESD affects all components of education: legislation, policy, finance, curriculum, instruction, learning, assessment, etc. ESD calls for lifelong learning and recognizes the fact that the educational needs of people change over their lifetime. There are many programmes using an ESD approach to learning which is critical for achieving sustainability”.

Source: UNESCO 2016, *Global*

In addition to providing quality education, the aim is to foster sustainable development through learning processes. This learning will be achieved by the intervention of teachers, and in the context of the learning environment, it will be the academics employed to assist students to learn. The teacher, or academic, is then the direct link to the students.

The research group had noticed ‘that the way in which teachers initiate and manage classroom discussions is an essential factor in promoting rich argumentative discourse in the classroom, and that there is a need for professional development in this area’ (Wolfensberger et al. 2010: 714).

These kinds of shifts can be seen as consistent with current wider moves in higher education towards student-centred, diverse and active learning approaches.

3.1 Integration of Sustainability within Education

Integration of Sustainability within Education implies shifts

From	Towards
Transmissive learning	Learning through discovery
Teacher-centred approach	Learner-centred approach
Individual learning	Collaborative learning
Learning dominated by theory	Praxis-oriented learning linking theory and experience
Focus on accumulating knowledge and a content orientation	Focus on self-regulative learning and a 'real issues' orientation
Emphasis on cognitive objectives	Cognitive, affective and skills-related objectives
Institutional, staff-based teaching/learning	Learning with staff but also with and from outsiders

Source: Sterling (2004, p.58); adapted from Van den Bor et al. (2000). In

The Future Fit Framework, An introductory guide to teaching and learning for sustainability in HE
Author: Professor Stephen Sterlin.

3.2 Sustainability Pedagogies

3.2.1 Sustainability Education

Sustainability Education is intended to provide learning, training, and practical experience, in both formal and non-formal settings, that fosters personal development, community involvement, and action for change in our human and natural worlds.

The approach to sustainability education is a more holistic and ecological model that emphasizes the realization of human potential and interdependence of social, economic, and ecological wellbeing. Such learning, exemplified by much of alternative education, is more engaged, experiential, and addresses the physical, mental, emotional, and spiritual components of our roles in the world and in human society. (http://www.jsedimensions.org/wordpress/content/a-pedagogy-for-sustainability-education_2013_06/)

"Our aim is to support educators in putting sustainability at the heart of everything they do; enabling young people to develop the knowledge, skills, values and attitudes they need to face the challenges of the 21st century and contribute to a sustainable future.

Such learning is based on core values of lifelong learning, recognition of diversity, cooperation and collaboration, personal reflection and values, integrative understanding, responsibility and faith in others, and developing learning communities with a commitment to the good of the whole. This involves developing a curriculum (and learning models) that values transdisciplinarity, recognizes that knowledge is provisional and approximate, involves the learner in determining goals and methods, allows for negotiation and flexibility, and promotes local, personal, applied, and first-hand knowledge.

The emphasis here is on knowledge that is applicable, practical, inclusive, and self-critical. Evaluation is based on self-evaluation, self-generated indicators, critical feedback and support from others, and assessment that is qualitative as well as quantitative. (Sterling, 2001) Such learning is based on core values of lifelong learning, recognition of diversity, cooperation and collaboration, personal reflection and values, integrative understanding, responsibility and faith in others, and developing learning communities with a commitment to the good of the whole. This involves developing a curriculum (and learning models) that values transdisciplinarity, recognizes that knowledge is provisional and approximate, involves the learner in determining goals and methods, allows for negotiation and flexibility, and promotes local, personal, applied, and first-hand knowledge. The emphasis here is on knowledge that is applicable, practical, inclusive, and self-critical. Evaluation is based on self-evaluation, self-generated indicators, critical feedback and support from others, and assessment that is qualitative as well as quantitative. (Sterling, 2001)

http://www.jsedimensions.org/wordpress/content/a-pedagogy-for-sustainability-education_2013_06/

More progressive educational thinking considers effective pedagogy to involve more participative approaches between teacher and pupils. Here the role of the teacher is to facilitate and guide learning rather than being a 'fount of all knowledge', and the learner is an active partner in judging their progress towards learning objectives.

http://assets.wwf.org.uk/downloads/wwf_pedagogy_report_final__no_back_tint__web.pdf

Expanding on the 'right-hand' characteristics shown in the above table, below are some further ideas to indicate the sorts of methodological approaches and values that are often associated with learning and teaching in relation to sustainability:

- critical thinking;
- systemic thinking;
- interdisciplinarity and transdisciplinarity;
- experiential learning and real-life issues;
- reconnecting to sense of place and real-world inquiry;
- empowerment of the learner;
- teacher as mentor, exemplar and facilitator;
- multiple teaching styles;
- developing dialogue;
- space for emergence;
- learning for action;
- reflection on learning (reflexivity);
- transformative learning;
- collaborative learning and co-inquiry;
- action competence;
- campus as curriculum and use of campus as a learning resource.

(Sterling 2008)

Such methodological values and approaches can be manifested through a number of methods, as suggested below. Taking ESD further is often a matter of extending pedagogic diversity by taking one, two or more methods on board:

- role plays and simulations;
- group discussions and dialogue;
- stimulus activities (e.g. use of photos, videos, newspapers);
- debates;
- diarying;
- critical incidents (posing critical events and asking what students would do);
- case studies;
- reflexive accounts;
- personal development planning (PDP);
- critical reading and writing;
- problem-based learning;
- fieldwork;
- modelling good practice;
- futures visioning;
- worldview and values research;
- action research.

