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Prof  ESus.eu
discovering a sustainable mindset
for a future-oriented lifestyle

ProfESus Handbook

Professional Education for Sustainability



An Innovative Teacher Training for Professionals in Home Economics and Guest-oriented Businesses

Why Teacher Trainings must be innovative!

How does it work?



Erasmus+



IFHE
INTERNATIONAL FEDERATION
FOR HOME ECONOMICS



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ProfESus-Project Team



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List of abbreviations

10YFP	10 Year Framework Programmes
3R	Reduce, Reuse, Recycle
5Es	5 Es Model as a specific inquiry-based learning model: Engage, Explore, Explain, Elaborate, Evaluate
ECTS	European Credit Transfer and Accumulation System
ECVETS	European Credit System for Vocational Education and Training
ESC	Education for Sustainable Consumption
ESD	Education for Sustainable Development
GAP	Global Action Programme
ILO	International Labour Organisation
LAP	Learning activity plan
PERL	PERL is a partnership of educators and researchers from over 140 institutions in more than 50 countries working to empower citizens to live responsible and sustainable lifestyles. Detailed information: https://www.perlprojects.org
ProfESus	Acronym of the Erasmus+ Project: Focus on Sustainability – Education for Professionals in household and guest-oriented businesses
SCP	Sustainable consumption and production
UN SDG's	United Nations Sustainable Development Goals
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme

Pre amble

The partners of the ProfESus-Project, mindful of the current social, ecological and economic challenges, support Nelson Mandela's statement: "Education is the most powerful weapon to change the world". The United Nations Sustainable Development Goals (SDG's), point out the most important requirements for change to reach sustainable development. In view of the important role of home economics and guest-oriented businesses to reach sustainable consumption and production, the project partners collaborated to develop an innovative blended learning course as a teacher training, which meets the demands for innovative education and strengthens and improves vocational education in conjunction with education for sustainable consumption and production in home economics and guest-oriented businesses.

The ProfESus handbook presents in the **first chapter** the current understanding of the key themes as a basis for the ProfESus course such as:

- the role and significance of education for sustainable development (ESD)
- the global challenge of sustainable development
- the importance of sustainable consumption and production (SCP)
- new approaches for education for sustainable development and education for sustainable consumption and production.

Based on these backgrounds the **second chapter** deepens the

- pedagogical theories
- methodological approaches and
- different sustainable competences

which are recommended for education for sustainable development and education for sustainable consumption and production.

The ProfESus course has been based and enhanced upon these fundamentals. The ProfESus course and its pedagogical concept, the ProfESus-Pathway is explained in chapter three.

The structure and content of the four modules of the ProfESus-Course is also described in chapter three.

Chapter four presents the planning structure for learning activities and selected learning activity plans of course participants in the pilot run.

The final chapter five includes the experiences with the pilot-run of the course and the quality approaches of the ProfESus-Project

1. Key Themes for the ProfESus Course

1.1 Questions regarding education

At a starting point of the ProfESus-Project it was important to clarify the key questions:

- What kind of education do we need for the 21st century?
- What is the purpose of education in the current context of societal transformation? How should learning be organised?

These key questions are discussed in the UNESCO-Publication *Rethinking Education Towards a global common good?*

In the introduction of this publication *Irina Bokova Director-General of UNESCO* highlights:

“The world is getting younger, and aspirations for human rights and dignity are rising. Societies are more connected than ever, but intolerance and conflict remain rife. New power hubs are emerging, but inequalities are deepening and the planet is under pressure. Opportunities for sustainable and inclusive development are vast, but challenges are steep and complex.



Education is at the heart of our efforts both to adapt to change and to transform the world within which we live.

The world is changing – education must also change. Societies everywhere are undergoing deep transformation, and this calls for new forms of education to foster the competencies that societies and economies need, today and tomorrow. This means moving beyond literacy and numeracy, to focus on learning environments and on new approaches to learning for greater justice, social equity and global solidarity. Education must be about learning to live on a planet under pressure. It must be about cultural literacy, on the basis of respect and equal dignity, helping to weave together the social, economic and environmental dimensions of sustainable development.

This is a humanist vision of education as an essential common good. I believe this vision renews with the inspiration of the UNESCO Constitution, agreed 70 years ago, while reflecting new times and demands. Education is key to the global integrated framework of sustainable development goals. Education is at the heart of our efforts both to adapt to change and to transform the world within which we live. A quality basic education is the necessary foundation for learning throughout life in a complex and rapidly changing world.

Across the world, we have seen great progress in expanding learning opportunities for all. Yet we must draw the right lessons to chart a new course forward. Access is not enough; we need a new focus on the quality of education and the relevance of learning, on what children, youth and adults are actually learning. Schooling and formal education are essential, but we must widen the angle, to foster learning throughout life. We need an ever stronger focus on teachers and educators as change agents across the board.

There is no more powerful transformative force than education – to promote human rights and dignity, to eradicate poverty and deepen sustainability, to build a better future for all, founded on equal rights and social justice, respect for cultural diversity, and international solidarity and shared responsibility, all of which are fundamental aspects of our common humanity.

This is why we must think big again and re-vision education in a changing world. For this, we need debate and dialogue across the board, and that is the goal of this publication – to be both aspirational and inspirational, to speak to new times.”
(UNESCO, 2015, p. 31 f.)

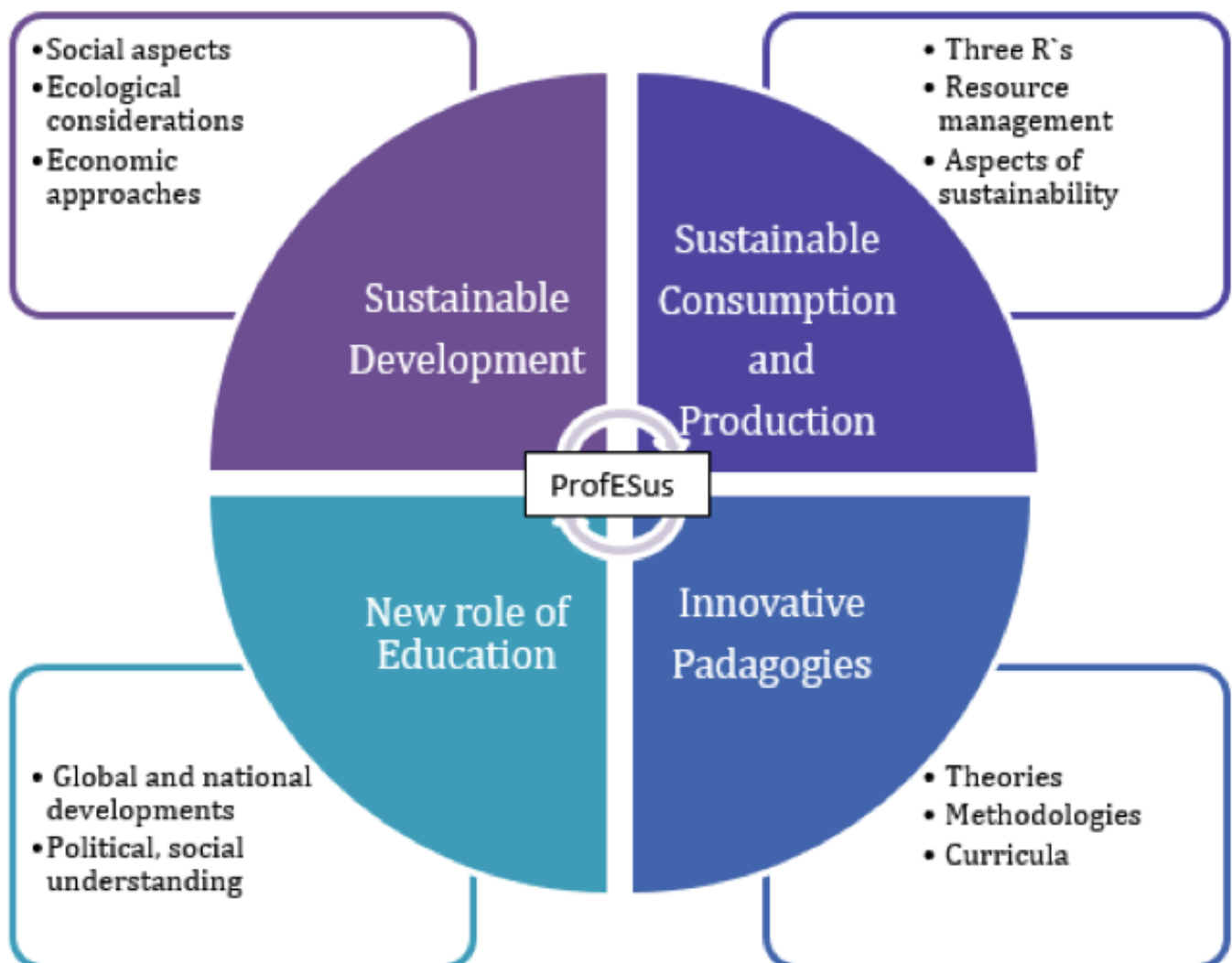
1.2 Demands for education to meet future challenges

Based on the new approach of the role and significance of education it must be clarified, how education should and must be developed, to be the powerful instrument for transformation and to fulfil its new role!

“This second decade of the twenty-first century marks a new historic juncture, bringing with it different challenges and fresh opportunities for human learning and development. We are entering a new historical phase characterised by the interconnectedness and interdependency of societies and by new levels of complexity, uncertainty and tensions.” (UNESCO, 2015, p. 15).

“The purpose of education must therefore be revisited in light of renewed vision of sustainable human and social development that is both equitable and viable. This vision of sustainability must take into consideration the social, environmental and economic dimensions of human development and the various ways in which these relate to education: ‘An empowering education is one that builds the human resources we need to be productive, to continue to learn, to solve problems, to be creative, and to live together and with nature in peace and harmony. When nations ensure that such an education is accessible to all throughout their lives, a quiet revolution is set in motion: education becomes the engine of sustainable development and the key to a better world. Education can, and must, contribute to a new vision of sustainable global development” (UNESCO, 2015, p. 31 f.).

Graphic 1:
Basement of the
ProfESus teacher training



1.3 The global challenge and understanding sustainable development

Developing a ProfESus teacher training to contribute to an innovative and transformative education for sustainable consumption and production requires not only a clear vision for future education, it requires also the clarification of the current understanding and, most of all, innovative approaches in the following topics/ subjects/fields:

- sustainable development in social, ecological and economic dimensions
- innovative Education for Sustainability (ESD), including education for sustainable consumption and production
- sustainable consumption and production and education for sustainable consumption and production

Sustainable development has been defined in many ways, but the most frequently quoted definition is from “Our Common Future”, also known as the 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.”
(WCED, 1987, p. 41)

This vision of sustainability must take into consideration the social, environmental and economic dimensions of sustainable development.

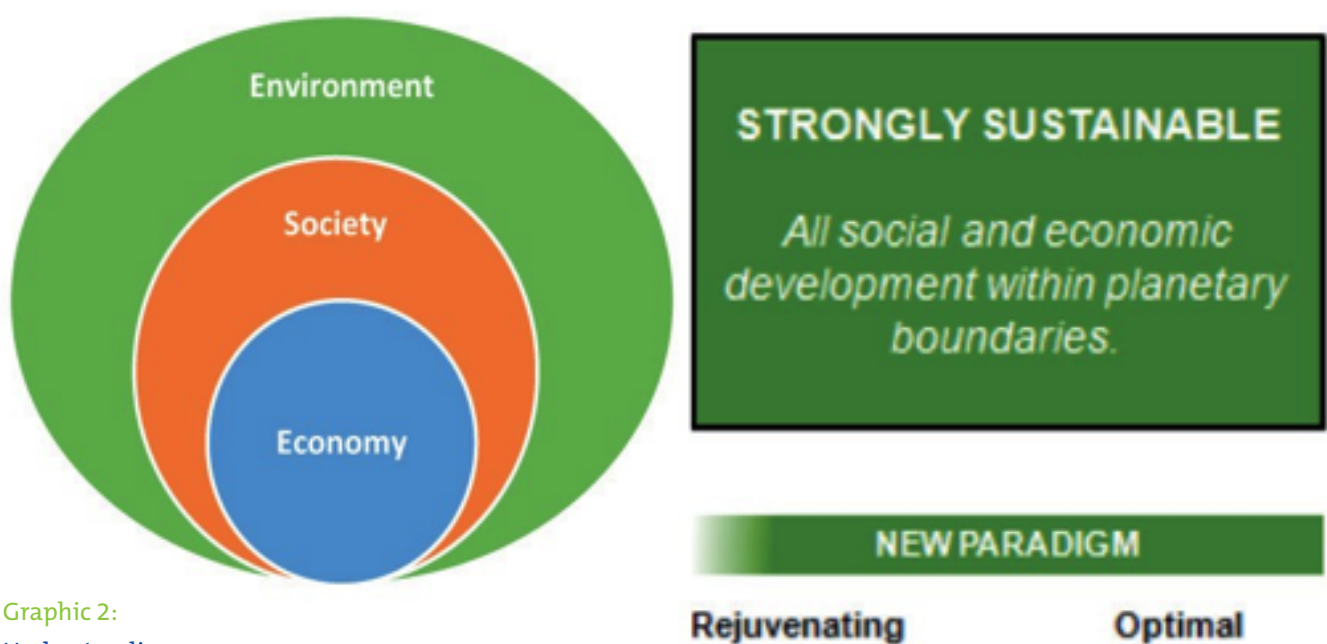
Transforming our world: the 2030 Agenda for Sustainable Development

The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice. The Goals interconnect and in order to leave no one behind, it is important that we achieve each goal and target by 2030.

A central aspect in the context of education for sustainable consumption and production is the understanding of priorities for sustainability. Which dimension is the most important in professional processes of planning, deciding, acting and evaluating?

Over the past two decades, there has been a vigorous debate over the precise nature of the relationship between the environment and the economy. But it has become clear that economic prosperity and employment depend in fundamental ways on a stable climate and healthy ecosystems. The paper of the International Labour Organisation (ILO) shows that both the environmental and the socio-economic challenges are urgent and that they are intimately linked. They can and must be addressed together. Employment that contributes to protecting the environment and reducing humanity's heavy environmental footprint offers people a tangible stake in a green economy. The pursuit of so-called green jobs will be a key economic driver as the world steps into the still relatively uncharted territory of building a low-carbon global economy.

"Climate-proofing" the economy will involve large-scale investments in new technologies, equipment, buildings and infrastructure, which will provide a major stimulus for much needed new employment and an opportunity for protecting and transforming existing jobs. (ILO, 2014, p. 2 f.)



Graphic 2:
Understanding
strong sustainability
(Brunner & Urenje, 2012, p. 6)

The ProfESus teacher training concept is based on the "Onion-Modell" of Shepherd **Urenje** and Wolfgang **Brunner**, Swedish International Centre of Education for Sustainable Development, Visby. At the very minimum the environment must be the most important aspect to consider so that future generations are able to live on earth.

1.3 THE GLOBAL CHALLENGE AND UNDERSTANDING SUSTAINABLE DEVELOPMENT

1.4 RESULTS AND EXPERIENCES WITH EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

So sustainability is the basement of the ProfESus-Teacher-Training as well as for today's leading global framework for international cooperation – the 2030 Agenda for sustainable development and its *Sustainable Development Goals*.



Graphic 3:
Sustainable Development Goals
(UN-Webpage: <https://sustainabledevelopment.un.org>)

1.4 Results and experiences with Education for Sustainable Development (ESD)

What is Education for Sustainable Development (ESD)?

Education for Sustainable Development (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. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society.

Learning content: Integrating critical issues, such as climate change, biodiversity, disaster risk reduction, and sustainable consumption and production (SCP), into the curriculum.



Pedagogy and learning environments: Designing teaching and learning in an interactive, learner-centered way that enables exploratory, action oriented and transformative learning. Rethinking learning environments

- physical as well as virtual and online
- to inspire learners to act for sustainability.

Wolfgang Brunner & Shepherd Urunjé present the three dimensions of ESD:

1. Relevant content
2. Effective methods
3. Desired competences

The difference between knowledge and competences is relevant.

“**Knowledge** is an awareness or understanding of something – such as facts, information, descriptions and skills, which is acquired through experience or education. **Competency** is shown in action. To be competent you need to be able to interpret the situation in the context and to have a repertoire of possible actions to take.” (Brunner and Urenje, p. 7)

Wiek et al. defined the following **key competences for ESD**:

- **Systems thinking**

The ability to see, understand and relate the different parts in a system and how these parts together connect issues to come up with a whole picture.

- **Anticipatory competence – Critical Thinking**

The ability to critically analyse and evaluate current situations with a view to predicting and envisioning future scenarios and their possible outcomes.

- **Normative competence – Value Thinking**

The ability to collectively demonstrate an understanding of values and principles with a view to negotiating and integrating these in your vision and practice of sustainability.

- **Strategic competence – Strategic Thinking**

The ability to collectively design and implement interventions, and to enable and manage change processes towards sustainability issues. Strategic questioning is a form of thinking about change. Change is often accompanied by a range of uncomfortable emotions, including denial, fear and resistance. However, change also

provides opportunities for new ideas to emerge. Strategic questioning assists the integration of new ideas and strategies into the development of individuals and communities in such a way that people can feel comfortable.

- **Interpersonal competence – Cooperation**

The ability to create an environment that enables people to learn from and with each other. The ability to motivate, enable and facilitate collaborative and participatory learning processes regarding sustainability issues. (Wiek, Withycombe and Redman, 2011)

Action competence is embedded in each of the above competences.

Societal transformation: Empowering learners of any age, in any education setting, to transform themselves and the society they live in.

- Enabling a transition to greener economies and societies.
- Equipping learners with skills for “green jobs”.
- Motivating people to adopt sustainable lifestyles.
- Empowering people to be “global citizens” who engage and assume active roles, both locally and globally, to face and to resolve global challenges and ultimately to become proactive contributors to creating a more just, peaceful, tolerant, inclusive, secure and sustainable world.

Learning outcomes: Stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making, and taking responsibility for present and future generations.

“The Global Action Programme (GAP) on ESD, the follow-up programme to the Decade of ESD (2005-2014), seeks to generate and scale-up ESD and to accelerate progress towards sustainable development.

The GAP aims to contribute substantially to the 2030 agenda, through two objectives:

- Reorienting education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to a sustainable future.
- Strengthening education and learning in all agendas, programmes and activities that promote sustainable development.” (UNESCO, Source: Retrieved from: <https://en.unesco.org/gap>)

The Global Action Programme (GAP) on ESD, the follow-up programme to the Decade of ESD (2005-2014), seeks to generate and scale-up ESD and to accelerate progress towards sustainable development

Education for Sustainable Development (ESD) empowers people to change the way they think and work towards a sustainable future.

“With a world population of 7 billion people and limited natural resources, we, as individuals and societies need to learn to live together sustainably. We need to take action responsibly based on the understanding that what we do today can have implications on the lives of people and the planet in future. Education for Sustainable Development (ESD) empowers people to change the way they think and work towards a sustainable future.” (UNESCO, Source: Retrived from: <https://en.unesco.org/themes/education-sustainable-development>)

1.5 The specific role of Sustainable Consumption and Production

As defined by the Oslo Symposium in 1994, sustainable consumption and production (SCP) is about *“the use of services and related products, which respond to basic needs and bring a 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 service or product so as not to jeopardise the needs of further generations”* (UNEP, 2012, p. 21).

The concept of sustainable consumption and production was later recognised in the Johannesburg Plan of Implementation and adopted in the year 2002 at the World Summit on Sustainable Development (UNEP, 2012, p. 27).

“On that occasion, sustainable consumption and production was identified as one of the three overarching objectives of, and essential requirements for, sustainable development, together with poverty eradication and the management of natural resources in order to foster economic and social development. It was acknowledged that fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development. The 10-year framework programme (10YFP) on sustainable consumption and production patterns was adopted at the Rio+20 Conference, through Paragraph 226.” (United Nations, Webpage: <https://sustainabledevelopment.un.org/topics/sustainableconsumptionandproduction>)

Achieving the United Nations Sustainable Development Goal 12 requires a strong national framework for sustainable consumption and production that is integrated into national and sectoral plans, sustainable business practices and consumer behaviour, together with adherence to international norms on the management of hazardous chemicals and wastes (United nations, Webpage: <https://sustainabledevelopment.un.org/sdg12>)

“Sustainable consumption and production is about promoting resource and energy efficiency, sustainable infrastructure, and providing access to basic services, green and decent jobs and a better quality of life for all. Its implementation helps to achieve overall development plans, reduce future economic, environmental and social costs, strengthen economic competitiveness and reduce poverty.”



Graphic 4:
SCP focus the whole
supply chain to involve
everyone, from producer
to final consumer
(UNEP, 2015, p. 11)

Since sustainable consumption and production aims at “doing more and better with less,” net welfare gains from economic activities can increase by reducing resource use, degradation and pollution along the whole life cycle, while increasing quality of life. There also needs to be significant focus on operating on supply chain,

involving everyone from producer to final consumer. This includes educating consumers on sustainable consumption and lifestyles, providing them with adequate information through standards and labels and engaging in sustainable public procurement, among others.” (United Nations, Website: <https://www.un.org/sustainabledevelopment/sustainable-consumption-production>)

United Nations Environment Programme (UNEP 2010) presented the principles of Education for Sustainable Consumption and Production as following: “Education for Sustainable Consumption (ESC) aims at providing knowledge, values and skills to enable individuals and social groups to become actors of change towards more sustainable consumption behaviors. The objective is to ensure that the basic needs of the global community are met, quality of life for all is improved, inefficient use of resources and environmental degradation are avoided. ESC is therefore about providing citizens with the appropriate information and knowledge on the environmental and social impacts of their daily choices, as well as workable solutions and alternatives. ESC integrates fundamental rights and freedoms including consumers’ rights and aims at empowering citizens for them to participate in the public debate and economy in an informed and ethical way.” (UNEP, 2010, p. 13)

“ESC is an excellent starting point for education for sustainable development since it deals with issues young people are concerned with in their everyday life, such as identity, food, energy, water, housing, transportation, communication, work, fashion, entertainment, tourism, etc.

“ESC is an excellent starting point for education for sustainable development since it deals with issues young people are concerned with in their everyday life, such as identity, food, energy, water, housing, transportation, communication, work, fashion, entertainment, tourism, etc.

Our lifestyles have a distinct impact on the environment, just as the choices we make affect the lives of other people around the globe. As the United Nations Development Programme stated **“Consumption clearly contributes to human development when it enlarges the capacities and enriches the lives of people without adversely affecting the well-being of others.**

It clearly contributes when it is as fair to the future generations as to the present ones. And it clearly contributes when it encourages lively, creative individuals and communities. But the links are often broken and when they are consumption patterns and trends are inimical to human development... Consumption patterns today must be changed to advance human development tomorrow.”