(Adapted from Cotton and Winter (2010); see also Section 11 Teaching/CPD Activities below.) in The Future Fit Framework, An introductory guide to teaching and learning for sustainability in HE Author: Professor Stephen Sterling

3.2.2 Green Pedagogy - Approach for Sustainable Development

Green pedagogy clearly defines education for sustainable development according to the tenets as well as the principles of constructivist didactics.

Green pedagogy shapes ways of learning for the constructive and solution-orientated handling of economic, ecologic and social “hot spots” in the areas of agriculture, resource conservation, lifestyle as well as consumption, with especial regard for application in the pedagogic as well as the practical vocational field.

Green pedagogy places development and thus processes at the centre of learning. As a result, concrete connections between scientific concepts, their practical application and the motives behind individual as well as communal actions in the fields of agriculture and environment are made.

Principles of Green pedagogy

- Learning through participation
- Learning through contradictions and discrepancies
- Learning to make differentiated distinctions with regard to diverse issues
- Learning to bolster people and clarifying intentions
- Learning to transform creative ideas into innovative solutions to problems

Green Pedagogy answers questions on:

- efficiency increase and resource conservation
- in the field of nature protection and use of nature
- food industry and values
- ability to act in spite of an exceeding ecological footprint
- rules for joint entrepreneurship on common land
- entrepreneurship in complex situations

The ProfESus Project commits to **quality** education and to improving learning outcomes, which requires strengthening inputs, processes and evaluation of outcomes and mechanisms to measure progress. The ProfESus Project will ensure that teachers and educators are empowered, adequately recruited, well-trained, professionally qualified, motivated and supported within well-resourced, efficient and effectively governed systems.

Quality education fosters creativity and knowledge, and ensures the acquisition of the foundational skills of literacy and numeracy as well as analytical, problem solving and other high-level cognitive, interpersonal and social skills. It also develops the skills, values and attitudes that enable citizens to lead healthy and fulfilled lives, make informed decisions, and respond to local and global challenges through education for sustainable development (ESD) and global citizenship education (GCED).

3.3 Aspects of Learning and the Role of Teachers

- a demonstrated capacity to think critically, communicate clearly, and solve complex problems is more important
- is important to demonstrate ethical judgment and integrity, intercultural skills; and the capacity for continued new learning.



UNESCO Global Action Programme on
Education for Sustainable Development

“Increase the capacities of educators and trainers to more effectively deliver ESD”

Educators and trainers are powerful agents of change for delivering the educational response to sustainable development. But for them to help usher in the transition to a sustainable society, they must first acquire the necessary knowledge, skills, attitudes and values. To address sustainable development issues, they must also develop the requisite motivation and commitment.

<http://en.unesco.org/gap/priority-action-areas>.

Developing courses to enable **Greening TVET** is an essential and cross-cutting theme for sustainable development. It refers to the efforts to reorient and reinforce existing TVET institutions and policies in order to reinforce achievement of sustainable development. Thus, greening TVET acknowledges the relationship between sustainable development and green development and clarifies different definitions of green jobs and green skills as well.

<http://www.unevoc.unesco.org/SWL2014/presentations/Parallel%20Session%204%20-%20Shyamal%20Majumdar.pdf>

Source: Majumdar 2010, *Global*

The need for sustainable system transformation and the associated green skills pushes classical vocational and educational training (VET) to its limits.

Specific technical skills can be provided easily within classical VET structures, when a set of skills is already established and reproducible and scalable. The challenges we face, as a society and economy, which arise from ecological boundaries, seldom lead to clear tasks on how to tackle these issues and therefore teach the appropriate skills.

An extended set of skills is needed to turn system knowledge into workable processes for companies and policy-makers.

Three stages of ESD and Sustainability Science

Sustainability science is “...an emerging field of research dealing with the interactions between natural and social systems, and with how those interactions affect the challenge of sustainability: meeting the needs of present and future generations while substantially reducing poverty and conserving the planet’s life support systems.”

<http://www.pnas.org/content/108/49/19449.full>

ESD

‘education about sustainability’

‘education for sustainability’

‘education as sustainability’

Sustainability Science

means content based sustainability literacy ‘Multi-disciplinarity’ Identifies and assembles relevant knowledge and expertise in traditional academic disciplines for addressing sustainability problems

means a critical questioning of assumptions; contribution to problem-solving ‘Inter-disciplinarity’ connects and integrates disciplinary knowledge and expertise to advance basic understanding of the complex, dynamic interactions of human-environment systems.

means a shift of worldview ‘Trans-disciplinarity’ promotes active collaboration with various stakeholders throughout society, organising processes of mutual learning among science and society.

Barth and Michelsen (2013)

Source: Table 12 Part 1: adapted from Routledge Handbook of Higher Education for Sustainable Development Chapter

3.4 Operationalising Competencies in ESD

Sustainability is the collective willingness and ability of a society to reach or maintain its viability, vitality, and integrity over long periods of time, while allowing other societies to reach or maintain their own viability, vitality, and integrity. Sustainability challenges do not seem tractable to business-as-usual solutions; novel approaches are needed, for example, solution-oriented and transformational sustainability research efforts (Lang et al. 2012; Sarewitz et al. 2012; Wiek et al. 2012; Miller et al. 2014).