Changing consumption patterns is dependent upon acquiring an understanding of the symbolic value of services and commodities, insight into the systems and processes which produce and market commodities and services, awareness of the impact our lifestyles have on the world around us, and development of skills that will help individuals become informed, reflective and responsible consumers. (UNEP, 2010, p. 16)

The practical, daily decisions made in offices, schools and private homes can set the stage and provide encouraging examples of sustainable consumption to teachers and students. These decisions are made after having clarified the values and principles one stands for and considered how to manifest these in action. Small initiatives affirm the principles of sustainable consumption. They emphasise the applicability of ESC. They underline the importance of starting here and now to change our habits. They also confirm the fact that sustainable consumption concerns everyone who is interested in actively contributing to sustainable development. (UNEP, 2010, p. 16)

The ESC subject specific competencies from UNEP (2010) include development of the following attitudes, knowledge and skills:

1. Ability to define what one considers to be a good quality of life and to be able to identify the values upon which this is based
2. Realization of the complexity and often controversial nature of sustainable consumption issues
3. Insight into how individual lifestyle choices influence social, economic and environmental development
4. Ability to acquire, assess and use information on the consequences of consumption especially on the environment
5. Knowledge of consumer rights and central consumer protection laws
6. Basic knowledge of the market system and the role of business
7. Knowledge of how production processes are linked to the consumption system
8. Basic knowledge of the interaction of pricing mechanisms with the consumer's attitudes and behaviour
9. Insight into the practicalities of both the supply and demand sides of production and consumption and their outside-of-the-market relationships to community development
10. Awareness of a commodity's intangible and symbolic characteristics
11. Ability to recognize, decode and reflect critically upon messages from the media and the market
12. Knowledge of social networks responsible for shaping consumption patterns (peer pressure, status, etc.)



13. Consciousness of civil society's power to initiate alternative ways of thinking and acting
14. Individual and collective understanding of consumer social responsibility in relation to the corporate social responsibility
15. Ability to manage personal finances (budgeting, saving, investing, taxes and fees)
16. Ability to manage physical resources (effective control, maintenance, reuse and replacement)
17. Knowledge of conflict resolution in general and in particular in relation to consumer related situations such as product safety, liability, compensation, redress and restitution.
18. Ability not only to envision alternative futures but also to create reasonable paths of action leading to these (UNEP, 2010, p. 27)

Based on these competences – developed in different learning settings – persons will be able to support sustainable consumption.

They will be able to analyze consumption issues as follows:

1. identifying the problem/condition/challenge;
2. recognizing the immediate causes
3. finding the underlying causes
4. clarifying the principles/values guiding action
5. reflecting on one's own experiences
6. mapping alternative solutions
7. considering initiatives for change
8. reflecting on immediate effects
9. reflecting on long-term effects.

There are many ways of making the ESC learning process relevant and interesting (UNEP, 2010, p. 28).

“Key Competences are integrated personal capacities. Key competencies work together and influence each other. Key competencies strengthen students’ capacity to participate in the world right now, rather than just prepare them to participate in the world at some time in the future. They are one’s personal capacity to interact with the resources at hand to solve problems. Students need to be capable of using key competencies in diverse contexts – at school, in the community, at home, with friends, with peers, in mathematics and statistics, in the arts, and other learning areas. They need to be able to draw on knowledge, skills, attitudes, and values simultaneously as they interact with others in their learning and in all aspects of their lives”

Source:
<https://www.ece.gov.nt.ca/en>

Stanszus et al. (2017) described that key competencies as learning objectives in ESC seek to

1. nurture cognitive, motivational and volitional dispositions,
2. are guided by the idea of critical, self-determined and self-reflexive individuals and
3. promote the capacity of learners to actively and responsibly contribute to advancing overall societal progress towards sustainability. To this end, it facilitates the deliberative processes underpinning social change, instead of simply pursuing behavioural change as a primary educational objective.

They say in general, that mindfulness is considered to bear the potential to bring together cognition and affection, thus extending and complementing dominating concepts of ESC. It is seen to encompass the reflection of individual values and actions in each given moment and therewith to potentially strengthen people’s ability to deliberately focus their mind in a way that they become more sensitive for their own values, emotions and ensuing actions. This ability would promote the alignment of intentions with actual behaviour and consequently the adaption of actions towards more sustainable consumption patterns.

In summary there are four main potential mechanisms of change:

1. Disruption of routines and switching off the autopilot
2. Reduction of the attitude-behaviour-gap to support more sustainable consumption patterns
3. Clarification of values and supporting the role of non-material values
4. Progression of pro-social behaviour and pro-ecological behaviour through empathy and collaboration (Stanszus et al., 2017).



2. Relevant Educational Theories and Methods for ESD and ESC

The ProfESus-Project aimed to develop an innovative blended learning teacher training to promote education for sustainable development in vocational education and vocational training.

The first chapter describes the current conceptions and demands for education, education for sustainable development and education for sustainable consumption and production.

Which pedagogical theories and which methods fulfil the requirements of ESD and ESC the best and which are suited for a successful education for sustainable consumption and production in vocational training will be described in chapter 2.



The key aspects for innovative education are summarized as follows:

1. **The world is changing – education must also change!**
2. **We must re-vision education in a changing world!** (UNESCO, 2015, p. 4f)
3. **ESD pedagogy and learning environments:** Designing teaching and learning in an interactive, learner-centred way that enables exploratory, action oriented and transformative learning.
4. **Rethinking learning environments:**
 - physical as well as virtual and online
 - to inspire learners to act for sustainability.
5. **Learning outcomes:** Stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making, and taking responsibility for present and future generations.
6. **Education for Sustainable Consumption (ESC)** aims at providing knowledge, values and skills to enable individuals and social groups to become actors of change towards more sustainable consumption behaviours
7. **ESC integrates fundamental rights and freedoms** including consumers' rights and aims at empowering citizens for them to participate in the public debate and economy in an informed and ethical way. (UNEP, 2010)

2.1 Innovative approaches to improve learning processes in ESD

The ProfESus-Project checked different pedagogical theories and teaching approaches, which support innovative education and education for sustainable development. The following findings correspond to the needs and expectations for ESD and ESC:

Constructivism in different contexts

(Retrieved from <https://www.learning-theories.com/constructivism.html>)

Lev Vygotsky's theory is one of the foundations of constructivism. It asserts three major themes regarding social interaction, the more knowledgeable other, and the zone of proximal development.

Applications of the Vygotsky's social development theory

Many schools have traditionally used a transmissive or instructionist model in which a teacher or lecturer 'transmits' information to students. In contrast, Vygotsky's theory promotes learning contexts in which students play an active role

in learning. Roles of the teacher and student are therefore shifted, as a teacher should collaborate with his or her students in order to help facilitate meaning construction in students. Learning therefore becomes a reciprocal experience for the students and teacher.

Discovery Learning according to Bruner is a method of inquiry-based instruction, discovery learning states that it is best for learners to discover facts and relationships for themselves.

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Discovery learning is an inquiry-based, constructivist learning theory that takes place in problem solving situations where the learner draws on his or her own past experience and existing knowledge to discover facts and relationships and new truths to be learned. Students interact with the world by exploring and manipulating objects, wrestling with questions and controversies, or performing experiments.

As a result, students may be more likely to remember concepts and knowledge discovered on their own (in contrast to a transmissive model). Models that are based upon discovery learning model include: guided discovery, problem-based learning, simulation-based learning, case-based learning and incidental learning, among others.

The theory is closely related to work by Jean Piaget and Seymour Papert.

Positive contributions of discovery learning:

- encourages active engagement
- promotes motivation
- promotes autonomy, responsibility, independence
- develops creativity and problem-solving skills.
- tailors learning experiences

Possible negative aspects of discovery learning:

- creates cognitive overload
- may result in potential misconceptions
- makes it difficult for teachers to detect problems and misconceptions

Constructivism as a paradigm or worldview posits that learning is an active, constructive process. The learner is an information constructor. People actively construct or create their own subjective representations of objective reality.

New information is linked to prior knowledge, thus mental representations are subjective. (David, 2017 in <https://www.learning-theories.com/discovery-learning-bruner.html>)

2.2 Methods and approaches which support learning as an active constructive process

2.2.1 Situated learning

In contrast with most classroom learning activities that involve abstract knowledge which is out of context, Jean Lave argues that learning is situated; that is, as it normally occurs, learning is embedded within activity, context and culture (Lave, 1988). It is also usually unintentional rather than deliberate. Lave and Wenger call this a process of “legitimate peripheral participation” (Lave & Wenger, 1990).

Knowledge needs to be presented in authentic contexts – settings and situations that would normally involve that knowledge.

Knowledge needs to be presented in authentic contexts – settings and situations that would normally involve that knowledge. Social interaction and collaboration are essential components of situated learning – learners become involved in a “community of practice” which embodies certain beliefs and behaviours to be acquired. As the beginner or novice moves from the periphery of a community to its centre, he or she becomes more active and engaged within the culture and eventually assumes the role of an expert.

Other researchers have further developed Situated Learning theory. Brown, Collins & Duguid emphasize the idea of cognitive apprenticeship: “Cognitive apprenticeship supports learning in a domain by enabling students to acquire, develop and use cognitive tools in authentic domain activity. Learning, both outside and inside school, advances through collaborative social interaction and the social construction of knowledge.” (Brown, Collins and Duguid, 1989)

Situated learning is related to Vygotsky’s notion of learning through social development.

2.2.2 Innovative forms of teaching

Ten innovative forms of teaching, learning and assessment for an interactive world, that are already in currency and are having an increasing effect on education are presented in the Open University Innovation Report 4, in 2015 (Sharples et al, 2015).

The most relevant for ESD from the perspective of ProfESus are:

Crossover learning in informal settings, such as museums and after-school clubs, can link educational content with issues that matter to learners in their lives. These connections work in both directions. Learning in schools and colleges can be enriched by experiences from everyday life; informal learning can be deepened by adding questions and knowledge from the classroom. These connected experiences

spark further interest and motivation to learn. An effective method is for a teacher to propose and discuss a question in the classroom, then for learners to explore that question on a museum visit or field trip, collecting photos or notes as evidence, then share their findings back in the class to produce individual or group answers. These crossover learning experiences exploit the strengths of both environments and provide learners with authentic and engaging opportunities for learning. Since learning occurs over a lifetime, drawing on experiences across multiple settings, the wider opportunity is to support learners in recording, linking, recalling and sharing their diverse learning events (Sharples et al, 2015, p. 4).

Learning through argumentation

Modern education extends beyond the transmission of knowledge and procedures, towards enabling students to become active and reflective learners.

The pedagogy of argumentation prepares students for a world where the consequences of science or subject areas, such as climate change and genetic engineering, affect every person and are publicly debated. Students can only understand scientific or professional ideas in depth by engaging in the kinds of inquiry and communication processes that experts use.

These involve reasoning and arguing from available evidence in order to improve and refute ideas and explanations, while communicating understanding through the use of precise language. The methods of professional argumentation are not confined to the traditional sciences, but can be applied to mathematics, history, language, arts, and the human sciences. Professional content and the practices of science need to be learned in concert; neither should be taught in isolation or as a prerequisite for the other.

Teacher practices associated with learning through argumentation include:

- having students articulate their ideas orally and in writing
- asking questions that drive students to evaluate and improve their ideas
- restating or re-voicing students' remarks in more scientific or mathematical language
- having students develop and use models to construct explanations.

Professional development can help teachers to lead dynamic group discussions using these strategies. Teachers can support constructive argumentation by establishing classroom norms for taking turns in conversation, active listening, and responding constructively to other people's ideas (Sharples et al, 2015, p. 4f).

By interpreting new information in the context of where and when it occurs and relating it to what we already know, we come to understand its relevance and meaning.

Technologies to support learning through argumentation

A good way to spark serious discussion of scientific or professional ideas is to pose a thought-provoking question that has no simple answer and that requires discussion of theory and evidence.

Teachers can spark meaningful discussion in classrooms by encouraging students to ask open-ended questions, re-state remarks in more scientific language, and develop and use models to construct explanations. When students argue in scientific ways, they learn how to take turns, listen actively, and respond constructively to others. Professional development can help teachers to learn these strategies and overcome challenges, such as how to share their intellectual expertise with students appropriately.

Implementing argumentation pedagogy can be difficult. Most learners and teachers are used to questions with known answers, which are asked so students can demonstrate individual mastery of a professional idea or topic. By contrast, argumentation provides an opportunity for learners to build knowledge through a process of proposing, critiquing, and defending ideas over cycles of turn-taking. This can be a laborious process.

Learners need thoughtful teacher-guided support to learn the specialized form of argumentation that scientists use to build deeper understanding of the natural world. Teachers may require several years to become proficient in leading classroom discussions that promote the development of science knowledge and argumentation skills.

Developing rich, curriculum-aligned questions or topics for science argumentation can be difficult as well (Sharples et al, 2015, p. 14f).

2.2.3 Context-based learning

Context enables us to learn from experience. By interpreting new information in the context of where and when it occurs and relating it to what we already know, we come to understand its relevance and meaning. In a classroom or lecture theatre, the context is typically confined to a fixed space and limited time. Beyond the classroom, learning can come from an enriched context such as visiting a heritage site or museum or being immersed in a good book. We have opportunities to create context, by interacting with our surroundings, holding conversations, making notes, and modifying nearby objects. We can also come to understand context by exploring the world around us, supported by guides and measuring instruments. It follows that to design effective sites for learning, at schools, museums and websites, requires a deep understanding of how context shapes and is shaped by the process of learning (Sharples et al, 2015, p. 4).

2.2.4 Computational thinking

Computational thinking is a powerful approach to thinking and problem solving. It involves breaking large problems down into smaller ones (**decomposition**), recognizing how these relate to problems that have been solved in the past (**pattern recognition**), setting aside unimportant details (**abstraction**), identifying and developing the steps that will be necessary to reach a solution (**algorithms**) and refining these steps (**debugging**). Such computational thinking skills can be valuable in many aspects of life, ranging from writing a recipe to share a favourite dish with friends, through planning a holiday or expedition, to deploying a scientific team to tackle a difficult challenge like an outbreak of disease. The aim is to teach children to structure problems so they can be solved. Computational thinking can be valuable in complex professional situations and in the context of sustainable development. The aim is not just to encourage children to be computer coders, but also to master an art of thinking that will enable them to tackle complex challenges in all aspects of their lives (Sharples et al, 2015, p. 4).

The aim is to teach children to structure problems so they can be solved. Computational thinking can be valuable in complex professional situations and in the context of sustainable development.

2.2.5 Adaptive teaching

All learners are different. However, most educational presentations and materials are the same for all. This creates a learning problem, by putting a burden on the learner to figure out how to engage with the content. It means that some learners will be bored, others will be lost, and very few are likely to discover paths through the content that result in optimal learning. Adaptive teaching offers a solution to this problem. It uses data about a learner's previous and current learning to create a personalised path through educational content. Adaptive teaching systems recommend the best places to start new content and when to review old content. They also provide various tools for monitoring one's progress. They build on longstanding learning practices, such as textbook reading, and add a layer of computer-guided support. Data such as time spent reading and self-assessment scores can form a basis for guiding each learner through educational materials. Adaptive teaching can either be applied to classroom activities or in online environments where learners control their own pace of study (Sharples et al, 2015, p. 5).

Five tips for adaptive teaching:

(Retrieved from <https://www.aateachers.org/index.php/blog/1272-adaptive-teaching-five-tips-to-meet-the-needs-of-each-student-in-your-classroom>)

Create class projects that use a "menu," by allowing students to pick activities that cover the same material and have equal difficulty but use different talents or specialty areas to complete.

Provide a variety of ways for students to learn material initially, whether that be through reading or watching a video on Khan Academy or doing independent research.

Allow for flexible grouping.

Recognize that not all students instinctively know their own strengths, weaknesses, and best learning environment. Help them to discover this about themselves and monitor their own learning.

Start slowly. Your classroom doesn't have to change overnight and even a little bit of adaptation will go a long way.

2.2.6 Analytics of emotions

Automated methods of eye tracking and facial recognition can analyse how students learn, then respond differently to their emotional and cognitive states. Typical cognitive aspects of learning include whether students have answered a question and how they explain their knowledge. Non-cognitive aspects include whether a student is frustrated, confused, or distracted. More generally, students have mind-sets (such as seeing their brain as fixed or malleable), strategies (such as reflecting on learning, seeking help and planning how to learn), and qualities of engagement (such as tenacity) which deeply affect how they learn. For classroom teaching, a promising approach is to combine computer-based systems for cognitive tutoring with the expertise of human teachers in responding to students' emotions and dispositions, so that teaching can become more responsive to the whole learner (Sharples et al, 2015, p. 5).

2.2.7 Stealth assessment

The automatic data collection that goes on in the background when learners work with rich digital environments can be applied to unobtrusive, 'stealth', assessment of their learning processes. Stealth assessment borrows techniques from online role-playing games such as World of Warcraft, in which the system continually collects data about players' actions, making inferences about their goals and strategies in order to present appropriate new challenges. This idea of embedding assessment into a simulated learning environment is now being extended to schools, in topics such as science and history, as well as to adult education. The claim is that stealth assessment can test hard-to-measure aspects of learning such as perseverance, creativity, and strategic thinking. It can also collect information about students' learning states and processes without asking them to stop and take an examination. In principle, stealth assessment techniques could provide teachers with continual data on how each learner is progressing. However, much research remains to be done,

both to identify the measures of student learning process that predict learning outcomes for different learning systems and to understand the amount and format of student learning data that are useful to teachers. Concerns have been raised about collection of vast amounts of student learning data and the ethics of using computers to monitor a person's every action (Sharples et al, 2015, p. 5).

2.3 Methodologies to support innovative education for sustainable development

The pedagogical approaches and innovative aspects for future teaching described point to that new methods should be used to support learning processes.

2.3.1 Provocation

(Retrieved from <http://www.racheous.com/reggio/what-provocation-reggio>)

Provocation as a method is appropriate for example in the context of learning through argumentation.

*Ultimately, the intention of provocations in learning processes is to provide an invitation for a learner to explore and express themselves. It should be **open-ended** and provide a means for **expression** where possible.*

Provocations can be as simple as a photo of a rock sculpture next to some pebbles or as elaborate as a table with an assortment of recycled materials next to a book on robots and resources to make upcycled robots. Often though, provocations are simple and displayed beautifully to provoke interest. They are usually created as an option, not as a premeditated activity. Put simply, provocations provoke! They provoke thoughts, discussions, questions, interests, creativity and ideas. They can also expand on a thought, project, idea and interest.

Provocations can come in many forms:

- An interesting photo, picture or book,
- Nature (e.g. specimens)
- Conceptual (e.g. changing seasons, light)
- Old materials displayed in a new way,
- An interest that a child or children have,
- An object (e.g. magnets, maps)
- New creative mediums,
- Questions (from any source – e.g. What is gravity?)
- An event (e.g. a presentation, a holiday).

Source: Website: Racheous: Respectful parenting, unschooling, intentional living.

2.3.2 Confrontation

For adults and students to discharge that responsibility, they must learn and practice the art of caring confrontation. David Augsberger's 2009 book, *Caring Enough to Confront* presents the following guidelines for effective confrontation:

- **Confront caringly.** Confront only after showing real care for the other person and confront only to express genuine concern.
- **Confront gently.** Speak tactfully, in a way you would like to be spoken to about a sensitive matter. For example, say, "I understand where you are coming from. I have been there, too. May I make a suggestion?" Do not offer more than the relationship can bear or draw out more than you have put into the relationship.
- **Confront constructively.** Make your positive intentions clear at the start to minimize the possibility that your comments may be interpreted as blaming, shaming, or punishing (negative aspects of most confrontation). For example, you might begin by saying, "John, you and I are good friends. What do you think about this idea?"
- **Confront with acceptance and trust.** Assume that the other person's intentions are good even if his or her actions are problematic. Acknowledge good intentions by saying, for example, "I know you want to be helpful, but ..."
- **Confront clearly.** Report what you actually observe, what emotions you feel or sense that others feel, and what you conclude would be a good next step for the person you're confronting. For example, "I heard what you said to Mary" (observation). "It seemed to hurt her feelings" (emotion). "I'm sure you didn't mean to hurt her. Please apologize to her" (conclusion). (Sanford N. McDonnel, 2009)

2.3.3 The Importance of Creative Teaching Skills

Creative teaching skills are about working towards the genesis of something unique, both within and outside of the learner. It's important to teach creatively for a few reasons:

Creativity is the heart of the motivational classroom.

It empowers students and teachers to express ideas and opinions in unique ways.

Creative teaching leads to active learning.

"Something unique" means something personal and relevant to the student.

It could be something small or something bigger. It could be an idea, a learning moment, an emotional experience, or any kind of creative revelation. The point is it's unique for the learner.

**Aspects to consider**

- Ignore Limitations: Creativity is eternal and it has limitless potential. That means we are unlimited as creative people.
- Challenge Assumptions: Creative people question assumptions about many things. Instead of arguing for limitations, creative minds ask “how” or “why not?”
- Define the Problem: This is what we teach with Solution Fluency, a practice through which anyone will benefit from defining a problem thoroughly.

Creatively defining a problem broadens both understanding and creative potential. In defining the problem, we exercise certain skills. Here are some of the creative thinking benefits we gain from it:

Restating or rephrasing the problem

- gets you thinking from different perspectives, leading to more versatile solutions;
- reveals things about the problem that may not be obvious;
- can help in creating solutions for multiple problems;
- leads to hearing unique perspectives from others;
- challenging assumptions;
- helps learners understand how the problem may have originated;
- challenges learners to consider an issue in different ways;
- helps learners question assumptions that limit independent thought;
- teaches learners to decide for themselves what is right and true.

Researching and gathering facts

- provides opportunities for developing useful research and data analysis;
- allows learners to discover surprising things about a problem they didn't know before;
- helps learners avoid making assumptions and forming opinions without ample information;
- gives learners time to think about why finding a solution to the problem is important.

Chunking details together/breaking them down

Breaking down details allows for better focus on the project as a whole.

Examining the details reveals how each component strings together logically in the overall project.

Team members can devote themselves to a specific project detail if they wish, depending on their individual strengths and talent.

Considering multiple perspectives

Helps us think of others and develop open-mindedness.

Urges us to consider the far-reaching effects of a problem or issue.

Guides us towards creating better solutions by considering others' needs.

Let us empathize with other professional, creative, or cultural viewpoints.

Reversing the problem

Reversing a problem can give you a better perspective on the problem's severity, and help you work towards a more effective solution. Considering what could make a problem worse can lead you to solutions that may never have occurred to you. It encourages a kind of lateral thinking about a problem and allows us to brainstorm better solutions in a more uninhibited manner.

Solution Fluency is the ability to think creatively to solve problems in real time by clearly defining the problem, designing an appropriate solution, delivering the solution and then evaluating the process and the outcome. Solution Fluency is defined by the 6Ds process.

Define: In order to solve a problem, we have to clearly define what the problem is first. We must decide exactly what needs to be solved, and give proper context to the problem.

Discover: This is the stage of researching and gathering and analysing clear knowledge about the problem. This helps us to give the problem context so that we can identify with it easier.

Dream: Here, we open up the heart and mind to the possibilities and visions of a solution the way we wish to see it. This phase is all about imagination, extrapolation, and visualization

Design: This is basically the workshoping phase. Here the actual mechanics of your solution begin to take shape. It involves techniques that allow us to get the solution "on paper."

Deliver: In this phase, there are two separate stages—Produce and Publish. This involves the action for completing the product (Produce), and presenting the proposed solution (Publish).

Debrief: The reflection stage where learners get to own their learning. They look at the ways they succeeded, and ways they could improve their approach in similar future situations (Watanabe-Crockett, 2018).

As an instructional strategy, case studies have a number of virtues. They “bridge the gap between theory and practice and between the academy and the workplace” (Barkley, Cross, and Major 2005, p. 182).