Similarly, a large-scale educational transformation is needed to equip a new generation of professionals (not only sustainability professionals!) to address sustainability challenges through

- problem-solving approaches that integrate
- systems thinking, structured anticipation,
- value-laden deliberation, evidence-supported strategies, and
- strong collaboration across government, businesses and civil society

(Wiek et al. 2011a).

Sustainability programmes in higher education institutions are supposed to convey these competencies in sustainability and enable graduates to make contributions to resolving challenging societal problems and building a sustainable future. Competencies in this context entail far more than just topical or issue-related knowledge, for instance, on the global water cycle, or consumption patterns in countries, or distributional injustices in developing countries. We define competence as ‘a functionally linked complex of knowledge, skills, and attitudes that enable successful task performance and problem solving’; applied to competencies in sustainability, these are ‘complexes of knowledge, skills, and attitudes that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges, and opportunities’ (Wiek et al. 2011b: 204). Competencies, as defined here, accommodate the topical knowledge required for successful problem solving in a particular context. We propose a fairly smooth transition from competencies to learning objectives/outcomes – the former being more generalised and abstract, the latter being more detailed and specific. More details on the concept and definition of (key) competencies can be found in Barth and Michelsen (2013).

Competencies have received increasing attention as critical reference points for the development of curricula and courses. There are some differences across competencies concepts, ranging from minor terminological to more substantive differences (Wiek et al. 2011b; De Kraker et al. 2014). We focus here on moving forward with a converging set of key competencies in sustainability, supported by a variety of scholars (de Haan 2006; Sterling and Thomas 2006; Barth et al. 2007; Wiek et al. 2011b; Frisk and Larson 2011; Rieckmann 2012; Steiner 2013; Thomas and Day 2014). These key competencies are: (Wiek et al. 2011b)

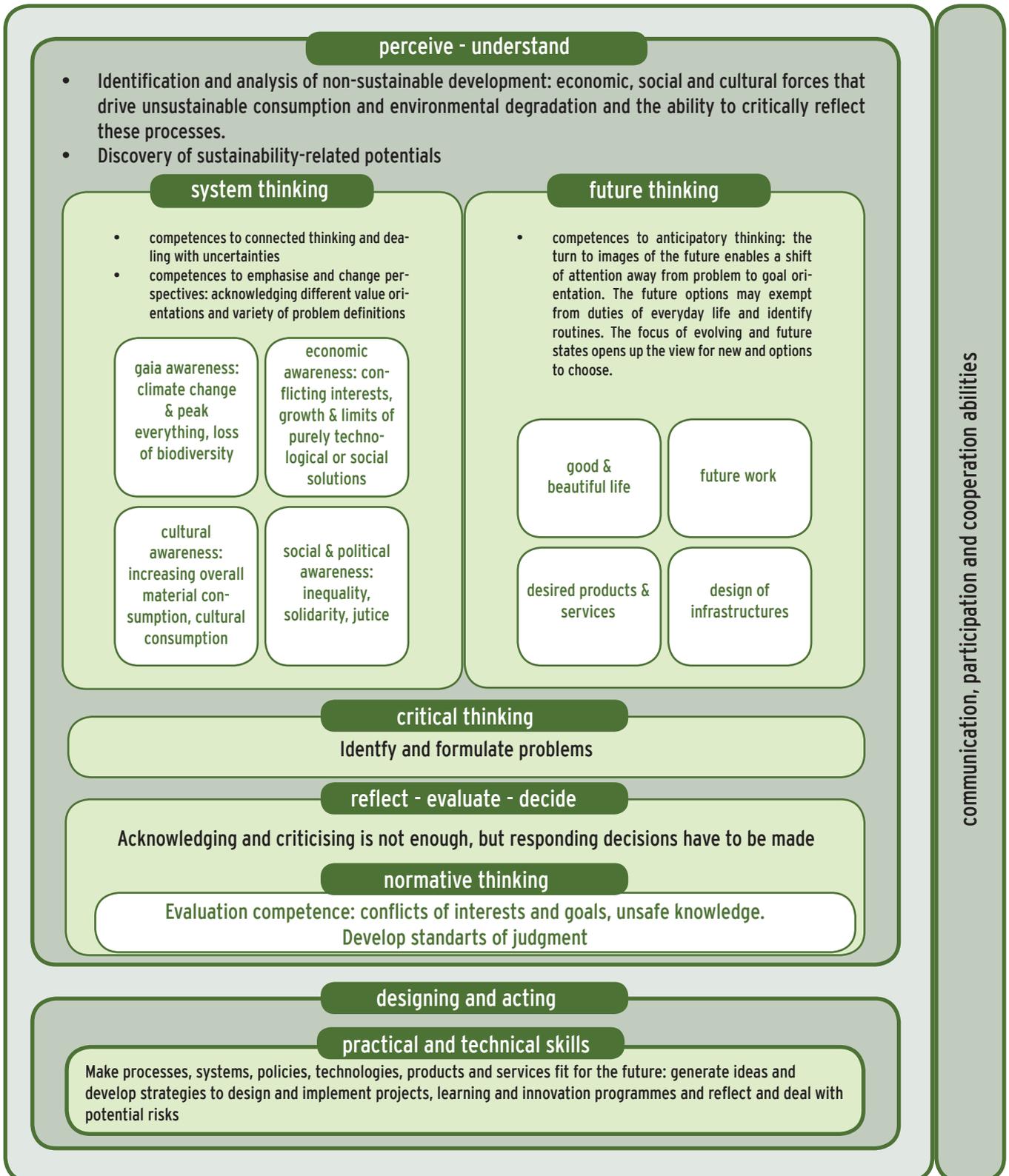
- Systems thinking competence
- Futures thinking (or anticipatory) competence
- Values thinking (or normative) competence
- Strategic thinking (or action-oriented) competence
- Collaboration (or interpersonal) competence

However, these competencies are rarely operationalised as specific learning objectives for different educational levels.

The operationalisation of competencies is the first step of curriculum and course design, delivery and assessment, following backward design (Wiggins and McTighe 2005), or constructive alignment (Biggs and Tang 2007). (Examples of operationalised competencies see Table 16.1ff)

Source: Part 3 Routledge Handbook of Higher Education for Sustainable Development Chapter 16

Figure 9.1 Integrated green skills matrix



Source: Authors.

Cedefob; OECD (2015): Green skills and innovation for inclusive growth. Luxembourg: Publications Office of the European Union. Cedefob reference series. Page 131

The approach identifies that learning for an accelerating pace of development to a greener society does not primarily need technical skills, but a set of competences that enable people to design and implement solutions in the right direction.

More complex problems are characteristic of the green challenge and require new solutions, involving many sectors. These problems cannot be solved within a single company or public institution, but often need a cross- sectoral approach. This demands interdisciplinary skills to create shared problem definitions and shared solving perspectives. New value chains emerge from or transform existing ones, so competences of cooperation and interaction between organisations are needed to devise more sustainable solutions. As a further important category is the normative aspects of skills, these must also be addressed as they reflect societal and cultural values and visions.

VET programmes have to be designed to be more process-oriented and must reflect directly the experiences gained and insights provided during workshops and lectures to aid good knowledge transfer, as well as personal work tasks and agendas for participants. Regions and companies have their own characteristics. Solutions and skills requirements differ, but VET involvement is generally transferable. The educational and scientific task is to create standardised tools that can be used by vocational training professionals to process specific regional and organisational requirements into feasible and workable projects. The ecological challenges ahead need regional and local momentum. VET can contribute enormously to this task and help to translate green issues into opportunities that can be tackled.

3.5 Aspects to Develop the Curriculum

With the context for the teachers and trainers in mind and aiming to “Implement a sustainable mindset for a future-oriented lifestyle” the curriculum and blended learning course should be developed based on contemporary theories of learning such as the constructivistic approach, situated learning, problem solving learning or collectively learning using related learning strategies, methods and techniques. New communication technologies should be integrated. The introduction of multimedia to the classroom can lead to higher-level thinking as the computer takes care of low-level routine tasks, supports inquiry learning by making available a wide range of resources, accommodates different learning styles, and changes the role of the teacher from knowledge source to learning facilitator. Another critical advantage of integrating the new technologies is that of smashing down the walls of the classroom. You can talk to anyone on the planet to get advice, information, evaluation of your project and so on.

Aspects to develop the curriculum for the course were developed during the ProfESus expert workshop

- Modules
- Global description and title
- Type of lessons (face to face / online)
- Competences
- Learning outcomes
- Content
- Guidance and support
- Methodology (recommended)
- Learning Product
- Assessment
- Timing and
- Context of the modules

To be considered:

- Definition of competences – key competences
- Gender Aspects
- Didactic Principles