2.3.4 The Role of Cases /Case-Studies in the activity teaching

As an instructional strategy, case studies have a number of virtues. They “bridge the gap between theory and practice and between the academy and the workplace” (Barkley, Cross, and Major 2005, p. 182).

- They also give learners practice identifying the parameters of a problem, recognizing and articulating positions, evaluating courses of action, and arguing different points of view.
- Case studies vary in length and detail and can be used in a number of ways, depending on the case itself and on the teacher’s goals.
- They can be very short (a few paragraphs) or long (e.g. 20+ pages).
- They can be used in lecture-based or discussion-based classes.
- They can be real, with all the detail drawn from actual people and circumstances, or simply realistic.
- They can provide all the relevant data learners need to discuss and resolve the central issue, or only some of it, requiring learners to identify, and possibly fill in (via outside research), the missing information.
- They can require learners to examine multiple aspects of a problem, or just a circumscribed piece.
- They can require learners to propose a solution for the case or simply to identify the parameters of the problem.

Finding or creating cases

It is possible to write your own case studies, although it is not a simple task.

The material for a case study can be drawn from your own professional experience from current events, from historical sources, etc. It is also possible to find published cases from books and on-line case study collections.

An effective case study is one that:

- tells a “real” and engaging story
- raises a thought-provoking issue
- has elements of conflict
- promotes empathy with the central characters
- lacks an obvious or clear-cut right answer

- encourages learners to think and take a position
- portrays actors in moments of decision
- provides plenty of data about character, location, context, actions
- is relatively concise.

Using case studies

How you use case studies will depend on the goals, as well as on the format, of your course. If it is a large lecture course, for example, you might use a case study to illustrate and enrich the lecture material. (A teacher lecturing on principles of marketing, for example, might use the case of a particular company or product to explore marketing issues and dilemmas in a real-life context.) Also, in a large class you might consider breaking the class into small groups or pairs to discuss a relevant case. If your class is a smaller, discussion-format course, you will be able to use more detailed and complex cases, to explore the perspectives introduced in the case in greater depth, and perhaps integrate other instructional strategies, such as role playing or debate.

Regardless of the format in which you employ case studies, it is important that you, as the learners, know all the issues involved in the case, prepare questions and prompts in advance and anticipate where learners might run into problems. Finally, consider who your learners are and how you might productively draw on their backgrounds, experiences, personalities, etc., to enhance the discussion.

Steps to lead case-based discussions

While there are many variations in how case studies can be used, these six steps provide a general framework for how to lead a case-based discussion:

1. Give learners ample time to read and think about the case. If the case is long, assign it as homework with a set of questions for learners to consider (e.g., What is the nature of the problem the central character is facing? What are some possible courses of action? What are the potential obstacles?)

2. Introduce the case briefly and provide some guidelines for how to approach it. Clarify how you want learners to think about the case (e.g., “Approach this case as if you were the presiding judge” or “You are a consultant hired by this company. What would you recommend?”) Break down the steps you want learners to take in analysing the case (e.g., “First, identify the constraints each character in the case was operating under and the opportunities s/he had. Second, evaluate the decisions each character made and their implications. Finally, explain what you would have done differently and why.”). If you would like learners to disregard or focus on certain

information, specify that as well (e.g., “I want you to ignore the political affiliation of the characters described and simply distinguish their positions on stem-cell research as they are articulated here.”)

3. Create groups and monitor them to make sure everyone is involved. Breaking the full class into smaller groups gives individual learners more opportunities for participation and interaction. However, small groups can drift off track if you do not provide structure. Thus, it is a good idea to make the task of the group very concrete and clear (e.g., “You are to identify three potential courses of action and outline the pros and cons of each from a public relations standpoint”). You may also want to designate roles within each group: for example, one individual might be charged with keeping the others on task and watching the time; a second individual’s role might be to question the assumptions or interpretations of the group and probe for deeper analysis; a third individual’s role might be to record the group’s thoughts and report their decision to the class. Alternatively, group members could be assigned broad perspectives (e.g., liberal, conservative, libertarian) to represent, or asked to speak for the various “stake-holders” in the case study.

4. Have groups present their solutions/reasoning: If groups know they are responsible for producing something (a decision, rationale, analysis) to present to the class, they will approach the discussion with greater focus and seriousness. Write their conclusions on the board so that you can return to them in the discussion that follows.

5. Ask questions for clarification and to move discussion to another level. One of the challenges for a case-based discussion leader is to guide the discussion and probe for deeper analysis without over-directing. As the discussion unfolds, ask questions that call for learners to examine their own assumptions, substantiate their claims, provide illustrations, etc.

6. Synthesize issues raised. Be sure to bring the various strands of the discussion back together at the end, so that learners see what they have learned and take those lessons with them. The job of synthesizing need not necessarily fall to the instructor, however; one or more learners can be given this task.

Some variations on this general method include having learners do outside research (individually or in groups) to bring to bear on the case in question and comparing the actual outcome of a real-life dilemma to the solutions generated in class.

Some variations on this general method include having learners do outside research (individually or in groups) to bring to bear on the case in question and comparing the actual outcome of a real-life dilemma to the solutions generated in class.

Source: Carnegie Mellon University: Eberly Center - Teaching Excellence & Educational Innovation, Case studies

Retrieved from: <https://www.cmu.edu/teaching/designteach/design/instructional-strategies/casestudies.html>

2.3.5 Scenarios in education and teaching

Scenarios present views on possible futures.

Scenarios are tools for focusing thought, developing visions and determining policy.

Scenarios help us to decide what to do now in order to shape it.

Scenarios are carefully constructed imaginations of the future and the possible ways a sector might develop. Scenarios do not predict the future. Scenarios help focus thinking to implement transformations in different fields. So, we are guided to improve our understanding how change processes work and how to guide them. Scenarios are tools to help us explore different visions, develop possible strategies, and create high-impact policies to be implemented now.

The goal is to reveal the dynamics of change and use these insights to reach sustainable solutions to the challenges at hand. Scenarios help stakeholders to break through communication barriers and visualise how current and alternative development paths might affect the future. The ability to illuminate issues and break impasses makes scenarios extremely effective in opening new horizons, strengthening leadership, and enabling new strategic decisions.

Why use scenarios

Three different uses of scenarios: to provoke strategic conversation and strategic decisions; to stimulate genuinely new thinking; and as a motivator for going forward.

What do they contain?

A well-constructed scenario contains enough detail to be useful for strategic planning, but not so much as to become overly specific and irrelevant to the issues of interest. We must be imaginative, without letting our pictures become too obscure or fanciful. This includes analytic tools such as 'trend analysis' and 'actor analysis', with step-by-step methods for creating and using scenarios in any environment where decisions that are necessary now may have important consequences in the future.

How are scenarios made?

Scenarios can range from simple to complex pictures of the future, but they must always be plausible and challenging. The level of preparation depends on the purpose. Two keys to producing useful and challenging scenarios are broad participation of stakeholders and experts and careful analysis of information and trends.

Content and context

Scenario is a Futures Thinking methodology in the world of education. It involves opinions and information from everyone, policymakers to students. One criterion for success is to involve people with marginal stakes as well as those with central stakes in the special issue. Participants gather around trend analysis to find key

features of the local, national and global context, considering how these features might develop and the possible effects. Content and context for the scenarios arise through consideration of demographic, economic, and cultural phenomena, as well as past, present, and possible future trends. (OECD, Website: Schooling for Tomorrow – Knowledge bank)

In brief:

Scenario development combines Futures Thinking methods with the inputs and participation of a broad range of perspectives.

Trend analysis is a central point in identifying key features of the local, national and global context and giving content and context to scenarios.

2.4 Special concepts for education for sustainable development and sustainable consumption and production

2.4.1 Education for responsible, sustainable consumption

Studies show that even though people may become wealthier, they do not, beyond a certain point, necessarily become happier. People are confused and uncertain about how to meet today's challenges, let alone how to prepare young people for dealing with tomorrow's challenges. Many are not even aware of the power individuals have through the choices they make daily.

Consumer Citizenship Education is a cross-curricular, interdisciplinary approach to promoting attitudes, transferring knowledge and developing skills that combine consumer education, environmental education and civic training.

The PERL (Partnership for Education and Research about Responsible Living) aims to educate individuals to recognise the influence they can have as stakeholders, citizens and fellow human beings; and to assist individuals in putting their principles into action through making more reflected responsible lifestyle choices. PERL strives to engage students in developing and to evaluate alternative visions of a sustainable future and motivating them to turn these visions into reality. It aims at creating a deeper understanding of the world that controls consumer society and the influence individuals can have on it in order to better contribute to sustainable development and global well-being. PERL's primary mission is to stimulate education which facilitates students' ability to analyse, understand and cope with real, everyday life problems and to empower them to be active participants in modern society. Active participants are individuals who not only make selective, reflected lifestyle choices in the market but who also effect changes by engaging as stakeholders in

Consumer Citizenship Education is a cross-curricular, interdisciplinary approach to promoting attitudes, transferring knowledge and developing skills that combine consumer education, environmental education and civic training.

the dialogues and debates which determine policy, contribute to transparency and guarantee accountability.

ESC deals with how each person interacts with the marketplace, society and the environment. The consequences and impacts of individual choices and actions are essential elements of ESC.

The necessary learning outcomes of ESC can be defined as attitudes, knowledge, skills and behaviour leading to:

- Critical awareness
- Ecological responsibility
- Social responsibility
- Action and involvement
- Global solidarity

Additionally, ESC encompasses the following generic competencies:

- Appreciation of nature and human diversity and multiculturalism
- Concern for justice, peace and cooperation
- Self-awareness
- Concern for quality
- Appreciation of the interrelatedness of individuals and society
- Capacity for empathy/compassion
- Ability to make critical reflected decisions
- Ability to apply knowledge in practice
- Ability to cope with one's emotions
- Information management skills
- Capacity for generating new ideas
- Capacity to adapt to new situations
- Willingness and ability to be of service to others
- Ability to recognise global perspectives

2.4.1.1 Concepts and values

Responsible living includes:

- the readjustment of present priorities
- the redefining of human relationships
- the transformation of how societies deal with existing economic, social and ecological challenges
- intensification of the dialogue between science and society.

Sustainable development

Sustainable development is a multi-dimensional concept interpreted in various different ways. The concept includes the following interdependent dimensions:

- satisfying the material and non-material needs of all humans within present generations and between a present and future generations (intra-generational and inter-generational equity)
- human and economic activity not exceeding the carrying capacities of ecosystems
- the efficient and wise use of both renewable and non-renewable resources
- integration of environmental, economic and social dimensions to support a fulfilling quality of life for everyone
- the most well-known definition of sustainable development is: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).

Sustainability is often used interchangeably with sustainable development, although the term development explicitly implies qualitative improvement.

Human development

The primary aim of development is to enlarge people’s choices. In principle, these choices can be infinite and can change over time. People often value achievements that do not show up at all, or not immediately, in income or growth figures: greater access to knowledge, better nutrition and health services, more secure livelihoods, security against crime and physical violence, satisfying leisure hours, political and cultural freedoms and sense of participation in community activities. The objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives” (Mahbub ul Haq, 1990).

Sustainability is often used interchangeably with sustainable development, although the term development explicitly implies qualitative improvement.

Social responsibility

Social responsibility is the responsibility of an organization for the impacts of its decisions and activities on society and environment, through transparent and ethical behaviour that contributes to sustainable development, health and welfare of society, takes into account the expectations of stakeholders, is in compliance with applicable law and consistent with international norms of behaviour and is integrated throughout the organization and practiced in its relationships (ISO 26000 – Social responsibility, 2010).

Consumer citizenship

A consumer citizen is an individual who makes choices based on ethical, social, economic and ecological considerations. The consumer citizen actively contributes to the maintenance of just and sustainable development by caring and acting responsibly on family, national and global levels (Thoresen, 2005).

Education for responsible living

Education for responsible living provides opportunities for learning about the systems and processes connected to consumption. It involves re-learning and reorganising information in broader contexts. It is contingent on the reconsideration of such central questions as the value of material and non-material prosperity, and the significance of service to one's fellow human. The present situation indicates the need for the further development of analytical, reflective thinking skills in order to decode the great and aggressive commercial messages to which individuals around the world are always exposed. Five basic skills are important to learning to be responsible. These are communication skills, decision-making skills, problem-solving skills, creativity and change management (Thoresen et al, 2015).

Education for sustainable consumption

Education for sustainable consumption (ESC) aims at providing knowledge, values and skills to enable individuals and social groups to become actors of change towards more sustainable ways of living. The objective is to ensure that the basic needs of the global community are met, quality of life for all is improved, and inefficient use of resources and environmental degradation are avoided. ESC is therefore about providing citizens with the appropriate information and knowledge on the environmental and social impacts of their daily choices, as well as workable solutions and alternatives. ESC integrates fundamental rights and freedoms including consumers' rights and aims at empowering citizens for them to participate in the public debate and economy in an informed and ethical way. (Here and Now! Education for Sustainable Consumption, UNEP 2010)

Education for sustainable consumption is an essential part of education for sustainable development.

Values

The core values on which PERL's work is founded are

- Justice
- Equity
- Unity
- Diversity
- Dignity
- Cooperation
- Respect
- Honesty
- Transparency
- Accountability
- Fun

2.4.1.2. Active learning methodologies

Sustainable development is a multi-disciplinary area requiring interactive, participative and reflective approaches. Learners need to be able to construct their understanding, meaning and values, as a step in the common search for a sustainable future.

Therefore, as a way of improving students learning, educators should where practicable, try to emphasise active, experiential learning and the use of real-world scenarios.

Active learning methodologies involve students in questioning the way they think, the values they hold and the decisions they make in the context of sustainable development. Many schools do not yet provide education for consumer citizenship and sustainable consumption which is value-based, holistic, systematic, active and related to student's daily experiences. Active learning methodology stimulates the willingness to source correct information, appreciate the perspectives of others, reflect on the outcomes and impact of our actions, and embrace change which is required in order for us to modify our way of living and reflect a responsible approach to daily decisions that foster sustainability. The main goal is for students to be open-minded, cooperative, to think, discuss and draw conclusions about different everyday activities in a holistic, critical and creative way for the betterment of all humanity (Sterling, 2004).

Table 1: The differences between Transmissive and Transformative Approaches
(adapted Sterling, 2004; p. 58)

Transmissive learning approach	Transformative learning approach
Teacher-centred approach	Learner-centred approach
Passive learning	Active learning
Individual learning	Collaborative learning
Learning by theory	Praxis-oriented learning linking theory and experience
Learning from feedback from one key person	Learning from reaction from many people
Emphasis on cognitive objectives	Cognitive, affective and skills-related objectives
Institutional, staff-based teaching/learning	Learning with staff but also with and from outsiders
Results thinking	Process thinking
Mistake feared	Mistakes learned from
Learning by notes	Learning by problem solving
Relying on rules	Relying on guidelines
Learning from experts	Discover under guidance
Consistency/sameness	Diversity/flexibility
Class time short	Longer class time
Secrecy	Openness/sharing

2.4.1.3 Images and Objects - Education for Sustainable Development

The Images and Objects Toolkit (O'Donoghue & Cusack, 2008) includes step-by-step instructions for planning and implementing Education for Sustainable Development activities by using images and objects, together with a starter kit of sample images.

Objectives of the Images and Objects Toolkit:

- to enhance the learning process and include alternative methods into the learning environment to meet the diverse needs and behaviour styles of learners,
- to encourage a democratic and collaborative approach through groupwork,
- to promote critical thinking and the opportunity to: question assumptions and stereotypes; discuss cause and effect relationships; problem solve,
- to develop awareness of the environment and the importance of Sustainable Development,
- to provide concrete examples related to Sustainable Development,

- to explore the positive and/or negative effects of what is portrayed by the image or object from an economic, sociological, environmental and/or cultural perspective,
- to create consumer awareness of rights and responsibilities (O'Donoghue and Cusack, 2008, p. 8).

Table 2: Benefits of using "images and objects" active methodology (O'Donoghue and Cusack, 2008, p. 11)

	Step of activity	Benefit
Step 1	A collection of different images and objects are presented	The different images and objects appeal to different senses and styles of learning etc.
Step 2	Each participant is invited to select an image or object	There is no right or wrong answer/selection as all images and objects are linked in some way to Sustainable Development
Step 3	Participants are invited to form pairs and share the image or object that each of them selected	This is less intimidating initially than sharing with a larger group and provides an opportunity to discuss and listen to another persons's perspective
Step 4	The group of four choose one image or object	This encourages a democratic process and decision making in a less initimidating small group setting
Step 5	One person is nominated from each group, to speak on behalf of the group	This provides the opportunity to take on the role of reporter and process the information shared during group discussion
Step 3	General discussion	This broadens viewpoints and perspectives

For more details see Education for Sustainable Development "Images and Objects" Active Methodology Toolkit.

2.4.1.4 Storytelling

How does storytelling support learning?

Learning through storytelling is entertaining and enlightening and can be used with learners of all ages to explore sustainability concepts, attitudes and behaviours.

Storytelling can particularly help to create a social learning environment, in which collaboration, reflection and social cohesion are valued and necessary ingredients in our rethinking of a common future and the purpose of responsible and sustainable everyday life decisions. Storytelling also provides important knowledge and can be a strategy for understanding and exploring other ways of knowing (Gough & Sharp-ley, 2005).

Storytelling is the transmission of events into words. It can be supported with images and other new forms of media that create opportunities for people to express, consume and record stories. Images and objects are useful starting points in storytelling. They help to encourage, promote and evoke discussion (a picture paints a thousand words). Stories consist of certain events, characters and narrative points of view, which determine through whose perspective the story is being viewed (O'Donoghue et al, 2014, p. 7).

"Stories extend your imagination to see the world from perspectives other than your own. When you hear someone's own story, your sympathy is engaged and you recognise that other person as a conscious being capable of suffering and joy" (Nanson, 2005, p. 34). Storytelling can help to make learning experiences, in relation to responsible and sustainable living, more interesting, engaging and meaningful (O'Donoghue et al, 2014, p. 7).

2.4.1.5 Inquiry-based learning

Inquiry-based learning actively engages learners by focusing learning on their questions and interests, and it is an effective method for developing the natural curiosity of learners.

There are many models of inquiry-based learning that are regularly used in education and teaching around the world. Thus, one can say that inquiry-based learning is one of the most readily applied active learning approaches currently available. The inquiry-based learning process facilitates learners' engagement in an investigative process of asking questions, collecting information, drawing conclusions, presenting their findings, and discussing their newly gained knowledge and insights with other learners. With inquiry-based learning, the learners have to actively search for the answers, rather than passively receiving them (Edelson, Gordin and Pea, 1999). This gives the learners responsibility for their learning process and supports an increased sense of self-ownership over the new knowledge they have gained which in turn contributes to deeper learning outcomes (Furtak, 2006). In addition to the content that they learn, inquiry-based learning also helps learners to develop the skills to find and process information from multiple sources (Kuhlthau, Maniotes and Caspari, 2015).

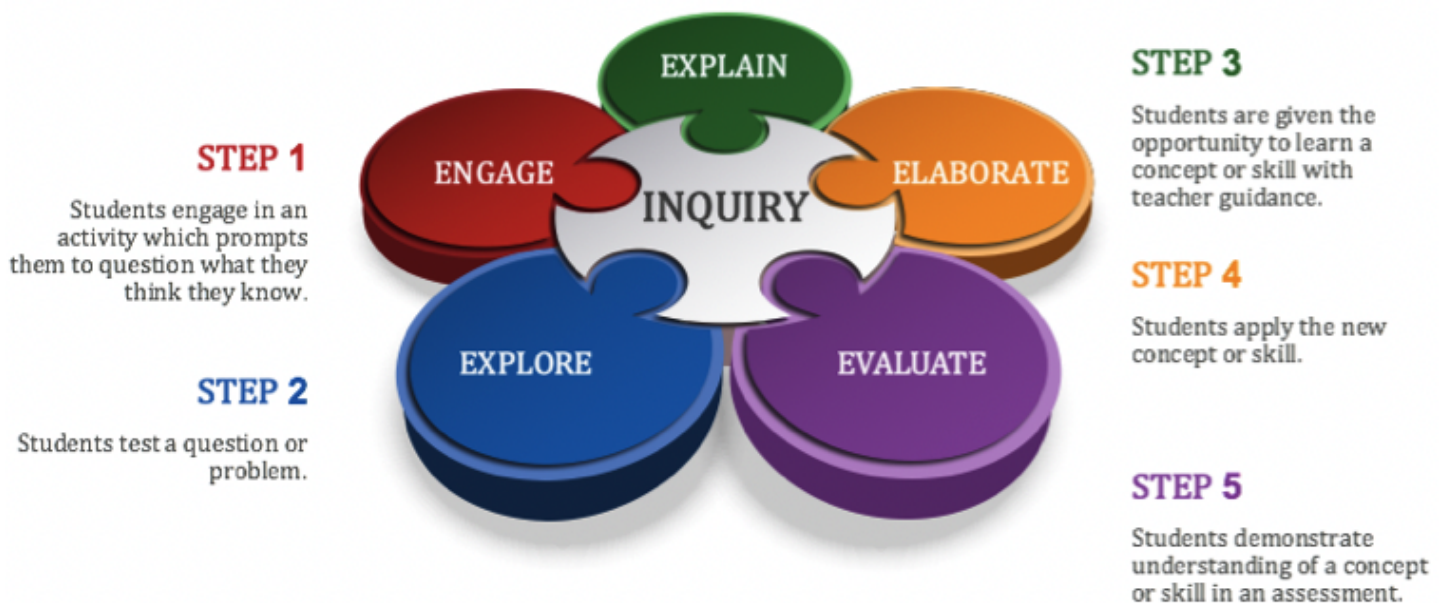
Inquiry-based learning stimulates learners to discover how things work and contribute to the development of an investigative attitude, which is essential for students to become life-long learners.

Inquiry-based learning may be understood as a broad, general approach that evolved from early constructivist learning theories (including the works of Piaget, Dewey and Vygotsky). At the same time, many specific models for inquiry-based instruction and teaching have been developed and applied in formal education, especially in the natural science disciplines. The process of inquiry-based learning contains several similarities with the experimental process of the scientific method, but the rigour and exactness of hypothesis testing in the scientific method dramatically contrasts the flexible nature of investigation and creativity in inquiry-based learning.

5Es Model of the Inquiry-based Learning Cycle

The 5Es Model, by Bybee, et al (2006), as a specific inquiry-based learning model has been widely applied and recognised. This model adapts the generic inquiry-based learning cycle (i.e. ask – investigate – create – discuss – reflect) into a more defined set of five phases, each with a distinct purpose and learning approach:

BSCS 5E Instructional Model



Graphic 5: BSCS 5E Instructional Model

<https://scholarworks.montana.edu/xmlui/bitstream/handle/1/13652/DodgeM0817-Poster.pdf?sequence=6&isAllowed=y>

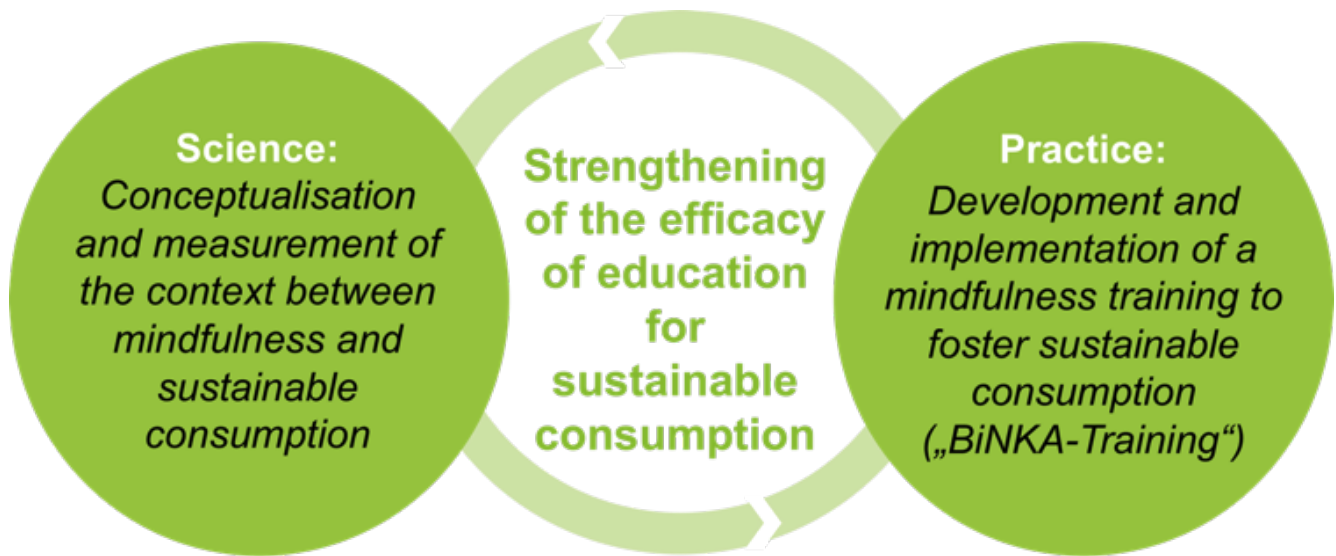
Table 3: Summary of the BSCS 5E Instructional Model (Bybee et al, 2006, p. 3)

Phase	Summary
Engagement	The teacher or a curriculum task accesses the learners' prior knowledge and helps them become engaged in a new concept through the use of short activities that promote curiosity and elicit prior knowledge. The activity should make connections between past and present learning experiences, expose prior conceptions, and organize students' thinking toward the learning outcomes of current activities.
Exploration	Exploration experiences provide students with a common base of activities within which current concepts (e.g., misconceptions), processes, and skills are identified and conceptual change is facilitated. Learners may complete lab activities that help them use prior knowledge to generate new ideas, explore questions and possibilities, and design and conduct a preliminary investigation.
Explanation	The explanation phase focuses students' attention on a particular aspect of their engagement and exploration experiences and provides opportunities to demonstrate their conceptual understanding, process skills, or behaviours. This phase also provides opportunities for teachers to directly introduce a concept, process, or skill. Learners explain their understanding of the concept. An explanation from the teacher or the curriculum may guide them toward a deeper understanding, which is a critical part of this phase
Elaboration	Teachers challenge and extend students' conceptual understanding and skills. Through new experiences, the students develop deeper and broader understanding, more information, and adequate skills. Students apply their understanding of the concept by conducting additional activities.
Evaluation	The evaluation phase encourages students to assess their understanding and abilities and provides opportunities for teachers to evaluate student progress toward achieving the educational objectives.

2.4.1.6 Education for Sustainable Consumption through Mindfulness (PERL Toolkit 9)

What kind of consumption can do us and our planet good? To what extent are body, mind and heart involved in our consumption decisions? What are some alternatives to consumption in order to satisfy our needs in such a way that they can be satisfied just as well or even better? These are questions we do not usually ask ourselves when we go shopping. Many of our daily consumer activities are routines and habits. Questioning them and establishing alternatives requires that we interrupt our automatic patterns and habits and explore what we want, what is good for us and how we want to deal with others and the surrounding environment. Opening up opportunities to develop new attitudes and behaviours in this regard is a major challenge for educators working to promote sustainable consumption and responsible lifestyles (Fritzsche, Fischer, Böhme and Grossman, 2018)

Education for sustainable consumption (ESC) encompasses more than purely knowledge-based education. The acquisition of specific consumer competences is at the forefront of the ESC-agenda; actors of all ages shall be empowered to actively and self-dependently determine more sustainable options for action (Fischer, 2016).



Graphic 6:

The overall objective of BiNKA is to strengthen the effectiveness of ESC (Fischer, 2016).

For this purpose, BiNKA (Bildung für nachhaltigen Konsum durch Achtsamkeits-training – Education for sustainable consumption and training for mindfulness) envisages the conceptualisation and measurement of the relationship between mindfulness and sustainable consumption behaviour. A practical prerequisite for this is the development of a mindfulness training to promote sustainable consumption (Fischer, 2016).

The combination of mindfulness and education for sustainable consumption can be a helpful approach to partially meet this challenge. Mindfulness is derived from principles of Buddhist psychology and has no religious or esoteric origin. It is about making ourselves aware of our experiences – in an open manner as they unfold from moment to moment (Grossman, 2015; Böhme et al., 2016). Mindfulness focuses on cultivating a greater awareness of experience that is integral to values, attitudes and actions of benevolence and goodness towards oneself, others and the world.

Strengthening of cognitive, emotional and spiritual behavioural requirements for sustainable consumption could support expansion and deepening of current educational approaches in ESC. The different facets of mindfulness need a lot of time to mature for individuals interested in developing it. Cultivating mindfulness is a challenge, and substantial personal experience is usually seen as an important prerequisite for teaching others. The structure and curriculum of the MBSR training served as a template and basis for the development of the consumption-specific mindfulness training in the BiNKA project (Stanszus et al., 2017).

The BiNKA Toolkit is based both on the curriculum and on the experience gained in the development and implementation of the BiNKA program. Specifically, selected educational activities to promote sustainable consumption and responsible lifestyles identified as mindful or congruent with the training have been adapted and included (see Fischer, 2016, for a comprehensive collection of educational formats).

The BiNKA toolkit can be understood as a mixture of selected elements and activities of the BiNKA training program (Böhme et al, 2016) and new ideas and inspirations resulting from the reflection and evaluation of the program. As such, this toolkit is a working document and an experiment in itself.

2.4.2 Green Pedagogy – Concept for Agrarian and Environmental Pedagogy

The constitution of Green Pedagogy aims to illustrate the didactic principles of the University College for Agrarian and Environmental Pedagogy, Vienna, Austria. The theoretical foundation of a Green Pedagogy is essential for a systemic cross-linkage of the fields of study of Agrarian and Environmental Pedagogy as well as a method-oriented implementation in the design of learning activity plans in practice.

The readiness and ability “to learn one’s whole life, acquire new competencies, also to reconsider and revise convictions” (Achtenhagen and Lempert, 2000, p. 7) must be developed. In the context of “sustainable” education, this fostering of the reflective dimension aims to help the application or supplementation of knowledge learned and the questioning of subjective patterns of interpretation and emotion (according to Arnold, 2007) from multiple perspectives.

2.4.2.1 Principles of Green Pedagogy (according to the concept paper of the university didactics 2010)

The orchestration of sustainable educational processes, which broach ecological, economic and social problem areas and accompany learners in the individual phases of development by mentoring and coaching are the focus of Green Pedagogy.

The following principles of university didactics characterize Green Pedagogy:

- an interdisciplinary approach to pedagogic content
- a multi-perspective examination of ecological and economic topics
- a specific coupling of expert knowledge for sustainable and economically meaningful development with pedagogic-didactic knowledge
- process-oriented strategies for the future and problem solutions
- cultural sensitivity, value orientation and development of emotions

- methodological variety for the promotion of self-acting, participation, joint responsibility
- a holistic reference to practice, life, space, nature and culture
- the coupling of disciplinary and pedagogic knowledge with practice
- a metacognitive handling of openness and contradictions (Hochschule für Agrar- und Umweltpädagogik, 2018, p. 4)

Continued education is aimed to be secured by fostering the willingness to learn and sharpening the view of complex problem solving from multiple perspectives

Knowledge as a resource is manifested in its various dimensions: practical knowledge (facts, techniques, competencies), interactive knowledge (understanding, reflection, analysis), identity knowledge (self-organisation, self-perception) and orientation knowledge (value orientation), and should be supplemented multi-dimensionally in ambitious teaching-learning settings. (p. 5)

2.4.2.2 Elements of the didactic concept of Green Pedagogy

The learning activity plans of Green Pedagogy are learner-oriented. Communicative competence is acquired through interdisciplinarity by testing options and decisions for sustainable action in as many situated learning processes as possible.

The preparation of learning activity plans takes place with reference to objectives that determine communicative competence and subsequently competency to shape the future. Showcase problems are selected in a participatory process involving interdisciplinary planning and execution together with the learners. The individual attribution of significance is determined by the learners. The next step is an exploratory, cognitively constructing process of development, organization and validation of rational concepts. In this process discourse-oriented topics, so-called “hotspots” are taken up. These arise in the reconstruction of a current state and are characterised by high complexity. By means of research, modelling and visualizations different perspectives become apparent.

In a process of co-construction synergies and divergences relating to the assessment of consequences are recorded, personal attributions of meaning are checked for contingency. The examination of problems on the basis of already existing pathways frequently does not lead to yet new possibilities.

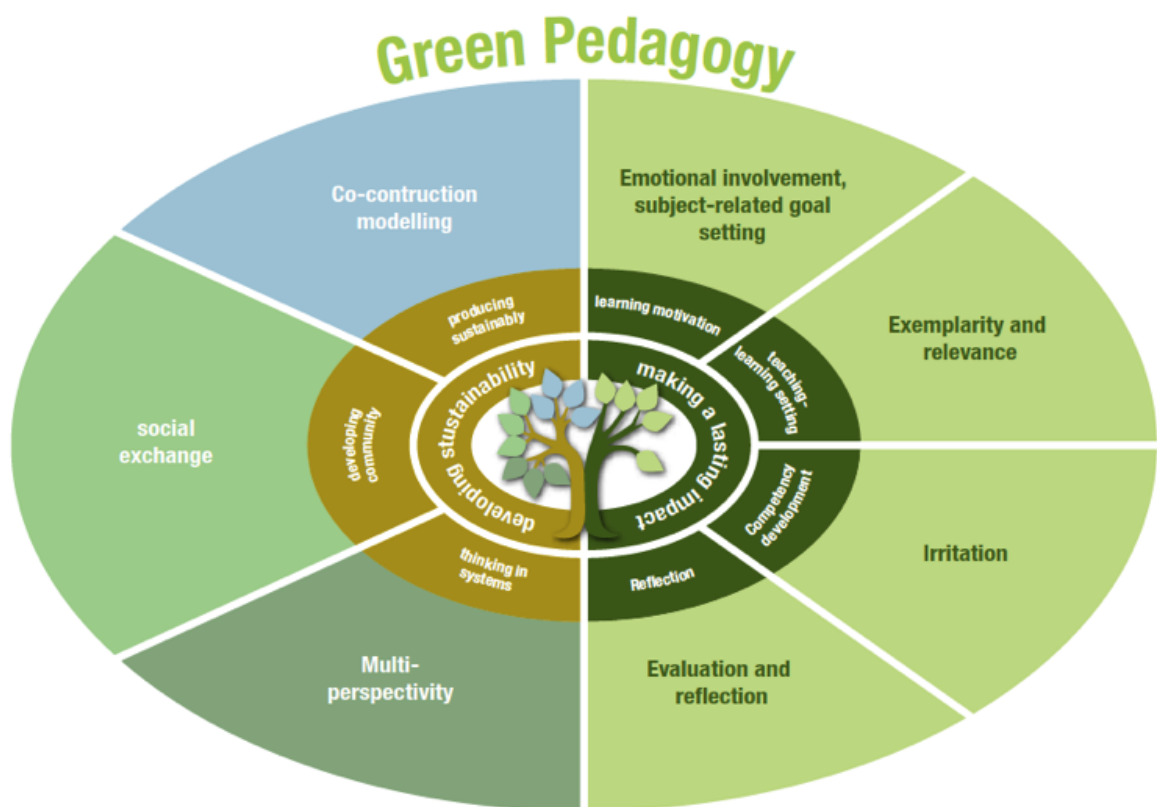
If improvements in a complex pattern are required, however, innovative approaches are necessary. Solutions can already become obvious in the process of reconstruction, but it is important to scrutinize them and assess their sustainability.

The creative process is initiated by an intervention, which invites learners to question routines and simple solutions. This can for instance be done by provocation

Learning Activity Plan(LAP)

A LAP is a plan, including the different aspects to be considered by teachers, when designing Learning activities to create the conditions for learning.

or irritation. In an ideal case linear patterns of thought can be ruptured by apparently disarranging the order of things. This can also take place by an alternating observation of top-down- and bottom-up-effects. When the sensitivity for different approaches and perspectives is enhanced, an analytical discourse begins that serves critical thinking. In a next step and based on the specific situation, learners look for possible effects, further influences or feedback loops and thus pervade connections in systems. This way a deconstruction of existing knowledge takes place. With the help of as many different analytical methods as possible, potential desired situations are scrutinised and tested for their usefulness. In this process the objective is not necessarily finding solutions. Learners should rather reach a high degree of reflecting capacity in order to evaluate the sustainability of actions in cooperative and deconstructing processes. The actual aim is the reflection on personal learning and the observation of personal development after a learning process. (Hochschule für Agrar- und Umweltpädagogik, 2018, p. 16)



Graphic 7:
Planning of learning scenarios
(Hochschule für Agrar- und
Umweltpädagogik, 2018, p. 29)

The elements of the didactic concept are based on pedagogical-psychological theories and yet are special for the site regarding constellation and sequence. For the implementation of the claims of Green Pedagogy in concrete learning activity plans, numerous methodical approaches and evaluation instruments can be employed. This way a multiplicity of approaches is possible. However, those employed need to allow for a critical, participatory, cooperative and reflective examination by the learners with topics in the field of sustainability (Hochschule für Agrar- und Umweltpädagogik, 2018, p. 17).

3. Development of the ProfESus Concept: Pathway to Discover a Sustainable Mindset

ProfESus is an innovative blended learning teacher training in home economics and guest-oriented businesses.

The aim of the ProfESus-Project was to develop an innovative blended learning teacher training for educators and trainers in the professional field of home economics and guest-oriented businesses.

The concepts of PERL regarding Education for Sustainable Consumption and Production and Green Pedagogy - used at the University College for Agrarian- and Environmental Education in the professional field Agriculture and Environment reflect both, the principles of innovative education as well as the key aspects and approaches for education for sustainable development described in chapter 2.

Based on these pedagogical concepts for education for sustainable development in specific fields, the next key question for the design of an innovative teacher training course was, which competences are needed so that teachers and trainers are able to educate students, so that they are able to act in a sustainable manner and to contribute to transformation?

The competences for educators developed by the United Nations Economic Commission for Europe (UNECE) gave a valuable answer and orientation for the design of the ProfESus Teacher-Training-Course



3.1 Integrating UNECE Competences in vocational education and training

3.1.1 UNECE Competences for educators

In the context of the Strategy for Education for Sustainable Development the United Nations Economic Commission for Europe (UNECE) describes that sustainable societies should be seen as a continuous process of learning and change, involving a variety of actors providing guidance in different learning settings. UNECE concludes that this process demands improvement in the competences of educators, leaders and decision makers at all levels of education.

The UNECE competences in ESD were developed for educators and not for learners, although both are interrelated. The UNECE competences go beyond the competences that individual educators would develop in order to provide a good quality education in their discipline.

Thus UNECE competences should be a goal to which all educators should aspire. The authors of the UNECE competences describe them as a framework for the professional development of educators, which are of particular importance to individuals, groups and teacher institutions that have a multiplier effect.

The UNECE Competences focus on ESD generally. They are described in the publication “Learning for the future: Competences in Education for Sustainable Development”, which was 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 Competences are based on:

- A holistic approach, which seeks integrative thinking and practice;
- Envisioning change, which explores alternative futures, learns from the past and inspires engagement in the present; and
- Achieving transformation, which serves to change the way people learn and the systems that support learning (UNECE, 2011, p. 12).

The UNECE competences for Educators are presented in categories which reflect a wide range of learning experiences:

- Learning to know, refers to understanding the challenges facing society both locally and globally and the potential role of educators and learners (The educator understands....);

- Learning to do, refers to developing practical skills and action competence in relation to education for sustainable development (The educator is able to....);
- Learning to live together, contributes to the development of partnerships and an appreciation of interdependence, pluralism, mutual understanding and peace (The educator works with others in ways that....);
- Learning to be, addresses the development of one's personal attributes and ability to act with greater autonomy, judgement and personal responsibility in relation to sustainable development (The educator is someone who....) (UNECE, 2011, p. 12)

3.1.2 Adapted UNECE Competences for learners

The original UNECE competences were developed for educators and focus on ESD generally. The aim of ESD is to empower members of society as far as possible to consider all sustainable dimensions, when acting in the professional setting.

The sustainability dimensions of ESD, which are relevant for all ESD processes are reflected in the UNECE competences. Due to the fact that educators are acting as professionals in the learning environment most of the UNECE competences can be adapted to other professional fields. The UNECE competences were adapted for professionals in the field of home economics and guest-oriented businesses. These adapted “Sustainability competencies for learners in vocational training or professionals in guest-oriented work” (see chapter 4) are a central component of the ProfESus Learning-Activity-Plan, which participants of the ProfESus course implement.

3.1.3. Competence understanding

“Competences are learnable but not teachable”. No single person can have all the necessary competences alone. A competence consists of the effective application of knowledge, skills and attitudes.

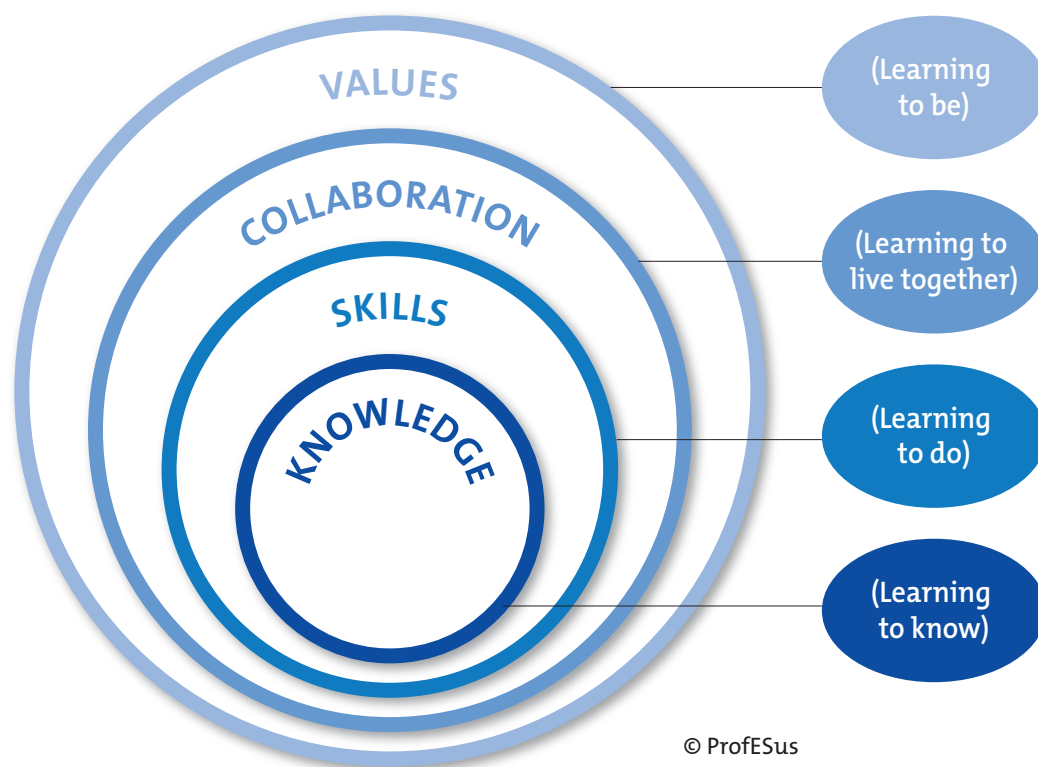
“Competence means acting with the use of knowledge according to values”.

The overall competency divides into 3 main areas (Table 1):

CSCT project 2008	UNECE 2011
Teaching	Achieving transformation (people, pedagogy & education systems)
Reflecting/visioning	Envisioning change (past, present & future)
Networking	Holistic approach (integrative thinking & practice)

Reading across the rows we find the most similarity between the two proposed sets of three competence areas.

Under each of the three knowledge areas, the UNECE framework identifies 4 different ways of knowing.