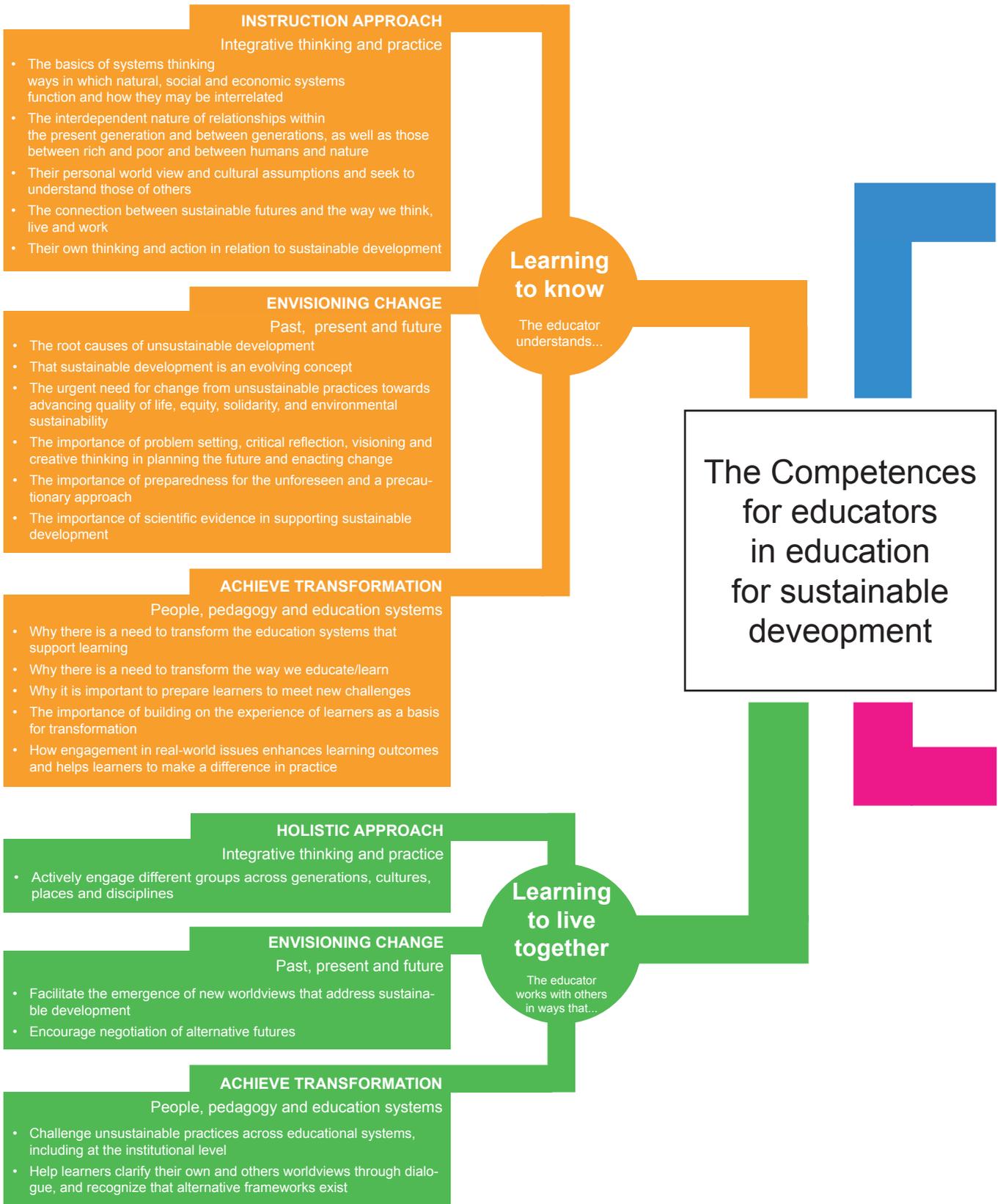
Learning for the future: Competences in Education for Sustainable Development; ECE/CEP/

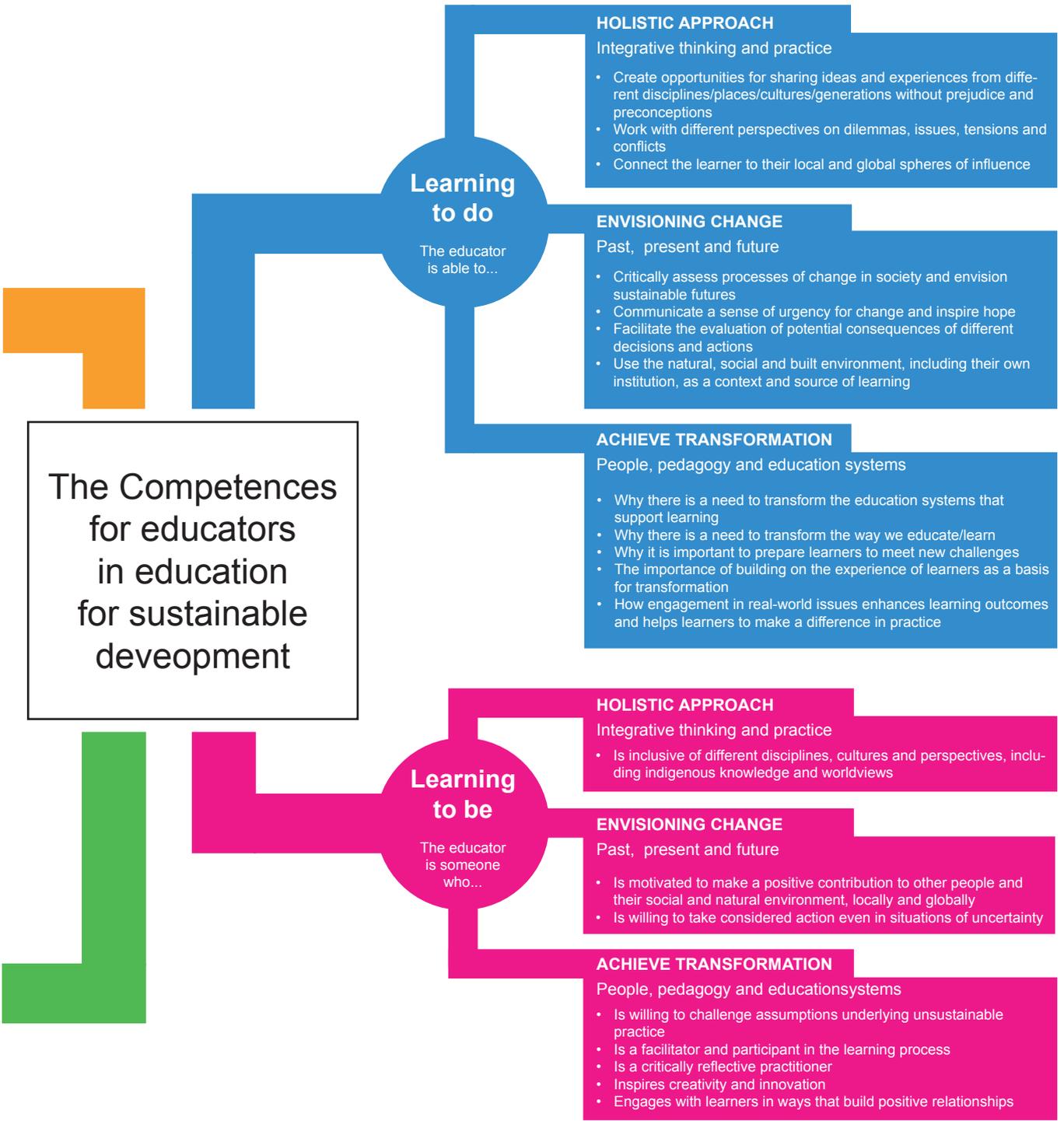
Source: <https://www.unece.org/.../DAM/.../ExpertGroupCompetences.pdf>