Graphic 8:
The ways of knowing
(UNECE, 2011)

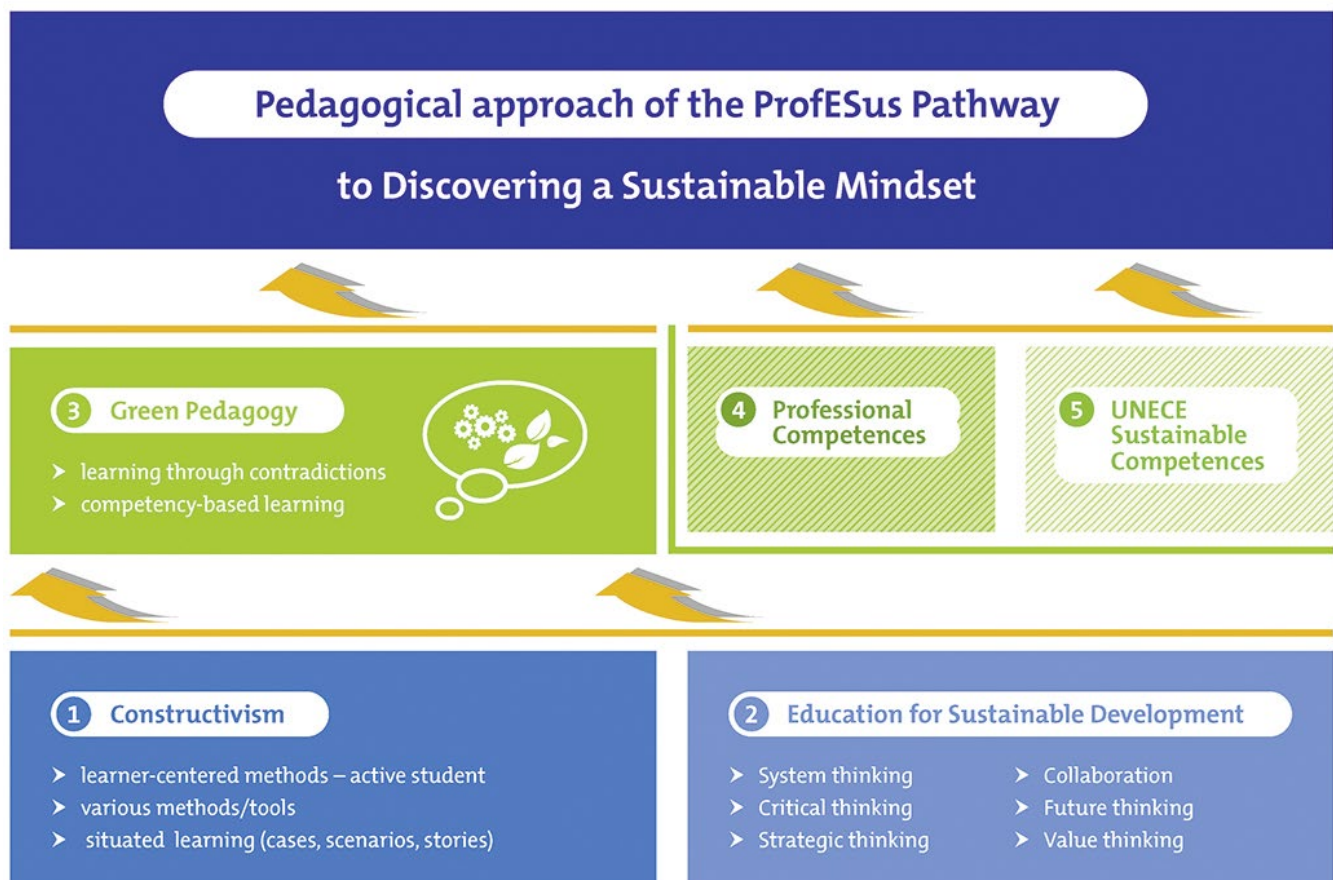
© ProfESus

3.2 Creating the ProfESus Concept “Discovering a Sustainable Mindset”

As graphic 9 below shows, the following five building blocks are the basis of the pedagogical ProfESus approach, which lead to the “ProfESus Pathway to Discover a Sustainable Mindset” and finally to the ProfESus Course:

- the demands for education for sustainable development including the call for innovative education, published by UNESCO,
- the pedagogical principles and approaches of Green Pedagogy and the PERL concept in the area of education for sustainable development, which both are built on
- the education theory of constructivism
- the UNECE competences for educators and
- the professional competences in the related professional field

Graphic 9:
Pedagogical approach
of the ProfESus Pathway

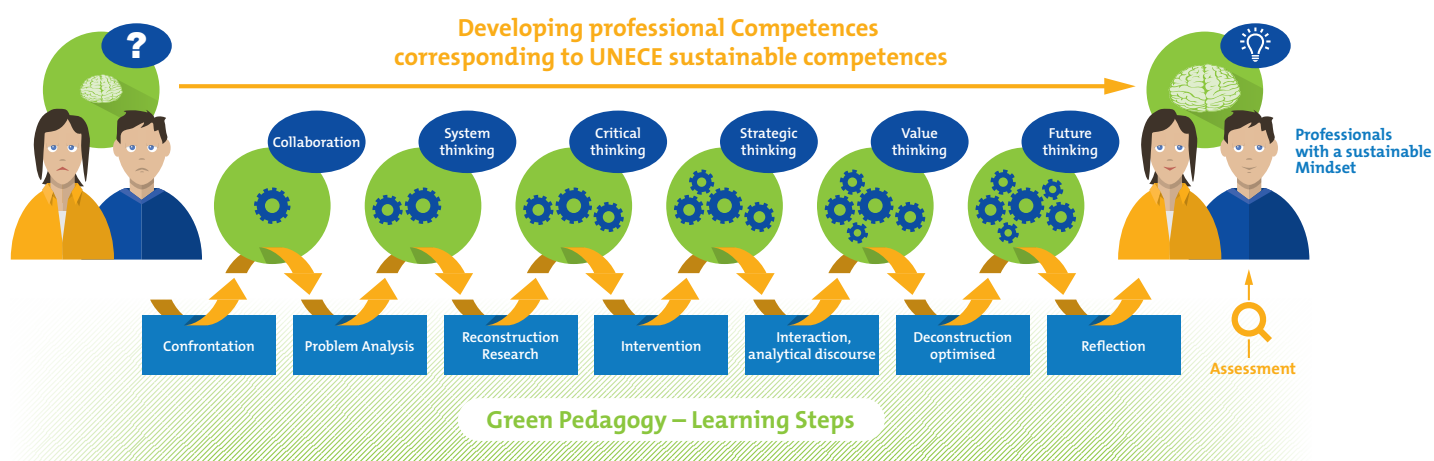


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This basis of the ProfESus approach was directed to answering the following question for designing the ProfESus Course: how should teachers with UNECE competences integrate the principles of the innovative pedagogical concepts with active learning methods and tools, the dimensions of education for sustainable development and the professional competences in a learning process?

3.3 ProfESus Pathway to discover a sustainable mindset

The 5E Model (see chapter 2) and the didactic concept of the Green Pedagogy combined with all the above-mentioned aspects led to the ProfESus Pathway to discover a sustainable mindset (see graphic 3).



Graphic 10:
The ProfESus Pathway
to discover a sustainable mindset

This graphic of the ProfESus Pathway to discover a sustainable mindset describes and symbolises

- the context which teachers/educators should consider and
- the process which teachers/educators should plan in detail to support learners in discovering their sustainable mindset.

[Link [Video on the ProfESus-webpage](#) – Startseite unten]

The waves of yellow arrows in the ProfESus Pathway – derived from the circle (spiral) in the concept Green Pedagogy – to implement motivation for sustainable development – combine key elements of constructivism, ESD and lead to innovative learning processes which are based on:

Learner-centered methods – which means active learners, based on

- Deliberate provocation
- Personal consternation
- Stimulated confusion (to think outside the box)
- Awareness building
- Motivation for ESD
- Various methods/tools
- Learning through contradictions/discrepancies
- Situated learning (cases, scenarios, stories)
- Different learning environments (such as school classes, technical rooms, businesses, nature, museums and institutes)
- Envisioning to support inspiration and reflection.

Based on the findings during the ProfESus Project it must be taken into consideration, that a growing sustainable mindset can only be achieved if the learning process includes a strengthening of professional competences accompanied by increasing sustainability competences. A separated approach of increasing professional competences without combining sustainability competences and vice versa, does not lead to the necessary links of knowledge, skills, values and collaboration (see graphic 1).

Therefore the use of situated learning including learner centered methods is essential.

Therefore the use of situated learning including learner centered methods is essential.

The ProfESus Pathway reflects the different levels of professional training and learning situations. The related curriculum for the learning outcome of a professional training describes the level and complexity of the professional competences.

The defined professional competences enable the teacher to assign the sustainable competences which should be developed by the student to fulfil the professional tasks considering the relevant sustainable aspects and consequences.

3.4 The ProfESus Learning-Activity-Plan (LAP)

The steps for the development of the ProfESus Learning-Activity-Plan (LAP) follow the action research cycle (see graphic 4). It includes all relevant aspects and a table as supporting tool for educators and trainers.



Graphic 11:
The action research cycle
(Retrieved from
<http://thelearnersway.net/ideas/2013/1/14/action-research>)

The ProfESus LAP template (see chapter 4) can be adapted for all professional fields.

The starting point of all planning aspects for the Learning-Activity-Plan is the description of the:

- Given subject, number of learners, conditions for the learning process (day, time, term),
- Options for learning environment and creating the learning situation,
- Current status of the learning phase of the learners/students, on which competences in the related subject can the learning process be built?
- Special aspects, which have to be considered.

Based on the given conditions, the planning phase is very important for the success of the learning process. In this phase teachers should think about:

- the professional competences which should be developed,
- the sustainable competences which should be integrated,
- the learning environment, technical devices,
- an idea, selection or development of a case study, scenario or story,
- selection of learner-centered methods and tools,
- selection of materials relevant for the different learning steps.

All aspects and considerations should be described in the LAP. Based on the reflections the detailed description of the learning steps should be planned with observation of the learning steps presented in the Green Pedagogy or the 5 E's-Model (see chapter 2) and the sustainable competences.

For the execution period it should be planned how to observe the learning processes of the students, which aspects, criteria are relevant?

How can results, outcomes be evaluated and be recorded?

A very important point for the planning is the assessment at the end of the learning process. Which methods, tools or tasks are suited to measure the competences the students developed and are able to demonstrate? The criteria for the assessment process are described in the ProfESus Assessment (see graphic 9).

The criteria for the assessment process are described in the ProfESus Assessment (see graphic 9).

3.5 The ProfESus Assessment Tool for a sustainable mindset

To assess the process of discovering a sustainable mindset all dimensions of professional and sustainability competences have to be reflected.

A sustainable mindset is built on the following competences with a lower or higher degree of difficulty:

- **Knowledge: Professionals are able to know ...**

For each task or process which has to be conducted in a business, professionals should know the relevant information, in which way (e.g. what, how, what is needed and why, what should be the result, quality...) the task, process has to be conducted and what has to be considered to get the expected result. In addition to the occupational knowledge, professionals should be aware about global challenges such as climate change, ocean pollution, poverty and should be able to know, which social, economic or ecological effect and relation the professional task or process will cause.

- **Skills: Professionals are able to do ...**

For each task or process which has to be conducted, professionals have to use skills to work in less or more complex processes, to fulfil the task or to organise the process and receive the desired qualitative and quantitative outcome. The more professional skills are trained, the more sustainable behavior could be achieved. It must be pointed out, that in all professional actions and processes, sustainable aspects have to be reflected and considered. In addition, willingness, which is influenced by personal values, is needed, to transform personal awareness and knowledge competences into action for sustainable development. Also a collaborative sustainable action, related to the general principles of the business, supports individual behaviour.

- **Collaboration: Professionals are able to work with others ...**

In any professional situation professionals have to collaborate on different levels with others (e.g. the head of the business, colleagues, clients or guests) to get the necessary information or to agree on a working process. The collaboration in the sense of sustainability includes

- the personal consideration of sustainable aspects in working processes
- the motivation and conviction of others (head, colleagues, clients or guests) to support sustainable development.

- **Values: Professionals are someone who ...**

Values are necessary for a sustainable mindset! They influence our professional, economic, social, ethical and ecological behaviour in working processes. Values determine if a professional is motivated to make a positive contribution to other people and their social and natural environment, locally and globally.

These additional sustainability dimensions of learning processes are reflected in the UNECE sustainability competences (Source: Sustainability competencies for learners/professionals in vocational training adapted from UNECE, 2011) and integrated in the educational concept of the **ProfESus Pathway to discover a sustainable mindset**.

These dimensions should also be a matter of the assessment process at the end of learning processes with the integrated sustainable competences which will lead to a sustainable mindset.

ProfESus Pathway to discover a sustainable mindset.

In each professional field the complexity of tasks or responsibilities, which professionals should be able to conduct, depend on their educational level or the related job description.

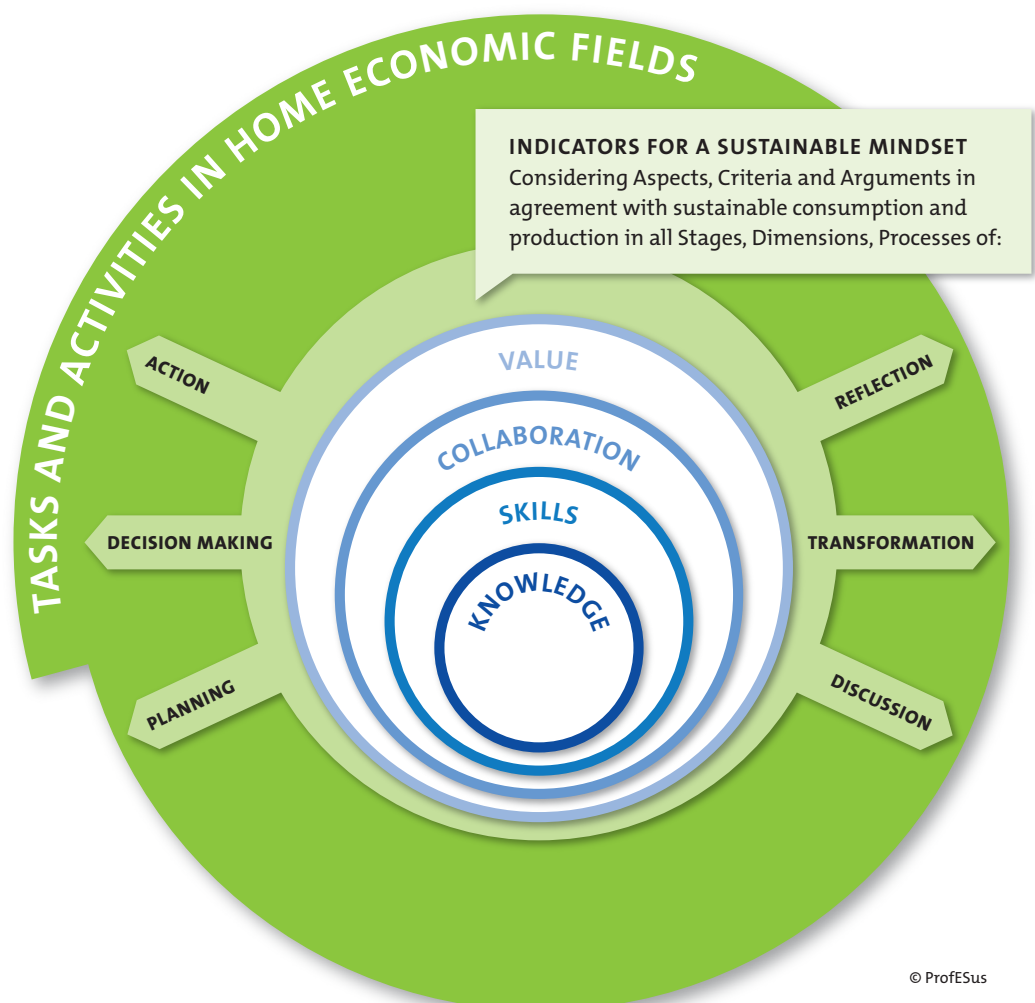
For discovering a sustainable mindset in professionals, all four dimensions of competences must be developed, so that they are able to plan, decide, act, discuss, transform and reflect on their professional work in a sustainable manner.

The graphic shows the context of a sustainable mindset in a professional field and gives ideas how to assess the growing sustainable mindset in a learning/training process.

Assessment of a Sustainable Mindset

Evaluation if relevant indicators are/were considered:

Aspects – effects on social, ecological and economic environment –, Criteria and Arguments in Agreement with Sustainable Consumption and Production in all Stages, Dimensions, Processes of Responsibility in Home Economics Fields and Guest-Oriented Businesses



Graphic 12:
ProfESus Assessment
of a sustainable mindset

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“ProfESus Assessment of a sustainable mindset” shows that professionals with a sustainable mindset are able to

- integrate/combine/consider relevant knowledge, skills and values when planning, deciding, acting, reflecting, transforming and discussing in their professional field
- collaborate with others in the professional, public and private environment, when planning, deciding, acting, reflecting, transforming and discussing.
- describe the context of tasks, processes and activities in the local and global economic, ecological and social structures/system, when planning, deciding, acting, reflecting, transforming and discussing (system thinking).
- point out critical local and global economic, ecological and social questions and look behind the curtains, when planning, deciding, acting, reflecting, transforming and discussing in their professional field (critical thinking),
- develop innovative strategies to fulfil tasks, processes and activities effectively, to support economic ecological and social perspective as much as possible, when planning, deciding, acting, reflecting, transforming and discussing in their professional field (strategic thinking)
- consider implications for the economic, social, ecological future (future thinking) when planning, deciding, acting, reflecting, transforming and discussing in their professional field.

To assess a sustainable mindset in professionals, learners should work on tasks, activities, processes which enable them to demonstrate that they are able to ...

- use professional and sustainable knowledge, skills and values,
- collaborate with others,
- think systematically,
- think critically,
- think strategically,
- think future-oriented.

Such tasks or processes to demonstrate professional knowledge, skills, collaboration, values and a sustainable mindset should be based on existing business or embedded in real case studies, scenarios or stories, which reflect the real professional world.

It is obvious that a transformation of businesses through sustainable development to sustainable businesses can only be reached, if almost all professionals and staff members, especially at management level have discovered a sustainable mindset in all dimensions.

3.6 The ProfESus blended learning course

The key aim of the ProfESus-Project was to develop an innovative blended learning course for professionals in household and guest-oriented businesses.

Based on the pedagogical ProfESus approach, the ProfESus pathway to discover a sustainable mindset, the ProfESus assessment tool and the curriculum for the ProfESus course was developed.

3.6.1. The ProfESus Curriculum – Discovering a sustainable Mindset for future-thinking professionals in household and guest-oriented businesses (8 ECTS/ECVETS)

The overall aim of this curriculum is continuous pedagogical adjustment and improvement to promote the active sustainability mindset of learners in the workplace.

This ProfESus curriculum is general enough to cover the different vocational areas and specific enough to support learners in discovering their sustainable mindset.

The different elements of the ProfESus Concept: Discover a Sustainable Mindset – Education for professionals in household and guest-oriented businesses were brought together in the ProfESus Course “Discovering a sustainable mindset for future-thinking professionals in household and guest-oriented businesses”, consisting of four modules.

The concepts for these modules consist of the following strategy:

- Each Module is based on special UNECE Competences for educators.
- Based on the selected UNECE-Competences and the elements of the ProfESus concept the contents were defined.
- Each Module follows the Green Pedagogy learning steps, which promote active and learner-centered methods.
- Learning activities were created, methods determined and
- Tools for the different learning activities were chosen or developed.
- Materials for the different learning activities were prepared.
- Detailed Learning Activity Plans were developed.

3.6.2 Module grid of the curriculum

Development of a curriculum, which corresponds:

- the amount of 8 ECVETs/ECTS and
- a blended-learning course with 4 modules
 - (80 hours presence phase and
 - 125 hours digital-learning including
 - 70 hours tutorials for self-study and
 - 55 hours online-learning).

Additional hours have been included to account for additional time needed to work in the second language and to allow time to consult colleagues, managers, local organisations and other stakeholders.

Content of the 4 Modules of the blended-learning curriculum (see graphic 6):

- **Module 1:** Take off on your road to a sustainable mindset (1.5 ECVET/40 hours) 5-day presence phase;
 - Awareness building of the global social, economic and social challenges and the role of innovative education for sustainability in all fields, areas and levels to meet the challenges.
 - Experience the idea and significance of sustainable businesses in home economics.
 - Understanding the significance of active learning methods and the opportunities offered by case studies, scenarios and stories etc. to support situated and active learning.
 - Recognition of the ProfESus concept and pathway to discover a sustainable mindset.
 - Get to know the structure and interrelations of the content of the modules.

Module 1

1,5 ECVETs/40 hours),
5-day presence phase

**Module 2**

3 ECVET/75 hours
online learning activity

- **Module 2:** Education for sustainability – discovering appropriate pedagogies and strategies (3 ECVET/75 hours) online-learning activity in the first semester;
 - Be familiar with the different pedagogies for Sustainability and are able to apply the ProfESus concept
 - Work on challenges to get to know a variety of tools to support active learning
 - Practice methods and tools for future thinking, system thinking, strategic thinking, value thinking and collaboration
 - Exchange experiences and give comment on others point of views.

Module 3

2 ECVET/50 hours
online learning activity

- **Module 3:** Teaching for sustainability – planning, conducting and evaluating learning activities (2 ECVET/50 hours) self-study and online-phase in the second semester;
 - Practice the ProfESus Learning-Activity-Plan template.
 - Plan, conducted and assess learning activities.
 - Support colleagues to improve their learning activity plans at different stages.
 - Use the ProfESus assessment approach for a sustainable mindset.

Module 4

1,5 ECVET/40 hours
presence phase

- **Module 4:** Assess teaching processes and envisioning sustainable futures (1.5 ECVET/40 hours) 5-day presence phase.
 - Exchange experiences related to lesson plans, learning processes and most of all the assessment of learning outcomes as well as the outcomes.
 - Reflection on demands and options for transformation processes in schools, education systems, communities and businesses.
 - Discussion of opportunities to promote change and transformation at different levels.

The following graphic shows the main aspects of each module.

The details and materials can be seen on the ProfESus Webpage
www.profesus.eu subsection Course



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Graphic 13:
 Content of the ProfESus
 Blended Learning Course
 (8 ECTS/8 ECVETS)

4. Learning Activities for Sustainable Development

During the construction of the ProfESus course the project team decided to prepare a Learning Activity Plan template to support international participants in their lesson preparation. During module 3 of the teacher training course participants had to plan and conduct such a learning activity.

To ensure, that participants follow the ProfESus pathway to discover a sustainable mindset in their students, the learning activity plan is a tool for a guided lesson planning process.

A Module 3 task was also a task to give feedback to the learning activity plans from colleagues. In this step the template was very helpful to communicate the idea and the steps of the learning activity.

The learning activity planning steps as a basis for action research are described in detail in chapter 3.4.

Below you will find the Learning-Activity-Plan-Template including helpful planning tools (see 4.1), the ProfESus Learning Activity Example (see 4.2) and international best practice examples of learning activities in different home economics fields (see 4.3).



4.1 Planning learning activities to support sustainable development

The following sections present the content of the learning activity plan template including different tools for planning lessons for sustainable development.

The teacher could use this template step-by-step to plan their lessons successfully. Detailed handling information is provided in the adjoining brackets.

4.1.1 Learning-Activity-Plan-Template (LAP-Template)

(Title of the learning activity)

Author	School/Business	Country
[Name of participant, e-mail address]	[Name of institution, short description]	

SUMMARY OF LEARNING ACTIVITY IDEA: *(not more than 5 lines)*

PROFESSIONAL SUBJECT/TOPIC:

COURSE LEVEL

- Primary school
- Secondary school
- University
- Vocational training/education

KIND OF COURSE

- Compulsory
- Optional
- Interdisciplinary
- Cross discipline
- Presence phase
- Blended course
- Online-learning activity

SHORT CLASS PROFILE: *(please indicate also number of learners)*

CLASS LEVEL/AGE:

Pre conditions: *(starting point: competencies/knowledge/skills of learners)*

Conditions of the learning environment

Learning environment: (e.g. class room, kitchen, garden, nature, forest, businesses...)

Technical equipment: Material/lesson and presentation equipment:

TIMETABLE FIT: *Number and duration of lesson units*

DATE OF SCHEDULED LESSON(S):

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

(Description of the competences, related to the professional field, which should be reached to improve professional action)

SUSTAINABILITY RELATED AIMS *(in the context of the learning activity topic based on the sustainability competencies for learners in vocational training or professionals in guest-oriented work (see table ??? in section 4.1.2))*

DETAILED PROCEDURE OF LESSON STAGES

(Please indicate: preparation/online/offline/group formation and any other relevant points;

The lesson phases should consider the learning steps of Green Pedagogy, see ProfESus Pathway to discover a sustainable mindset;

For details see chapter 2.4.2.2 and chapter 3.3)

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)

PROCESS OF ASSESSMENT FOR LEARNERS' MINDSET OUTCOME (see chapter 3.5):

Follow Ups/Variations:

Anticipated problems and suggested solutions:

OTHER RESOURCES/MATERIALS/LESSON OUTCOMES:

4.1.2 Sustainability competences for learners

The following competences for learners in vocational education and training are adapted from UNECE 2011.

The innovative approach of the education concept ProfESus Pathway of Discovering a Sustainable Mindset is built on Green Pedagogy and integrates/combines

- professional competences related to the professional curricula and
- sustainability competencies for learners in vocational training (see table XXX below).

Based on the findings of the ProfESus-Project it became evident, that a growing sustainable mindset can only be supported if the learning process includes a strengthening of professional competences accompanied by increasing sustainability competences. Increasing professional competences without combining sustainability competences and vice versa, does not lead to the necessary links of knowledge, skills, values and collaboration (see graphic).

Table XXX: Sustainability competencies for learners in vocational training or professionals in guest-oriented work (Source: adapted from UNECE, 2011)



	HOLISTIC APPROACH Integrative thinking and practice	ENVISIONING CHANGE Past, present and future	ACHIEVING TRANSFORMATION through personal development and the work environment
Learning to know The professional understands...	1. basics of systemic thinking processes; 2. the interrelation of ways in which natural, social and economic systems function; 3. the responsibility for the nature between generations, as well as those between rich and poor and between humans and nature; 4. his/her personal world view and cultural assumptions and seeks to understand those of others; 5. the connection between sustainable futures and the way we think, live and work; 6. his/her own sustainable thinking and action in relation to sustainable development.	7. the root causes of unsustainable development and is able to describe it in a story; 8. and is able to make a evolving concept for sustainable development; 9. and is able to react on the urgent need for change in a professional-situation from unsustainable practices towards advancing quality of life, equity, solidarity, and environmental sustainability; 10. and is able to fulfil tasks, which are aimed at the importance of problem setting, critical reflection, visioning and creative thinking in planning the future and effecting change; 11. and is able to be prepared for the unforeseen and to pursue a precautionary approach; 12. and is able to consider the importance of scientific evidence in supporting sustainable development.	13. and is able to transform the work context to support sustainability; 14. and is able to transform the way we work and develop professionally; 15. and is able to support colleagues and stakeholders to meet new challenges; 16. and is able to build on the experience as a basis for transformation to show engagement on the experience of colleagues and stakeholders; 17. knows how engagement in real-world issues enhances professional development and helps the professional to make a difference in practice.
Learning to do The professional is able to...	18. create opportunities for sharing ideas and experiences from different disciplines/places/cultures/generations without prejudice and preconceptions; 19. work with different perspectives on dilemmas, issues, tensions and conflicts; 20. connect work and the business to her/his local and global spheres of influence.	21. arrange critically processes of change in society and envision sustainable futures; 22. communicate in sense of urgency for change and inspire hope; 23. facilitate the evaluation of potential consequences of different decisions and actions; 24. use the natural, social and built environment, including his/her own work organisation, as a context and source of professional development.	25. facilitate participatory as well as worker- and user-centered sustainability initiatives that develop critical thinking and active citizenship in the work and/or beyond; 26. assess outcomes in terms of changes and achievements in relation to sustainable development.
Learning to live together The professional works with others in ways that...	27. supports collaboration actively in different groups across generations, cultures, places and disciplines	28. facilitate the emergence of new worldviews that address sustainable development; 29. encourage negotiation of alternative futures.	30. challenge unsustainable practices across the work environment; 31. help work colleagues and guests clarify their own and others world views through dialogue, and recognise that alternative frameworks exist;
Learning to be The professional is someone who...	32. is inclusive of different disciplines, cultures and perspectives, including indigenous knowledge and worldviews.	33. is motivated to make a positive contribution to other people and their social and natural environment, locally and globally; 34. is willing to take considered action even in situations of uncertainty.	35. is willing to challenge assumptions underlying unsustainable practice; 36. is able to be a facilitator and participant in her/his own work processes; 37. is able to be a critically reflective practitioner; 38. is able to inspire creativity and innovation; 39. is able to be engaged with work and colleagues in ways that build positive relationships.

4.1.3 Checklist with criteria for best-practice learning activities

The following criteria could be used to check learning activity plans:

- Series of lessons (more than one)
- Professional competences based on the related subject(s)/curriculum (professional field: guest-oriented businesses)
- Related sustainability competences based on UNECE 2011 (see best-practice example “The menu today, change your world tomorrow!”)
- Coherence between professional skills and sustainability-related aims and the expected learning outcomes
- Use of learning approaches (methodology and didactics) to support learner-centered education for a growing mindset
 - learning steps of Green Pedagogy
 - confrontation
 - problem analysis
 - reconstruction research
 - intervention/provocation/irritation
 - interaction/analytical discussion
 - deconstruction/optimised results
 - reflection/evaluation
- Transformational learning, transgressive learning, ...
- Adequacy of materials and external resources
- Active learning – use of activities that involve learners directly, creatively and experientially
- Group collaboration – experience of team work during the lessons
- Deeper learning – use of appropriate activities that rely on competencies such as thinking critically, interdisciplinary and solving complex problems
- Use of real/realistic scenarios/case studies (for learning processes and/or mindset assessment)

- Indicators for assessment of the sustainability mindset shift of learners (see graphic below) and their growing professional competences
 - Multiple dimensions of sustainability and the sustainability mindset
 - Different dimensions of professional competences
 - Individual efforts and individual commitment
- Risk assessment (pedagogy, technical equipment, etc.)
- Include all intended materials to conduct the lessons as an attachment in the learning activity plan

4.2 ProfESus Learning Activity Example

“The Menu today can change your world tomorrow!”

The Menu today today can change our world tomorrow

Author	School/Business	Country
ProfESus-Team	Vocational school for household and guest-oriented businesses	Austria, Germany

SUMMARY OF LEARNING ACTIVITY IDEA:

During this lesson unit the learners will have the chance to build awareness of the complexity of planning a healthy and sustainable nutrition and to use the criteria in concrete planning situations.

PROFESSIONAL SUBJECT/TOPIC: Nutrition and food preparation

- **COURSE LEVEL:**
secondary school
- Vocational training/education

KIND OF COURSE: Presence phase

SHORT CLASS PROFILE:

28 learners female and male in rural area in a school for professional education or a dual school system

CLASS LEVEL/AGE: 14-18

Pre-conditions:

- The professionals/vocational learners know the significance and effects of nutrients in the human body.
- The professionals/vocational learners know the criteria for different diets.
- The professionals/vocational learners know the basic criteria for planning the menu (food pyramid, regionally and seasonal choice)
- The professionals/vocational learners know the connection between individual consumption behaviour and their impacts on the environment (e.g. Calculation of the ecological footprint with the online-tool)

Classroom conditions

Technical equipment: none

Material/lesson and presentation equipment:

Working sheets with meals, coloured cards, markers, pins, pin walls, anonymous menu plans for a week, analysis template for menu evaluation, 5 posters presenting the production chain, blackboard or flip chart;

TIMETABLE FIT: 2 coherent lesson units - 90 min

DATE OF SCHEDULED LESSON:

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

SUBSIDIARY AIM(S):

- a) The professional/vocational learner is able to evaluate important diets based on the criteria for healthy nutrition in the context of the production chain.
- Perspective of the producers/farmers, the processing companies, the consumers
 - Perspective related to individual health and consumers (including lifestyles, taste, enjoyment,...)
 - Social, economic and ecological implications



- b) The professional/vocational learner is able to evaluate menu plans related to healthy and sustainable criteria.
- Analysing and optimising weekly menu plans for different guest and target groups (healthy nutrition/vegetarian/..)
 - Preferences for plant-based food (ovo-lacto-vegetable meals)
 - Ecological and seasonal food
 - Preference for low processed food
 - Fair trade food
 - Resource management
 - Enjoyable gastronomic culture

SUSTAINABILITY RELATED AIMS in the context of the lesson topic:

Based on the UNECE 2011 competences for sustainable education

- a) The professional/vocational learner understands the connection between sustainable futures and the way we think, live and work;
- b) professional/vocational learner is able to facilitate the evaluation of potential consequences of different decisions and actions;
- c) The professional/vocational learner works with others in ways that facilitate the emergence of new worldviews that address sustainable development;
- d) The professional/vocational learner is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally;

DETAILED PROCEDURE OF LESSON STAGES

Learning steps based on the didactic concept of Green Pedagogy

90 Minutes

4.2 PROFESUS LEARNING ACTIVITY “THE MENU TODAY CAN CHANGE YOUR WORLD TOMORROW!”

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Confrontation/ Problem analysis (15 min)	The professional/ vocational learner develops awareness of the variety of opinions, meanings and attitudes regarding different diets.		<p>Learners discuss in groups which experiences/opinions they have related to the different meals from their personal or from their target groups perspectives.</p> <p>Pictures with different meals will be presented on folded sheets of paper for each group. In a brainstorming process learners will comment their impressions on the sheets. They will hide their answers and will pass sheets to their neighbours until each learner of the group has commented all meals. After this process the sheets will be unfolded and discuss the question “What do the different comments demonstrate to you?”</p> <p>The learners will be asked to write their 3 main group aspects on 3 coloured cards. After then the groups will present their results in the following way: Group 1 will present their priority aspect and put it on the pin wall, group 2, 3 and 4 will follow with new or additional aspects. At the end all cards will be clustered on the wall.</p>	<p>Material for group building (randomly allocated);</p> <p>Folded photo sheets;</p> <p>Coloured cards, markers;</p> <p>Pin wall and pins,</p>
Reconstruction/ Research (15 min)	The professional/ vocational learner is able to evaluate important diets based on the criteria for healthy nutrition.		<p>Analysis of anonymous menu plans for a week with different diets for different target groups (pupils, elderly people, ill people, staff of a company, tourists/guests).</p> <p>All learners work in groups (4 to 6 persons)</p> <p>Task: Evaluate the presented menu plan on the basis of the analysis template.</p>	<p>Anonymous menu plans for different target groups;</p> <p>Analysis template</p>
Intervention/ Provocation/ Irritation (20 min)	The professional/ vocational learner is able to recognise social, economic and ecological implications in the context of the product chain (food system).	<p>The professional/ vocational learner understands the connection between sustainable futures and the way we think, live and work;</p> <p>The professional/ vocational learner is able to facilitate the evaluation of potential consequences of different decisions and actions.</p>	<p>5 covered posters are presented in different places in the learning environment/room.</p> <p>Each poster represents one step of the production chain.</p> <p>The different aspects of each step of the production chain will be demonstrated by a variety of pictures.</p> <p>Learners will be asked to find a partner. Each couple will start at any step of the product chain and reflect based on a worksheet about possible social, economic and ecological implications of the presented procedures. Their main aspects should be written on the worksheet.</p> <p>Short plenary discussion: Which influences could the knowledge about the product chain (food systems) have for the menu planning/eating behaviour?</p>	<p>5 posters of the production chain;</p> <ul style="list-style-type: none"> • Production • Processing • Distribution • Consumption • Waste disposal <p>Worksheet;</p>

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Interaction/ Analytical discussion (15 min)	The professional/ vocational learner derives additional quality criteria for menu plans and creates new dimensions for its evaluation.	The professional/ vocational learner recognizes the emergence of new worldviews that address sustainable development.	Plenary discussion, facilitated by the teacher: More and more people are motivated to eat healthily and additionally support sustainable development. For this reason the key question is "Which criteria are relevant for your target group, to choose the right meal for the menu plan? The answers/criteria of learners will be collected and integrated in the analysis template. All learners will update their list with the new and additional sustainable aspects for menu plan evaluation.	Flip chart/blackboard Analysis template completed by learners
Deconstruction/ optimised result (15 min)	The professional/ vocational learner is able to create ideas how to indicate additionally sustainable aspects in menu plans. The professional/ vocational learner is able to plan a sustainable meal.	The professional/ vocational learner is able to create ideas how to indicate additionally sustainable aspects in menu plans. The professional/ vocational learner is able to plan a sustainable meal.	The learners will develop icons to mark menus to indicate the way of the product chain. Learners will work with one partner on the following task: Demonstrate with one example how you plan a healthy and sustainable meal.	Coloured round cards, markers; "sustainable meal" template
Reflection/ Evaluation (10 min)	The professional/ vocational learner is able to reflect on the effects of acting sustainably regarding menu planning and create realistic ideas how to implement it in his/her guest-orientated business.		The learners discuss, what will be the effects, if all guest orientated businesses supported healthy and sustainable menu plans? Which new aspects have you learned today? Which concrete action ideas should be implemented in the daily professional work of your business? Write these aspects on the board/flip chart.	Flip chart/blackboard

SUBSIDIARY AIM(S):

See table

PROCESS OF ASSESSMENT FOR LEARNERS MINDSET OUTCOME:

Planning and decision making (e.g. 24 Points): The responsible person for the food preparation asks you to optimise the presented weekly menu plan for the elderly people’s home. Before you start to improve the menu regarding the requirements, please list the aspects which you will consider

Indicators in the sector **Knowledge** (e.g. 9 Points):

- regional/seasonal
- selection and amount of food and ingredients
- variety of food during the week
- way of processing
- needed time and equipment for preparation
- nutrients
- awareness of special needs or preferences (target group)
- money/costs
- waste

Indicators for the sector **Skills** (e.g. 5 Points):

- correct use of the menu template
- completed menu template



Indicators for sector **decision making** (knowledge, skills, values and sustainable mindset) (e.g. 10 Points)

- right selection of meals, food, ingredients and processing methods regarding all above mentioned aspects

Action: Must take place in the businesses or in practice.

Reflecting (e.g. 25 Points): Your kitchen chef asks you, to present and comment your agreed improvements. Please convince her/him with plausible arguments.

Indicators (knowledge, skills, values and sustainable mindset):

- health aspects, enjoyment and well-being for elderly people
- sustainable aspects of the optimized weekly menu, such as way of production, transportation, processing, energy usage, water usage and emission, waste ...
- economic aspects like costs, number of available staff

Discussing: Discuss with your learner colleagues why your optimized menu plan is the best; give reasons for your decision (collaboration and communication) – no grading just to widen their individual horizon and fostering the mindset

All above-mentioned indicators can be used especially for the assessment of the sustainable mindset.

Transforming (e.g. 15 points): Which additional aspects do you have to consider, if you decide the menu for another business. What could be the effect, if all institutional households in your region were to adopt your aspects and considerations for menu planning?

Indicators for a sustainable mindset:

- less water usage, less energy usage, less carbon emission, less waste
- strengthen the local producers and businesses and foster local product chains
- secured local workplaces
- healthy consumers/guests/occupant, increased awareness for sustainability
- animal well-being, environmental hygiene.

4.3 International ProfESus Learning-Activity-Examples in the different home economics fields

In this chapter you will find 4 international best-practice examples of learning activities in different home economics fields and different levels of learning/schools, which were planned, conducted and optimised during the first pilot run of the ProfESus teacher training course in 2018. For more inspiring learning activity plans and additional learning materials, please visit the ProfESus webpage <http://profesus.eu>.

4.3.1 Learning activity for different levels of age and different disciplines

Who is the winner in the food system and why it matters?

Author	School/Business	Country
Katja POLC, Master student of Management of sustainable development	University of Primorska	Slovenia

SUMMARY OF LEARNING ACTIVITY IDEA: The purpose of the workshop is to understand where our food comes from and who it produces. Youngsters will explore relationships between farmers, companies (supermarkets) and customers involved in the creation of a global food chain. They will be introduced to the concept of Fair Trade, its prevalence in our country and around the world, and how each of us can contribute to a fairer and sustainable world.

PROFESSIONAL SUBJECT/TOPIC: Economics, Food preparation

COURSE LEVEL

- Primary school
- Secondary school
- Vocational training/education

KIND OF COURSE

- Optional
- Interdisciplinary
- Cross discipline
- Presence phase

SHORT CLASS PROFILE (please indicate also number of students): 15 young females and males from small city Trbovlje in the youth centre

**CLASS LEVEL/AGE: 15- 18 years****Pre-conditions: (which competencies/knowledge/skills students learned before)**

- Youngsters know the processes of producing the food – intensive farming, organic farming, perm culture
- Youngsters knows the differences between locally and globally produced food
- Youngsters know the concept of zero miles

Classroom conditions

Technical equipment: PROJECTOR

Material/lesson and presentation equipment: Board, world map, sticky papers, pens, papers with descriptions of the roles, evaluation paper, flip chart.

TIMETABLE FIT:

Number and duration of lesson units: 90 minutes

DATE OF SCHEDULED LESSON: 28.5 2018

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

Perspective of the producers/farmers, processing companies, consumers

The youngster is able to identify his own consumer practices.

The youngster is able to understand perspectives of the producers/farmers, the processing companies and the consumers.

The youngster is able to understand social, economic and ecological implications of the food production chain.

The youngster is someone who knows and understands the fair trade food system.

The youngster is someone who can explain fair trade food system.

The youngster is someone who can find and use fair-trade products in his locality.

SUSTAINABILITY-RELATED AIMS in the context of the lesson topic:

2. The youngster understands interrelation of ways in which natural, social and economic systems function.
3. The youngster understands responsibility for nature between generations, as well those between rich and poor and between humans and nature.
7. The youngsters is able to understand root causes of unsustainable development and is able to describe it in a story.
17. The youngster is someone who knows how engagement in real-world issues enhances professional development and helps the vocational student to make a difference in practice.
30. The youngster works with others in a way that challenges unsustainable practices across the work environment.

DETAILED PROCEDURE OF LESSON STAGES

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
1. (10 min)	The youngster is able to identify his own consumer practices	The youngster understands the interrelation of ways in which natural, social and economic systems function	Before we start the workshop: Presentation of the participants/students of the workshop who tell their name and what they ate today for breakfast, the workshop leader writes answers on the board The world in my shopping bag To the answers that we wrote on the board (what we ate for breakfast) we try to identify the origin and show the country on the map. We also ask students/participants: How far is that? How long did it take to come to the supermarket? Optional: Show them the Powerpoint about banana chain if there is a need.	World map
2. (30 min)	The youngster is able to understand perspectives of the producers/farmers, the processing companies, the consumers The youngster is able to understand social, economic and ecological implications of the food production chain	The youngster understands the interrelation of ways in which natural, social and economic systems function The youngster understands the responsibility for nature between generations, as well those between rich and poor and between humans and nature	The banana chain game (description below the table) Divide the group into five smaller groups. Ask young people about the role of plantation owners, plantation workers, distributors, importer and supermarkets Each group is assigned one of the roles (To help them, distribute a card describing their role). Tell them that the price of one banana is 1 euro. They must agree among themselves about the proportion for each group - the owner of the plantation, workers, distributors, importer and supermarkets. The workshop manager/teacher is only a moderator. The group has 10min minutes to determine the percentage/cents that their group should receive. After that each group present the percentage. Most probably, it will be above 100%. Now all together have to negotiate the percentage/how many cents their group gets (15min) so that they reach a 100%.	The papers with description of the roles, projector
3. (20 min)	The youngster is able to understand perspectives of the producers/farmers, the processing companies, the consumers The youngster is able to understand social, economic and ecological implications of the food production chain. The youngster is someone who knows and understands the fair trade food system	7. The youngster is able to understand the root causes of unsustainable development and is able to describe it in a story	Understanding the fair trade concept At the end of the game, when they announce their decision, ask them: On what basis did you decide? Was it difficult? What has affected your decision? Is there really the same distribution of shares in reality? Finally show them a picture with real proportions in the global retail chain of bananas (Picture below) Is such a division fair? Who benefits most, who the least? After the conversation you can show them the video about fair trade, if it is needed – https://www.youtube.com/watch?time_continue=65&v=7K4G5-ydh50	

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
4. (25 min)	<p>Youngster is someone who can explain the fair trade food system</p> <p>Youngster is someone who can find and use fair-trade products in his locality</p>	<p>17. The youngster is someone who knows how engagement in real-world issues enhances professional development and helps the vocational student to make a difference in practice.</p> <p>30. The youngster works with others in a way that challenges unsustainable practices across the work environment.</p>	<p>It's time for a change!</p> <p>Ask youngsters if they can see the FAIRTRADE mark. Have you seen this before? Where have you seen it? Do you know what it means?</p> <p>In groups (3-5 youngsters) discuss:</p> <ul style="list-style-type: none"> Have you seen this label in the shops where are you buying with your family? Where does the food come from? What kind of products is your family buying? Why do you think it is important to buy fair trade? Which are common products that have this label? <p>Imagine a Banana (Fruit) fairtrade smoothie/milkshake</p> <p>In the groups they define what everything they would put in the smoothie or milkshake and how it will be different from the "ordinary" one. (Teacher has to identify if the youngsters/students have been able to identify other advantages of fair trade food – like the healthy, eco aspects,...)</p> <p>Each group presents their flipcharts with smoothie (10 min)</p> <p>Homework* Identify fair trade products in the supermarket where you usually shop and write down the name of the products and their origin. Also get to know other labels which you can find on local products and identify their meaning – internet. (Find the sheet below)</p>	<p>Flipcharts</p> <p>Pens</p>
5. Evaluation (5 min)			<p>Evaluation method: SEMAPHORE</p> <p>Green: What did I learn that was new?</p> <p>Yellow: What is my opinion about fair trade?</p> <p>Red: What I don't agree with</p>	<p>Paper</p> <p>pens</p>

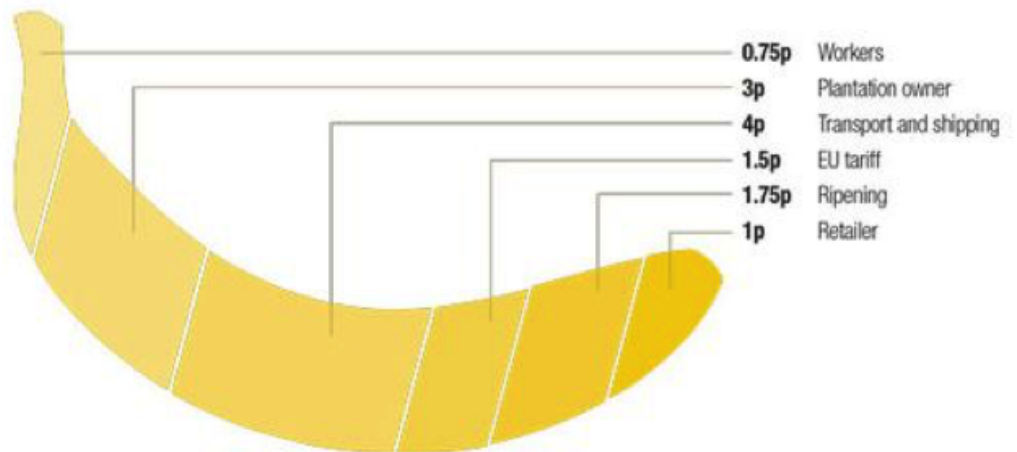
ROLE PLAY CARDS FOR BANANA GAME

Plant worker	Owner of the plantation	Shipper and importer	Shops and supermarkets	Distributor
<p>You work 12–14 hours a day, you have to work hard in an extremely hot climate.</p> <p>Your work includes:</p> <ul style="list-style-type: none"> • Choosing the best bananas. • Cleaning bananas – you have wet hands and clothes all day. • Banana cutting – you have to carry on your back • Heavy bean bananas weighing up to 50kg. • Spice and spraying with pesticides – it can be severe • endangers health because it causes diseases such as cancer. • Pesticides also sprayed by airplanes, so it is very likely that the wind will spread them to your home or school. <p>Worries: Will you have enough money to buy food?</p> <p>You do not have enough money to pay medical bills and send your children to school. Planters can prohibit you from meeting with other workers in order to complain about the underpaid salary together, and poor working and living conditions. They will try to prevent you from joining the union.</p>	<p>You have plant maintenance costs: You need to buy expensive pesticides, buy fuel, tools and machines and pay workers.</p> <p>Legal costs: If these workers sue you for accidents at work, you have to pay expensive attorneys.</p> <p>Waste: The rules in most European countries is customer preferences demand “perfect fruit”. No damage to the peel, the correct shape of the fruit, etc. This can only be achieved with a lot of pesticides, skills and money. If your banana-as do not meet the necessary standards, you must discard them, which can cost you a lot of money.</p> <p>Risk: You bear costs in the event of a bad harvest because of storms, insects...</p> <p>Investments in modernization: You need a lot of money to buy and maintain cutting-edge machines and track new ideas, so that you can compete with other plantations.</p> <p>Costs of the soil: if bananas are grown for a long time, there are fewer nutrients in the soil. You must either buy expensive fertilizers or buy new land.</p>	<p>You are facing the following costs:</p> <p>Ships: The purchase and maintenance of large cargo ships costs a lot of money.</p> <p>Fuel: You have to pay for shipping fuel – the journey between Latin America and Europe can take up to five weeks.</p> <p>Insurance: if the cargo is damaged or lost, you have to pay back the damage.</p> <p>Cooling: Bananas are stored in huge refrigerators during transport, so that they would not start maturing during sea transport. If they started maturing on ships, they would start to rot in stores soon.</p> <p>Contract: You must promise to the plantation owners that you will buy from them every week a certain amount of bananas.</p> <p>Imports: If you import bananas into the European Union, you must pay a high import license fee</p>	<p>You are facing the following costs:</p> <p>Staff: You have to pay people who work in your shops.</p> <p>Current costs: You must pay bills for electricity, water, transport, packaging</p> <p>Competition: You need to try new ideas, perhaps build larger stores, buy new equipment – all in order to earn more money and stay in business.</p> <p>Risk: If bananas are bad or if they are too mature when they arrive on the shelves, your customers will not be satisfied. They can even choose not to buy in your store anymore.</p> <p>Advertising: It is necessary to advertise products that you sell, so that buyers will know what you are offering and how good your store is. If your commercials are good, buyers will prefer to shop in your store, rather than others</p>	<p>You are facing the following costs:</p> <p>Routers: Importers “need” large business premises for doing his job. Bananas should be stored at a suitable temperature. You need to start the process of towing with the addition of ethylene gas.</p> <p>Contracts: You must promise the supermarkets that you will deliver them as many bananas as they need each week. You must keep your promises, no matter what happens – even if you are not guilty of a delay.</p> <p>Maturing gas: Large quantities of ethylene are used to ripen bananas.</p> <p>Packing: After bananas are mature, they need to be repackaged. You have to pay for the material for packaging and workers who pack them.</p>

Ressource in Slovenian:

<http://focus.si/wp-content/uploads/2017/01/Sadje-naj-bo-pravicno-ld.pdf>

These figures represent the share of total value - not profits - from a conventional banana from Ecuador sold at 12p in a UK supermarket:



Ressource:

<http://www.bananalink.org.uk/who-earns-what-from-field-to-supermarket>

HOMEWORK SHEET FOR THE SHOPS:

Product with a fair trade label	Country of origin	Price compared with the price of product without fair trade label

PRODUCTS WITH OTHER LABELS:

Product with a label – write which one, what does it mean	Is it a product local/ from our country/EU	Price compared with the products without labels

SUBSIDIARY AIM(S): See above

PROCESS OF ASSESSMENT FOR LEARNERS MINDSET OUTCOME:

Indicators for a sustainable mindset

Decision making: Creating real or flipchart fair trade smoothie

Discuss: Environmental, social and economic dimensions of current food production system. Discussion about a similar food production system in your locality.