The Competences in Education for Sustainable Development (“Learning for the future: Competences in Education for Sustainable Development”; ECE/CEP/ AC.13/2011/6) were adopted at the sixth meeting of the United Nations Economic Commission for Europe (UNECE) Steering Committee on Education for Sustainable Development on 7 April 2011.

The development and the practice of educator competences are dependent upon a process of empowering educators. These recommendations are intended to focus attention on how educators can be supported to recognize their full potential and to fulfil that potential through the development and practice of the Competences.

The Competences should be a basis for the review of curriculum documents. While the Competences are those of educators, they also suggest approaches to educational practice. In order for educators to practice the Competences they should be supported by a curriculum which reflects such educational approaches.





3.6 ESD Training of Trainers TRAINING MANUAL

Source: esd-expert.net/assets/ESD_ToT_Training_Manual_TERI_IND.pdf

The objective of this Training of Trainers (ToT) concept which has been developed by the transcontinental ESD expert net is to provide teachers and trainers with orientation as to how school and community life can change towards sustainability and transformation.

The ToT is oriented towards initialising and facilitating change on different levels:

The ToT and its concept of ESD uses the Whole School Approach as a platform to interlink all aspects of sustainable development at and around school with the practice of Education for Sustainable Development. Thus, the ToT influences the general aspects of school development in the fields of school curricula, standards of education as well as the systematic professional development of staff, teachers and headmasters with the main focus on the sustainability at school in general.

The ToT fosters personal competency development and provides participants with a broader understanding and more knowledge of sustainability-related issues. Increased reflection on existing values, norms and assumptions enhance their ability to reflect upon their own advisory practice. On the level of professional performance, teaching and counselling routines are also transformed. The ToT gives participants the opportunity to question their traditional ways of teaching and mentoring and to experience new and more participative approaches. The 'learning-by-doing' approach is crucial, as it links teaching and learning practices. It fosters participants' commitment and increases their motivation to get involved with ESD.

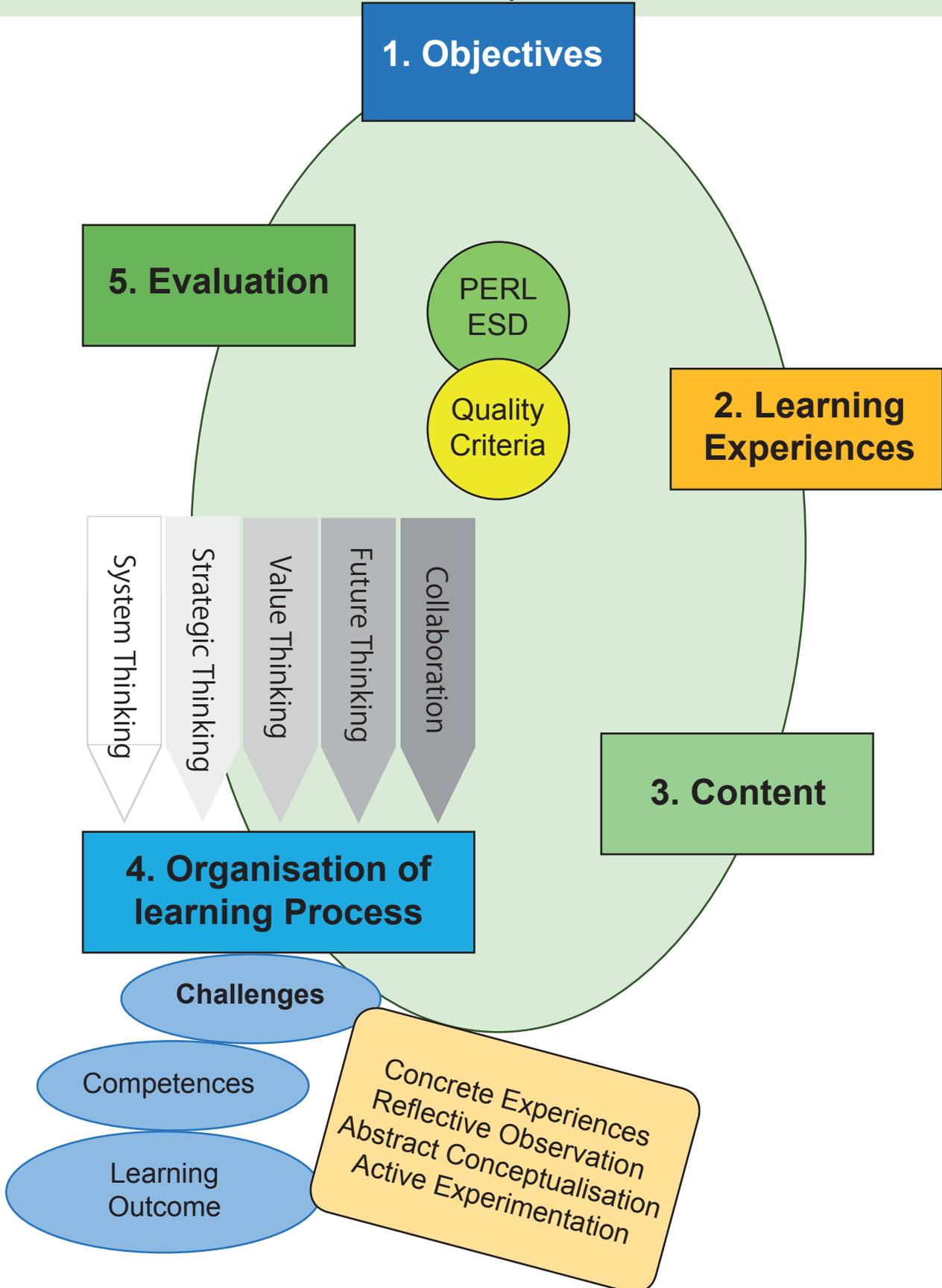
The ToT is intended to influence the overall institutional development of schools. As this goes far beyond the teaching approaches, the professional development of teachers and trainers is a relevant factor for integrating sustainability successfully. Thus, the ToT sees itself as a promoter of curriculum change towards ESD by interlinking individual processes of learning and competency development with social learning that takes place as collective action and reflection, both within the group/teaching staff and in the whole organization with a main focus on the development of the school in general.