Planning: Think how you could optimize/make fairer the current food production system. Plan how could a local system be more functional in your locality.

Reflecting: your and your family's daily/weekly/monthly groceries shopping list and the products that you buy – where are they from, what labels do they have? What are the reasons for buying these products?

Transforming: Identify fair trade products in the market that you usually shop. How many products can you afford/are you able to adopt and buy fair trade? What are other options to make your shopping list more sustainable?

Action: Rewrite your own shopping list. Create a fair trade smoothie event in your school/locality. With your friends create a survey on people's shopping habits and identify possible ways of transforming their consuming habits.

ProfESus Perspective:

The LAP **Who is the winner in the food system and why it matters?** focus on the key topics of sustainable consumption and production - social, environmental and economic implications of consumption. Important aspects for active learning and learner centred methods are considered. The LAP also reflects the different levels of a sustainable mindset including value thinking. Different learning steps of the Green Pedagogy are planned. With an additional focus in the Green Pedagogical Learning steps for example - a provoking introduction could have increased the motivation and interest of the learners.

4.3.2 Learning activity for secondary schools and vocational schools in different disciplines

Virtual Water

Author	School/Business	Country
Julia Knogler	University College for Agrarian and Environmental Pedagogy	Austria

SUMMARY OF LEARNING ACTIVITY IDEA:

After a brief started with “direct water consumption”, I focused on my actual point “indirect water consumption” (= virtual water). That topic is way more important than discussing whether and how water should be saved in Austria. When it comes

to water saving, most think about the tap in their own house instead of “water-consuming” consumer goods. Here I want to trigger an “aha effect”. I worked with four worksheets divided into four stations. In between, the students changed tables and each table offered a new subtopic on “Water and Lifestyle”. The worksheets are kept simple and have working instructions. For “Virtual Water” I used practice-oriented methods to build on the living environment of students.

PROFESSIONAL SUBJECT/TOPIC:

COURSE LEVEL: Secondary school

KIND OF COURSE: Interdisciplinary

SHORT CLASS PROFILE: 16 female students, technical school for horse industry, elective class: horse tourism (includes topics like “Healthy eating”, “Food and beverage service”, “Business organization”, “Buffet design”, “Guest accommodation”, “Event management”)

CLASS LEVEL/AGE: 14-15 years old, 2. grade of technical school

Pre-conditions:

They have already had one year ecology, IT and their elective classes.
They are able to do research on computers on their own.

Learning environment conditions

Technical equipment: computer, projector, student tables + computer in IT-room
Material/lesson and presentation equipment: worksheets for stations, game materials,

products: 1 apple, 1 tea, 1 potato, 1 cup sugar, 1 cup coffee, 1 cup rice, 1 t-shirt, 1 pizza, 1 chocolate bar, 1 picture of beef, 1 cup pasta, 1 cucumber, 1 cheese, 1 banana, 1 picture of pork, 1 bread, 1 butter, 1 orange,

16 cards, 16 leaflets,

TIMETABLE FIT: 4*45 minutes

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

The students

- recognize the importance of virtual water and reflect their consumption behaviour.
- are able to independently develop a topic using online search engines.
- strengthen team spirit through group work.
- act independently and self-responsibly and can divide time correctly

SUSTAINABLE COMPETENCES

	HOLISTIC APPROACH Integrative thinking and practice	ENVISIONING CHANGE Past, present and future	ACHIEVING TRANSFORMATION through personal development and the work environment
Learning to know The professional understands...	the responsibility for the nature between generations, as well as those between rich and poor and between humans and nature, the water situation in Austria and worldwide, the global coherences with virtual water	and the SDG 6 (Clean Water for All) and become aware of the need for action and is able to react on the urgent need for change in a professional-situation from unsustainable practices towards advancing quality of life, equity, solidarity, and environmental sustainability.	and is able to transform the work context to support sustainability; and is able to support colleagues and stakeholders to meet new challenges;
Learning to do The professional is able to...	create opportunities for sharing ideas and experiences from different disciplines/places/cultures/generations without prejudice and preconceptions;	communicate in sense of urgency for change and inspire hope; facilitate the evaluation of potential consequences of different decisions and actions;	assess outcomes in terms of changes and achievements in relation to sustainable development.
Learning to live together The professional works with others in ways that...	supports collaboration actively in different groups across generations, cultures, places and disciplines	facilitate the emergence of new worldviews that address sustainable development;	challenge unsustainable practices across the work environment; help work colleagues and guests clarify their own and others world views through dialogue, and recognise that alternative frameworks exist;
Learning to be The professional 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 able to be a critically reflective practitioner; is able to be engaged with work and colleagues in ways that build positive relationships.

DETAILED PROCEDURE OF LESSON STAGES

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
10:05 – 10:10 10 min			greeting, introduction	
10:10 – 10:30 20 min	think about the importance of water in different professions	recognize how the absence or presence of water affects us	Game “who am I”, professions with water	Game cards, stickers
10:30 – 10:35 5 min	reflect their own consumption on an average day	know about the water situation and water consumption in Austria	Estimate-question: “How much water do you need a day?” Collecting the answers + my answer on the board + input: average Austrian needs 135 L water directly	16 Blank cards My card
10:35 – 10:40 5 min	think about different lifestyles and climate requirements	know about the water situation in the world	Estimate-question: “How much water does a teenager your age in Haiti need a day?” Collecting the answers on the board + input: Haiti 19 L, Dubai 500 L, USA 295 L, Tanzania 20 L, India 25 L, Japan 270 L	16 Blank cards
10:40 – 10:45 5 min	collaborate with colleagues and discuss openly	reflect & share their own opinion on the topic	Discussion about results	
10:45 – 11:45 60 min	strengthen team spirit through group work.	know the SDG 6 (Clean Water for All) and become aware of the need for action.	working stations about different topics: How much water do we need? Enough water for all? water on the earth, SDG 6...	worksheets on stations, 1 blank sheet for each student
11:45 – 11:55 10 min	train their presentation skills	strengthen their learning output on the issues	Teacher goes to stations and talks about the right answers for the worksheets. Then every group presents their & topic answers to the whole class.	
11:55 – 12:05 10 min			break	
12:05 – 12:15 10 min	cross-link the new topic to their own professional field	recognize the importance of virtual water and reflect their consumption behaviour.	Video input, new topic virtual water www.youtube.com/watch?v=fY5OKdvXydl	Projector, computer
12:15 – 12:30 15 min	cross-link the new topic to their own professional field	perceive the global coherences with virtual water.	Input virtual water, water footprint	Projector, computer, PowerPoint presentation
12:30 – 12:50 20 min	are able to independently develop a topic using online search engines.	recognize the importance of virtual water and reflect their consumption behaviour.	Research on waterfootprint.org/en/resources/interactive-tools/product-gallery/water-footprint-of-products	Food, non-food products, computer
12:50 – 13:20 30 min	strengthen team spirit through group work.	recognize the importance of virtual water and reflect their consumption behaviour.	Group game “guess how much water is in...?”	Game material
13:20 – 13:40 20 min	stabilize their new knowledge about virtual water	strengthen their learning output on the issues	Kahoot game with smartphones about learning outcome	Projector, computer, students’ smartphones
13:40 – 13:45 5 min			goodbye	

SUBSIDIARY AIM(S):

Through the lesson the students should reflect the behaviour of their own lifestyle and recognize connections with the situations of other young people in other regions of the world. The students should become aware of how their own consumption decisions affect global water distribution.

SET OF QUESTION FOR STUDENTS SKILLS OUTCOME:

Planning and decision-making: You need to go grocery shopping for 5 Chinese guests. Do you know about the virtual water issue, what will you watch out for? Where will you do your research?

Indicators in the sector **Knowledge:**

- knows how to get information about water and transfers that knowledge to the shopping list

Indicators for sector **decision-making** (knowledge, skills, values and sustainable mindset) (e.g. 10 Points)

Reflecting: Your guests saw you researching for virtual-water-less products and ask you about your motivation. How do you reply?

Indicators (knowledge, skills, values and sustainable mindset):

- ecological, ethical and social aspects of global virtual water usage
- a few numbers or examples of typical groceries

Discussing: Discuss with your guests the worldwide issue of water shortage and distribution (collaboration and communication) – no grading just to widen their individual horizon and fostering the mindset

All above mentioned indicators can be used especially for the assessment of the sustainable mindset.

Transforming: What other aspects could you take into account, to make your guest-house more ecological? (Brainstorm)

Indicators for a sustainable mindset:

- less garbage, less plastic, more recycling
- fewer animal products
- improve energy use, reduce CO₂
- inform guests about sustainable actions

**Follow Ups/Variations:**

https://www.youtube.com/watch?v=t3_JDd9kpbg

Animated map of global water scarcity. Water is taken for granted by most Central Europeans. Even though we are regularly committed to saving water, it rarely occurs to us that it could become scarce. It will be possible to make better connection with the work in the original LAP with everyday life and the student's own life through this video.

Anticipated problems and suggested solutions:

I wanted to avoid open questions in plenary, because I was afraid there would not come an answer. Instead I forced group work and partner discussions and tried to use creative work methods and group games. The class is usually bigger, I only had a part of the class. It was more relaxed to do the exercises on a smaller scale, such as in the working stations.

ProfESus Perspective:

The LAP **Virtual Water** picks up an important theme of sustainable consumption and production. It considers all dimensions of the learning process comprehensively. The learning activities are well planned with different innovative methods, which are indeed learner-centred and stimulating. The LAP considers well the Learning Steps of the Green Pedagogy although they are not specially indicated.

4.3.3 Learning activities for vocational schools in different disciplines

Sustainable Mindset – Growing the future:

Author	School/Business	Country
Christine Atkinson waotuzanzibar@gmail.com	Chako is a social, creative and environmental enterprise located in Zanzibar, Tanzania. They employ youth and women who create beautiful interior design products from recycled bottles, paper beads and dhow sails. chakozanzibar.com	American living in Zanzibar

SUMMARY OF LEARNING ACTIVITY IDEA:

During these lesson units the students will discover what a sustainable mindset is and ways to promote this type of thinking. They will learn about their role in the input and output of consumption and waste. They will explore the concept of zero food waste, including composting and other uses for leftover food, using food waste productively. Finally, they will learn how composting can be a green entrepreneurship and creates a circular economy. We will find solutions using realistic planning and various thinking strategies.

PROFESSIONAL SUBJECT/TOPIC:

COURSE LEVEL: Vocational training/education

KIND OF COURSE: Blended course

SHORT CLASS PROFILE

Male and female vocational training students, who are enrolled in a program through EqwipHubs, a Canadian NGO here in Zanzibar. Some will have completed the program and are an alumni group forming an environmental club; and the others are just beginning the program learning job skills or basic entrepreneurship. 30 students

**CLASS LEVEL/AGE: 18-35****Pre conditions:**

- Students have a basic understanding about their environment.
- Students know the different types of waste produced and their input.
- Students have a basic understanding about ways they can be more sustainable.
- Students know the connection of their actions and the environment.

Classroom conditions

Technical equipment: Computer, data projector and screen

Material/lesson and presentation equipment: Photocopies of values translated into Swahili, dry erase board/chalk board, pens/chalk, soil/compost samples, samples of organic items to be composted and items that cannot be composted, samples of reuse/repurposing and materials to build composting bin as per plenary discussion and design thinking.

TIMETABLE FIT:

Series of 3 different lessons starting with building a sustainable, mindset, composting, and green economy.

2 units on sustainable mindset- 90 min planned, however the lesson will be translated into Swahili so the allotted time is closer to 3 hours. This gives a buffer for internet not working, power outages and so forth. This is the first instalment that will be delivered in May.

2-3 units on composting and using it as a green entrepreneurship- 90 minutes planned with translation after the end of the course. This is due to the fact of the timing of Ramadan, needs of the NGO to do a thorough waste assessment and to create an agency policy. I will also be collaborating with another entity, the Permaculture Institute of Zanzibar to teach the composting and this takes time to coordinate as well. Final lesson plan has yet to be completed, only outline and introductory meeting with composting instructor at Permaculture Institute. I am still waiting for EqwipHubs to get back to me regarding continuing this workshop series.

DATE OF SCHEDULED LESSON:

May 9 and 14, 2018 to start, rest of the lessons to be determined

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

(description of the competences, which should be reached to improve professional action)

1. The vocational student is able to define a sustainable mindset and can provide ways to promote this type of thinking.
 - Discovery of how your mindset is formed, shifted or transformed.
 - Exploring the 3 pillars of sustainability and what that looks like in Zanzibar.
 - Look at the 5 perspectives of sustainability and why it is important.

Learn how we can promote sustainable thinking ourselves.

2. The vocational student is able to state their role in input and output of consumption and waste.
 - Students will reflect on sustainable activities and how they are currently disposing of waste.
 - Students will explore possible scenarios of reducing waste in their home, school and work.
 - Resource management
 - 3 R's and the 6 R's
3. The vocational student is able to learn how to use food waste more productively and why it matters.
 - What is compost and its benefits.
 - Compost can be the key to nutrition.
 - How to set up a composting system using design thinking.
 - How to compost and what to use.
 - Quick start up guide and the fine details.

3R's and 6R's

3R's = reuse, reduce, refuse

6R's = rethink, refuse, reduce,
reuse, recycle, repair



4. The vocational student is able to discover how composting is a green entrepreneurship.
- Ways to use finished compost.
 - Exploring a circular economy.
 - Look at systems thinking, strategic planning, future planning and values thinking to discover how they can fit into the system of a green economy.
 - Think tank of ideas in how to start a green entrepreneurship using compost or other sustainable green businesses.

****Has yet to be completed****

SUSTAINABILITY RELATED AIMS in the context of the lesson topic:

The vocational student is able to define a sustainable mindset and can provide ways to promote this type of thinking.

The vocational students understand their relationship within their environment and the impacts they have as a consumer.

The vocational student is able to facilitate the evaluation of potential consequences of different decisions and actions.

The vocational student is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally.

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Confrontation/ Problem analysis (15 min)	The vocational student is able to define a sustainable mindset and can provide ways to promote this type of thinking.	Students will have an awareness of what sustainability means and how our mindset is created or changed.	There will be a facilitated plenary discussion about sustainability and your mindset. Students will watch a video regarding sustainability and the funnel example to stress how there is no better time than now to act. A PowerPoint presentation will be used to highlight the main points of discussion. Examples used for each pillar and perspective of sustainability will be relevant to residents of Zanzibar. Personal story shared to demonstrate how my own mindset was shaped to encourage sharing and establish a connection.	Computer, data projector, screen and dry erase board or chalk board with markers or chalk.
Reconstruction/ Research (15 min)	The vocational student is able to state their role in input and output of consumption and waste.	Students understand their relationship within their environment and the impacts they have as a consumer.	Students will participate in a facilitated plenary discussion exploring ways to be more sustainable at home, school and work after they have been in groups to brainstorm ways to be more sustainable in all aspects of their life. Each group will come up and present some topics putting them on the board. Next group must not duplicate an idea already there. Students will work first individually then in groups to look at their value system, which impacts their role as a consumer. A PowerPoint presentation will be used to highlight the main points of discussion. Examples will be relevant to residents of Zanzibar.	Computer, data projector and screen. Dry erase board or chalk board with markers or chalk.
Intervention/ Provocation/ Irritation (20 min)	The vocational student is able to use food waste more productively and why it matters.	The vocational student is able to facilitate the evaluation of potential consequences of different decisions and actions.	Facilitated plenary discussion of the benefits of composting and what to compost. Students will view a video in Swahili on composting. Students can view samples of compost and will be able to see the difference in the soils. Students will be able to see examples of items that can and cannot be composted. A PowerPoint presentation will be used to highlight the main points of discussion. Examples used will be relevant to residents of Zanzibar.	Computer, data projector and screen. Soil samples; one with compost and one without. Sample of just compost. Samples of organic matter that can be composted and samples of items that should not be composted. Dry erase board or chalk board with markers or chalk.

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Interaction/ Analytical discussion (15 min)	The vocational student is able to plan, construct and implement a compost system for Ekwiphubs and the Vocational Training Authority of Zanzibar.	The vocational student is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally.	Students will participate in a design thinking activity facilitated by the teacher to establish the best system for the class. Students will then use materials provided to design and create a composting system. Facilitated plenary discussion of the Ekwiphubs waste plan, their waste audit and how compost will be collected.	Materials for the composting bin as decided by the class. Shovel, rake, or hoe.
Deconstruction/ optimised result (15 min)	The vocational student discovers ways how composting can be a green entrepreneurship.	The vocational student is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally.	Facilitated plenary discussion about ways to use finished compost. Students will view a video demonstrating how the European Union is creating a circular economy by eliminating plastics by 2030. Students will learn about other examples of a circular economy in Mwanza, Tanzania. A PowerPoint presentation will be used to highlight the main points of discussion. Examples used will be relevant to residents of Zanzibar.	Computer, data projector and screen. Pictures of Mwanza examples. Dry erase board or chalk board with markers or chalk
Reflection/ Evaluation (10 min)	The vocational student is able to use systems thinking, strategic planning, future planning and values thinking to discover how they can fit into the system of a green economy.	The vocational student is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally.	Facilitated plenary discussion about the various strategies for thinking and planning. Students will break up into groups of 3-5 to discuss ways they can use compost in a green entrepreneurship or other green entrepreneurship ideas. After 10-20 minutes groups will present their ideas to the class using a flip chart paper or chalkboard. A PowerPoint presentation will be used to highlight the main points of discussion. Examples used will be relevant to residents of Zanzibar.	Dry erase board or chalkboard with markers or chalk. Flip chart paper and pens.

PROCESS OF ASSESSMENT FOR STUDENTS MINDSET OUTCOME

Process will be similar to example. Discussion, reflection and transformation happening during the sustainable mindset portion. While the decision making, planning and action will be during the composting and green entrepreneurship section. If the students see value in composting and increase their knowledge and skills in ways to be sustainable the class will be considered successful. The last section will involve collaboration in constructing the compost bin and creating a design. With final think tank discussion on ways to begin a compost business and establishing a network.

Planning and decision-making (e.g. 24 Points): The responsible person for the construction of the compost bin will get all supplies. The planning and decision making will be a group effort in design and usage of available materials.

Indicators in the sector Knowledge (e.g. 9 Points):

- Understanding of ways to be sustainable
- Understanding of what compost is and its importance
- Understanding of how to compost and the process of maintenance
- money/costs
- waste

Indicators for the sector Skills (e.g. 5 Points):

- Constructing a compost bin
- Creating a rotation for the compost and system for collection

Indicators for sector **decision-making** (knowledge, skills, values and sustainable mindset) (e.g. 10 Points)

- right selection of materials for the construction of the compost bin and the organic material to be used to start it.

Action: Construction of the compost bin will take place at EquipHubs near their garden area.

Reflecting (e.g. 25 Points): Students will reflect on ways that composting can be a green business and brainstorm entrepreneurship opportunities.

Indicators (knowledge, skills, values and sustainable mindset):

- positive ways to utilize food scraps, waste and organic material
- sustainable aspects of composting and other practices that can make an impact
- economic aspects of a circular economy

Discussing: Discuss with your learner colleagues why we need to promote a more sustainable mindset and real-world application- no grading just to widen their individual horizon and fostering the mindset

All above mentioned indicators can be used especially for the assessment of the sustainable mindset.

Transforming (e.g. 15 points): Which additional aspects do you have to consider to shift your mindset and live more sustainably.

- Waste management
- Productive ways to use food waste
- less water usage,
- less energy usage,
- less carbon emission, less waste,
 - strengthen the local producers and businesses and foster local product chains,
 - secured local workplaces
 - healthy consumers/guests/occupant,
 - Increased awareness for sustainability,
 - animal well-being, environmental hygiene,

Follow Ups/Variations:

I most definitely feel I approached the learning activity with the idea of promoting a sustainable mindset. I wanted to promote sustainable thinking but exposing students to new ways of thinking, realistic examples, hands on activities and future planning. It was a challenging learning activity because it was not in my native language and I was at the mercy of my translator to adequately relay what I was saying. That being said, I know that the students I was teaching were grasping what a sustainable mindset was when the plenary discussion was spot on. Starting with a discussion of what is a mindset and how it is formed had generated wonderful stories that ranged from learning about gender equality, respecting everyone, while another became emotional over my story. In discussion about ways for the planet to be more sustainable this was really where it got interesting. There were times of enlightenment, learning about new practices such as solar farms and silvopasture. It was great to see things changing for them and ideas starting to form. Other topics such as educating girls and family planning demonstrated that there still is a long way to go in terms of shifting some mindsets. It seems to be more of a cultural thing here though, because Zanzibar has traditionally been a patriarchal society.