Transformation has to go even beyond organisational boundaries. In its latest flagship report *World in Transition – A Social Contract for Sustainability*, the German Advisory Council for Global Change (WBGU) points out that society is considered a stakeholder in the transformation process, with the aim of also allowing participation in the education process itself in the future: 'People can only comprehend the transformative power of their actions if they see themselves as an active factor. Respective educational structures are an essential precondition for this.' This corresponds perfectly with the idea of change towards which the ToT is aiming.



Teaching in the context of:

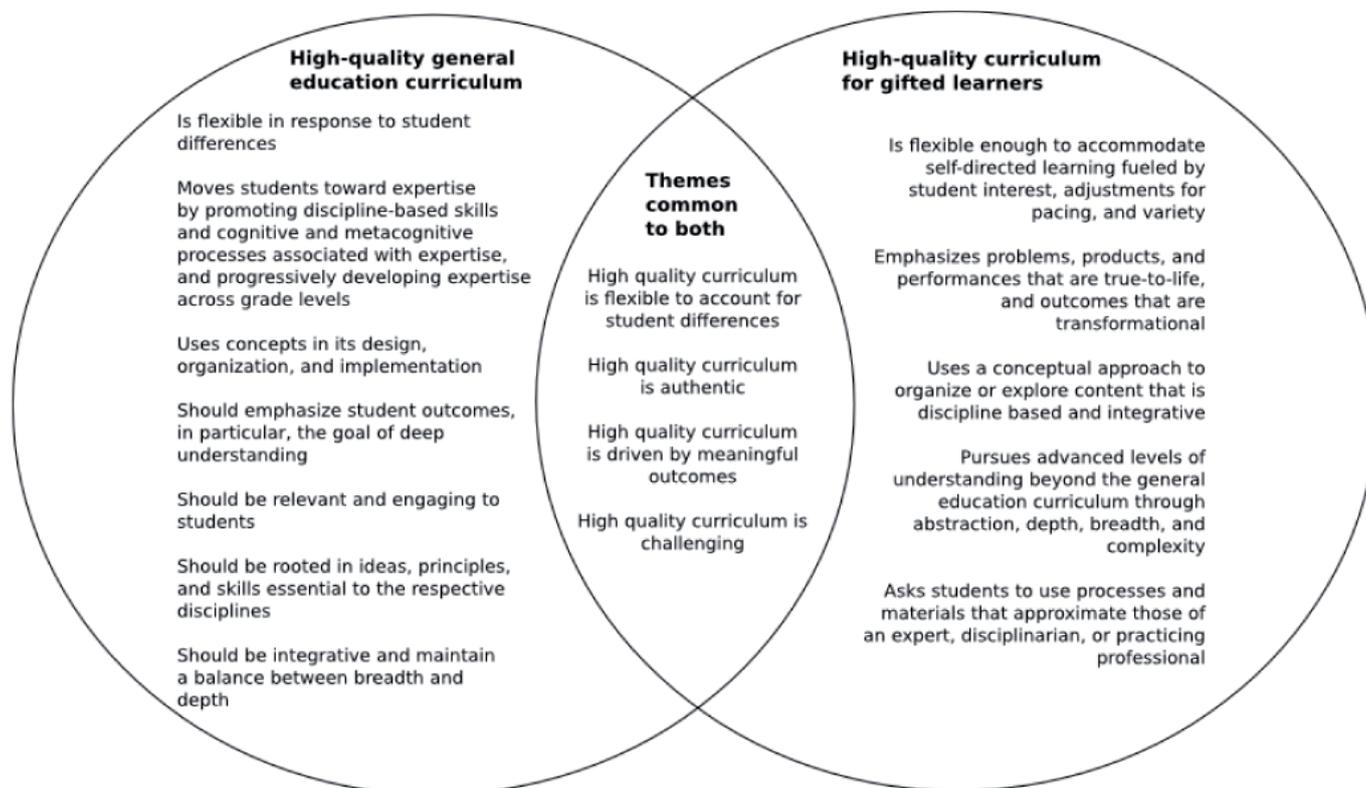
- Education for Sustainable Development
- Education for Sustainable Consumption and Production



Curriculum strategies

Principles of high-quality curriculum in general and gifted education, and the themes they have in common.

http://possibilitiesforlearning.com/?page_id=113



For the development of a curricula a few of the following strategies should be used!

- introduce new 'modules' (see above);
- minor modifications to your teaching or modules;
- put ESD in Personal Development Planning (PDP);
- cross-disciplinary and extra-curricular events;
- dissertations, projects and workplace learning placements;
- infuse sustainability in assessment;
- develop new modules;
- generic or common modules;
- new programmes;
- invite external speakers in;
- mount extra-curricular events, film

Developing sustainability literacy: eight dimensions, eight questions

The following eight generic dimensions and questions can be used, adapted and refined in a teaching situation to help develop sustainability literacy in relation to sustainability-related issues or problems. Around any issue, ask:

- **Holistic:** 'How does this relate to that?' 'What is the larger context here?'
 - **Critical:** 'Why are things this way, in whose interests?'
 - **Appreciative:** 'What's good, and what already works well here?'
 - **Inclusive:** 'Who/what is being heard, listened to and engaged?'
 - **Systemic:** 'What are or might be the consequences of this?'
 - **Creative:** 'What innovation might be required?'
 - **Ethical:** 'How should this relate to that?' 'What is wise action?' 'How can we work towards the inclusive wellbeing of the whole system – social, economic, and ecological?'
 - **Practical:** 'How do we take this forward with sustainability in mind as our guiding principle?'
- Based on Sterling (2010).

Source: **The Future Fit Framework** - *An introductory guide to teaching and learning for sustainability in HE*
Author: Professor Stephen Sterling.

Quality Aspects related to Online Learning and Education can be found on the presentation of Prof. Ehlers, see ProfESus website with presentations related to the topic quality.

<https://de.slideshare.net/uehlers/elearning-quality-in-higher-education-in-europe>

<https://ulf-ehlers.net/publications/>

The ProfESus-Project-Team discussed the above mentioned approaches and aspects and will consider them for the development of the curriculum for the blended learning course. The development of the Curriculum will mainly be based on the recommendations of the UNECE competences and the training manual from esd-expert.net.

Reference ONLINE Course: UNESCO Concept of Education for Sustainable Development

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.

http://www.unesco.org/education/tlsf/mods/theme_a/mod04.html?panel=2#top

For persons, who are interested in a comprehensive introduction to "Teaching and Learning for a Sustainable Future" can find a multimedia teacher education programme under the following link:

http://www.unesco.org/education/tlsf/mods/theme_a.html

http://www.unesco.org/education/tlsf/journal/tlsf_journal.html

CURRICULUM RATIONALE

- Module 1 | Exploring global realities
- Module 2 | Understanding sustainable development
- Module 3 | A futures perspective in the curriculum
- Module 4 | Reorienting education for a sustainable future
- Module 5 | Accepting the challenge

SUSTAINABLE DEVELOPMENT ACROSS THE CURRICULUM

- Module 6 | Sustainable futures across the curriculum
- Module 7 | Citizenship education
- Module 8 | Health education
- Module 9 | Consumer education

CONTEMPORARY ISSUES

This section illustrates ways in which a variety of curriculum themes may be recognised to integrate an interdisciplinary emphasis on a sustainable future. http://www.unesco.org/education/tlsf/mods/theme_c.html

- Module 10 | Culture & religion for a sustainable future
- Module 11 | Indigenous knowledge & sustainability
- Module 12 | Women & sustainable development
- Module 13 | Population & development
- Module 14 | Understanding world hunger
- Module 15 | Sustainable agriculture
- Module 16 | Sustainable tourism
- Module 17 | Sustainable communities
- Module 18 | Globalisation
- Module 19 | Climate change

TEACHING AND LEARNING STRATEGIES

- Module 20 | Experiential learning
- Module 21 | Storytelling
- Module 22 | Values education
- Module 23 | Enquiry learning
- Module 24 | Appropriate assessment
- Module 25 | Future Problem Solving
- Module 26 | Learning outside the classroom
- Module 27 | Community Problem Solving

UNIQUE BENEFITS OF MOBILE LEARNING

- Expand the reach and equity of education,
- Facilitate personalized learning
- Enable anytime, anywhere learning
- Ensure the productive use of time spent in classrooms
- Build new communities of learners
- Support situated learning
- Enhance seamless learning
- Bridge formal and informal learning
- Minimize educational disruption in conflict and disaster areas
- Assist learners with disabilities
- Improve communication and administration

Find resources related to promoting sustainability in vocational education and training on
<http://profesus.eu/resource-directory/>

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First published 2017 by the Authors
Shared by IFHE / edited by Anne von Laufenberg-Beermann

Edited by:

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Acknowledgements:

This resource is the result of contributions, reflections and development work carried out by ProfESus Project Group.

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