... a great plenary discussion outside the comfort-zone and the ecological footprint to find out a better way!

I think I did a good job meeting most of the criteria for my sustainable activity, at least in theory. There were some things that I had planned that were not able to happen due to the amount of time that the translation took and the fact that both workshops started half an hour late. I had more group activities and active learning planned but was not able to get to it, so that could be improved by shortening the lecture-based material or even cutting out some information presented. This is a critical component for the lesson. There was great plenary discussion though that actually took longer than anticipated, but it is difficult to stop the flow. I feel another area I could improve on is the transgressive learning. While a lot was going outside of their comfort zone, I think there could have been more visual and hands on examples. I had wanted to calculate our ecological footprint, but due to slow internet this did not work. I need to find a better way to produce similar results within the confines of our situation. We were able to do some deeper learning when it came to uncovering our values, but I was not able to get to the final part with the SDGs. Again, time was a factor, so I need to reshape the entire lesson to fit within the confines of translation and starting late. Nothing here seems to start on time. One thing that did work very well was my use of realistic situations and examples for the students to relate to, this helped to improve understanding and created a great discussion.

Some of my own evaluation included adding more photos and more ideas to create their own rocket stove. Polling questions did not work well, perhaps were lost in translation. We had a great discussion about what shaped their mindset and students shared some wonderful, personal stories. During our discussion about waste at home, one student talked about how they are composting; but no one discussed how they are really taking care of their trash. I need to have a better example for strategic thinking, eco-labeling was difficult to understand. There were a few more things that would have been helpful to have translated prior. The first session was 1 hour shorter than I was anticipating, which changed how much I was able to get through. We had a very enlightening discussion regarding Paul Hawken's methods to reduce greenhouse gases and to build sustainability. When it came to reduced food waste, this was difficult concept for the students to grasp. This is a culture thing. They do not save left over food and were somewhat resistant to this idea and they argued that it wouldn't be good and they didn't know how to use them. There was quite heated discussion regarding educating women. There were some male students that felt it was ok for girls to get an education, but that their place was in the home. They argued if you are having babies, who is going to take care of these babies. Childcare can be an issue if no family is around. Family planning was another hot topic as large families are expected in this culture and if you do not have very many you are seen as a lower status. I would take out my section on scenarios,

it is not necessary and would allow more time to focus on active learning and group activities. Overall, I felt the material was well received based on discussion and feedback from students. There are definitely some changes I would make in terms of shortening the lecture and amount of material presented so that students could participate more in active learning and group activities.

The next series of lessons will be planned later; and will be more hands on when we talk about composting and build a compost bin. When we explore composting as a green business that will allow for much deeper learning.

Anticipated problems and suggested solutions:

Internet is a problem here, as well as power outages. Videos will not be critical to the discussion and lesson, but an additional resource. In case of power outages a written presentation will be made available for students to follow.

OTHER RESOURCES/MATERIALS/lesson outcomes:

One group receiving these lessons will utilize the information gained to create a foundation for an environmental club they are forming. The hope is also that some students may pursue some type of green entrepreneurship and all will work at creating less food waste in their lives.

Resources: Home Composting Made Easy by C. Forrest McDowell and Tricia Clark-McDowell and Backyard Composting: Your Complete Guide to Recycling Yard Clippings.

Materials provided through ProfESus course.

ProfESus Perspective

The LAP Sustainable Mindset - Growing the future is very ambitious. Considering the conditions in Zanzibar awareness building of a sustainable mindset is a totally new cultural approach. In correlation with the waste and compost aspects, the content of the lesson is very useful for the learners. As already reflected by the teacher the lesson plan could have included more learner-centred activities and methods. Thus the learning steps could be more effective. The LAP includes detailed reflections and demonstrates that the teacher has developed the key UNECE competences.

4.3.4 Learning activities for vocational education in household management**The good is so close.****A meal for the parents entitled “Spring in the Marchfeld (region in Lower Austria)”**

Author	School/Business	Country
Ing. Caroline Kittl, BEd. caroline.kittl@lfs-obersiebenbrunn.ac.at	Landwirtschaftliche Fachschule Obersiebenbrunn (Agricultural collage Obersiebenbrunn). This school is a vocational school specializing in household management and agriculture	Austria

SUMMARY OF LEARNING ACTIVITY IDEA:

In this lesson, students have the opportunity to get to know the diversity of the region better. Students should create a 2-course meal in groups of three. This menu should be regional and seasonal. This menu must consist of at least 80% of regional foods (produced within 100 km.) In this lesson, students have the opportunity to create a healthy and sustainable menu and apply the criteria in concrete planning situations.

PROFESSIONAL SUBJECT/TOPIC:

Interdisciplinary with housekeeping, nutrition and ecology/The regional and seasonal menu

COURSE LEVEL: Vocational training/education**KIND OF COURSE: Presence phase**

SHORT CLASS PROFILE: 13 students female and male in rural areas in a vocational college

CLASS LEVEL/AGE: 2nd year/15 – 17 years

Pre conditions:

- Students know the meaning and effect of nutrients in the human body.
- The students know the basic criteria for the menu planning (food pyramid, regional and seasonal selection)
- The students are familiar with the relationships between individual consumer behaviour and its impact on the environment (eg calculation of the ecological footprint with the online tool)



- The students can work as a team
- The students know the basic rules of service and customer service
- The students can do research with the computer and create a work plan.

Learning environment conditions

Technical equipment: Beamer, PC, blackboard

Material/teaching and presentation technique:

Worksheets with meals, coloured maps, markers, pens, pin boards, cookbooks and examples, analysis template for the menu analysis, blackboard or flipchart, fully equipped school kitchen, student PC room, dining room (with cutlery, glasses, plates, etc.)

Material/lesson and presentation equipment: Flipchart, computer including internet, pens, paper, cards, folder

TIMETABLE FIT:

Number and duration of lesson units

- 145 minutes
- More hours to implement the learned material
- 4 contiguous units of 50 minutes each = the planning phase
- 8 contiguous units of 50 minutes each = the implementation phase

DATE OF SCHEDULED LESSON: 23.05.2018; the planning phase =24.05.2018; the implementation phase =29.05.2018;

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

(Description of the competences, related to the professional field, which should be reached to improve professional action)

- b) The vocational students can create a regional and seasonal menu.
- c) The vocational student can evaluate food according to the criteria for a healthy diet in the context of the production chain.
 - Perspective of the producers/farmers, the processing companies, the consumers
 - Perspective related to individual health and consumers (including lifestyles, taste, enjoyment,...)
 - Social, economic and ecological implications

c) The vocational student is able to evaluate menu plans related to healthy and sustainable criteria.

- Ecological and seasonal food
- Preference of low processed food
- Fair trade food
- Resource management
- Enjoyable gastronomic culture

SUSTAINABILITY RELATED AIMS in the context of the learning activity topic based on the [UNECE 2011 competences](#) for sustainable education (see Annex 1)

- e) The vocational student understands the connection between sustainable futures and the way we think, live and work;
- f) The vocational student is able to facilitate the evaluation of potential consequences of different decisions and actions;
- g) The vocational student works with others in ways that facilitate the emergence of new worldviews that address sustainable development;
- h) The vocational student is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally;

DETAILED PROCEDURE OF LESSON STAGES

Learning setting based on the didactic concept of Green Pedagogy

135 minutes (3*45 minutes)

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Confrontation/ Problem analysis (30 min)	The vocational student develops an awareness of the diversity of opinions, meanings and attitudes towards seasonal and regional products	The vocational student understands the connection between sustainable futures and the way we think, live and work;	As an introduction, I show the students television reports. The reports are from Austrian Television (ORF). Once a year, the ORF is focused on sustainability. This year's focus was from 23 May to 1 June. The program title was "Mother Earth". This year's main theme was "Look where your food comes from" Some short videos are viewed at the beginning. Two years ago, an experiment was started in Austria. For one year, families were only allowed to buy products within a radius of 100 km. These videos and reports should give the students an idea of what is possible.	https://www.mutter-erde.at https://www.youtube.com/watch?v=R1dFQC-uoa6Y https://www.youtube.com/watch?v=VM6BhwQpQd0 http://essperiment-oriniton.strikingly.com
Reconstruction/ Research (30 min)	The vocational student can select foods based on their regionality and seasonality.		What foods are currently growing, which farmers are producing which products? The students should find out about producers in the area by means of the internet and various brochures. All students work in groups (3 people) Task: Where can the food be bought? The direct marketers and their products are displayed on a whiteboard. Each group is assigned some communities and has to figure out which farmers produce which products.	<ul style="list-style-type: none"> https://www.regionmarchfeld.at/freizeit/essen-trinken/ Folder
Intervention/ Provocation/ Irritation (30 min)	The vocational student is able to recognise social, economic and ecological implications in the context of the product chain (food system).	The vocational student is able to facilitate the evaluation of potential consequences of different decisions and actions.	The student group tries to find out as much as possible about the production of the required foods through the internet resources of the producers. It is also possible to call the manufacturer for exact information on production, operation and product. Each group designs a poster about the producer and presents it to the entire class. A4	Working sheet; Poster, internet, ...

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Interaction/ Analytical discussion (20 min)	The vocational student derives additional quality criteria for menu plans and creates new dimensions of its evaluation.	The vocational student recognizes the emergence of new worldviews that address sustainable development.	Plenary discussion, facilitated by the teacher: More and more people are motivated to eat healthily and additionally support sustainable development. For this reason, the key question is: "Which criteria are relevant for your target group, to choose the right meal of the menu plan? The answers/criteria of students will be collected and integrated in the analysis template. All students will update their list with the new and additional sustainable aspects for menu plan evaluation. In a plenary discussion, a dish is invented and created which exclusively consists of foods originating from Obersiebenbrunn.	Flip chart/black board Analysis template completed by students
Deconstruction/ optimised result (25 min)	The vocational student is able to evaluate important diets based on the criteria for healthy nutrition. The vocational student is able to plan a sustainable meal.	The vocational student is someone who is motivated to make a positive contribution to other people and their social and natural environment, locally and globally;	Each group creates a menu (2 courses, appetizer or dessert and a main course) based on the previously presented food. These menus will be presented to the other groups and it will be discussed together if all foods are available regionally and seasonally. The students should also try to find suitable drinks.	Coloured round cards, markers; "sustainable meal" template
Reflection/ Evaluation (10 min)	The vocational student is able to reflect on the effects of sustainable action on the menu planning and to develop realistic ideas for the implementation at the parents' dinner.		The students discuss possible effects of the possibility where all guest-oriented businesses support healthy and sustainable menu plans, and which new aspects they have learned during the exercise. It will also be discussed which concrete action ideas could be implemented in the daily professional work in a business.	Working sheet; Poster, internet, ...

**PROCESS OF ASSESSMENT FOR LEARNERS MINDSET OUTCOME (see Annex 2):**

Planning and decision-making (eg 24 points): The responsible person for the meal preparation asks you to create a menu sequence (2-course) for adults. Before you begin to create the menu in terms of requirements, please list the aspects that you will be considering

Indicators in the knowledge industry (eg 9 points):

- regional/seasonal
- Selection and quantity of food and ingredients
- Choice of food during the week
- Type of processing
- Time and equipment needed for preparation
- Nutrient
- Awareness of special needs or preferences (target group)
- Costs, money
- Waste

Indicators for the Skills sector (eg 5 points):

- Correct use of the menu template
- Completed menu template
- Sector decision indicators (knowledge, skills, values and sustainable thinking) (eg 10 points)
- proper selection of foods, foods, ingredients and processing methods in relation to all the above aspects
- Action: Must take place in the company or in practice.
- Reflect (eg 25 points): Present and explain your chosen menu. Please convince them with plausible arguments.
- Indicators (knowledge, skills, values and sustainable thinking):
- Health aspects, enjoyment and well-being for the elderly

- Sustainable aspects of the optimized weekly menu, such as type of production, transport, processing, energy consumption, water consumption and emissions, waste ...
- economic aspects such as costs, number of available employees
- What could be the effect, if all institutional households in your region adopt your criteria and considerations for menu planning?

Indicators for a sustainable mindset:

- less water usage, less energy usage, less carbon emission, less waste,
- strengthen the local producers and businesses and foster local product chains,
- secured local workplaces
- healthy consumers/guests/occupant, increased awareness for sustainability,
- animal well-being, environmental hygiene,

Follow Ups/Variations:

At any time of the year, consciously plan the seasonal and regional ones. Rework the menu and try to improve it. Respect for rationality and seasonality

Anticipated problems and suggested solutions:

The students do not find enough regional food. Solution: You could take more time and visit several companies.

OTHER RESOURCES/MATERIALS/LESSON OUTCOMES:

Further steps:

On 24.05.2018 recipes, shopping lists and workflow plans should be written for the planned menu. Other tasks in the group with the materials available (prepared by me) Writing and creatively designing menu cards, folding napkins;

On 29.05.2018, the students should put the planned tasks into action and cook until 15:00 in the afternoon the menu, a table and a arrangement or table decoration (80% from regional flowers, in gardens or meadow) and the guests (Parents and possibly producers) care properly.

ProfESus Perspective

The LAP The good is so close. A meal for the parents entitled “Spring in the Marchfeld puts the topic sustainable consumption and production in a motivating goal for the learners. All learning steps are well considered and planned. Learner activities, the methods and tools are manifold and motivating. The learning steps of the Green Pedagogy are integrated. Learning activities need a lot of time which must be considered.

4.3.5 Learning activities for vocational education on university level

'The Cultural Day Luncheon'

Author	School/Business	Country
Catherine Sempele, sempnaire@gmail.com	University of Eldoret, Lecturer in the department of Hotel and Hospitality Management, School of Business and Management Sciences	Kenya

SUMMARY OF LEARNING ACTIVITY IDEA:

During the lesson, the student will have the opportunity to develop menus using traditional foods and cooking methods from the main communities in Kenya to be prepared and served for lunch for a Kenyan cultural day planned for the next semester by the Tourism and Hospitality Associations at the University.

PROFESSIONAL SUBJECT/TOPIC: Food and Beverage Production (Menu Design)

COURSE LEVEL: University

KIND OF COURSE: Compulsory

SHORT CLASS PROFILE: 30 students (21 female and 9 male) who are members of the tourism and hospitality association at the university

CLASS LEVEL/AGE: 20 years and above

Pre conditions:

- Students know different foods and their food groups.
- Students know the different types of menus.
- Students know popular foods from key communities in Kenya.
- Students understand the balanced diet concept.
- Students know factors to consider when entertaining.
- Students understand the significance of resource management and conservation.

Classroom environment

Technical equipment: Desktop computers teachers' laptop,

Material/lesson and presentation equipment: coloured cards, marker pens, pin wall and pins, flip charts, white board

TIMETABLE FIT: 2 lessons of 45 minutes each (90 minutes)

DATE OF SCHEDULED LESSON: 30th May 2019

MAIN PROFESSIONAL SKILLS/COMPETENCES/OUTCOMES:

1. The student should be able to develop a balanced traditional menu for the cultural day luncheon.
 - Perspective of producing balanced menus with all required nutrients.
 - Perspective of using traditional foods popular to specific communities in Kenya.
 - Perspective of using traditional culinary art to plan for traditional balanced menus.
2. The student should be able to develop menus that promote resource conservation.
 - Perspective of using local grown, non-processed foods and healthy traditional cooking methods.
 - Perspective of conserving the environment through proper resource management.

SUSTAINABILITY RELATED AIMS in the context of the lesson topic:

Based on the UNECE 2011 competences for sustainable education

- The student understands his/her personal world-view and cultural assumptions and seeks to understand those of others.
- The student is able to create opportunities for sharing ideas and experiences from different disciplines/places/cultures/generations without prejudice and preconceptions.
- The student works with others in ways that engage actively in different groups across generation, cultures, places and disciplines.
- The student is someone who is willing to challenge assumptions underlying unsustainable practice.

DETAILED PROCEDURE OF LESSON STAGES

Lesson plan will be based on the didactic Concept of Green Pedagogy

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Confrontation/ Problem analysis (15 min)	The student explores meaning and the different types of food, menus and food groups.		Students form six groups of about 5 students each. Pictures from the internet of different foods and menus will be presented and students will identify foods that are popular in Kenya and point out the community where the specific foods are common. Key question: identify the various types of foods locally available and the nutritional groups they belong to. Each of the groups will note down their responses on the coloured cards provided. Secretaries from the various groups will then present their notes at the plenary session.	Coloured papers and markers, PowerPoint presentations on types of food and menus from the internet.
Reconstruction/ Research (10 min)	The student derives a criteria for developing a balanced traditional menu plan	The student is someone who is willing to challenge assumptions underlying unsustainable practice.	Students in their groups discuss the components of a sustainable balanced diet and how to design a sustainable menu. Key question: give the meaning of a menu and balanced diet. Students identify a community in Kenya that they want to plan for during the luncheon. Students will be allowed to choose a community they are comfortable planning for. This may be a community that most of them belong to. They will in turn form six groups; earlier ones or new ones as desired. Based on the discussions, each group decides on the number of courses to opt for in their traditional menu.	Coloured papers and markers, Flip chart and markers
Intervention/ Provocation/ Irritation (30 min)	The student creates a menu plan for a specific given community in Kenya	The student understands his/her personal world-view and cultural assumptions and seeks to understand those of others. The student is able to create opportunities for sharing ideas and experiences from different disciplines/places/cultures/generations without prejudice and preconceptions.	Students in each of the six groups develop a traditional lunch menu for a specific community chosen by the group. Key question: develop a one/two/three course lunch menu for the traditional community chosen. Students also decide on the methods that will be used to prepare the various foods in the menu which should be traditional cooking methods. Students will be encouraged to be as creative and innovative as possible. They can consider the best way they would want to present their meals during the luncheon preferably using traditional serving methods too.	Coloured papers and markers, Flip chart and markers

Phase of the lesson schedule	Professional competences	Sustainable competences	Tools and Methodology	Material (Comments of teachers)
Interaction/ Analytical discussion (15 min)	The student examines the menu created to establish if its balanced	The student works with others in ways that engage actively in different groups across generation, cultures, places and disciplines.	At the plenary session, students analyse the menus for the different groups to establish if they are balanced, tasty and appealing. They will focus on establishing if the menus developed represent the community it relates to and whether the foods are indeed traditionally popular in the community identified. They will scrutinize the nutrients provided and the appropriateness of the cooking methods proposed. Key question: evaluate the suitability of the menus developed for the theme of the luncheon with respect to the community the group is planning for. All these should promote the theme of the event which is a cultural luncheon.	Pin wall, pins, White board, markers, flip chart.
Deconstruction/ Optimise Result (10 min)	The student analyses the menus to ensure it adheres to the principles of a sustainable menu	The student is someone who is willing to challenge assumptions underlying unsustainable practice.	In the same groups, students will identify ways in which the menus developed are sustainable. They will then move to the plenary session where other students will check on whether the menus developed adhere to the principles of sustainability and how best they can be improved to enhance this aspect. Key question: identify extent to which the menus developed are sustainable. How else can they be improved to make them more sustainable?	Pin wall, pins, White board, markers, flip chart.
Reflection/ Evaluation (10 min)	The student reflects on the impact of a sustainable menu on the individual, hotel, environment, institution and the world at large.		Students then discuss how such an event (the cultural luncheon) and the meals served can be used to create awareness of sustainability. They will also explore how the day's activities can be managed to promote sustainability for instance, how any waste produced during the luncheon will be managed. Key question: how else can the event be made more sustainable besides the use of sustainable menus?	White board, Colored cards, Pin wall and pins

Anticipated problems and suggested solutions

The class maybe too large to manage. The teacher divided the class into two groups so the lesson groupings were smaller in the long run.

Indicator for a sustainable mindset

Planning: Optimise the chosen plan for your target group

The student develops criteria that will be used to develop a balanced luncheon menu for a particular community in Kenya.

The aspects to be considered will include:

- Ensuring the menu is balanced (has the 3 main food groups).
- Ensure the foods chosen are considered traditional foods.
- The food chosen should be popular in the specific community chosen.
- The foods chosen should promote the concept of a sustainable menu.

Discussing: Students discuss the implications of the foods chosen for the specific menus; aspects will include:

- The appropriateness for the community chosen,
- The balance in the diet,
- The availability of the foodstuff which should be locally available,
- Their appropriateness for healthy eating and
- How sustainable the menu will be in terms of resource acquisition and use.

Decision-making: the student should be able to make a correct decision by:

- Choosing the correct and appropriate foods from the specified community,
- Ensure that the foods form a balanced diet and in the end
- Providing a sustainable menu.

Reflecting: Students reflect on the impact the menus planned will have on the consumers, suppliers/farmers, the environment, the university and the world at large in terms of promoting sustainable practices in food production and consumption.

They should also reflect on the:

- Cost implications of the planned menu.
- The equipment required to produce and serve the luncheon.
- The personnel required for the production and service activities.
- The economical use of resources during the production and service activities.

Transforming: Students could also explore the possibility of using the planned sustainable menus in the university cafeteria in addition to the associations luncheon and discuss the implications this might have on the economic, social and ecological dimensions of life.

Action: The students will later on be involved in the actual production and service of the traditional menus developed.

The assessment of the sustainable teacher mindset can be the lesson plan including all above mentioned dimensions.

Indicators will be the best practice lesson plan criteria including the assessment face for the students.

ProfESus-Perspective

The **LAP The Cultural Day Luncheon'** is planned in detail and considers different professional aspects. The learning approach and learner-centred activities are motivating. The learning steps of the Green Pedagogy are considered but not clearly presented. The LAP does not describe in detail, if the question was clear to the learners, "what does sustainable lunches mean to them?"

5. Quality in the ProfESus course

The chapter describes the tools and strategies used to ensure and monitor quality in the new course “Discovering a sustainable mindset”. There are those that were used to assure the innovative aspects of a newly developed course as well as those that would be used by any institution to monitor their existing educational products regularly. The chapter covers both qualitative and quantitative approaches. It includes some of the main findings of the quality assurance process and discusses the reasons for these.

In many ways, ensuring quality in the ProfESus course was like assuring quality in any other educational course and the tools used were to find out if the learning outcomes had been met. However in some ways the ProfESus course was different to other courses and therefore special consideration had to be taken to consider and evaluate its unique features.

The innovative aspect of the ProfESus approach is its marrying of the Green Pedagogy approach to the sustainability competences described by UNECE and further defined as professional competences in the home economics field.



Mix face to face sessions with online lectures.

The most unusual aspect of the ProfESus course was that it aimed to affect mindset. So, in addition to testing knowledge and skills, the main task was to discover whether mindset had changed in the direction of more sustainable professional behaviour. Another uncommon feature of the course was that it brought together participants from all over the world who were expected to work together. And finally, not so unusual but still not so common, is the fact that the course is a blended one, mixing face to face sessions with online sessions.

In this chapter we will describe the way in which different tools were used to assure the quality of these different aspects of the course. Where possible we favoured international and European standards over tailor-made solutions, but in the end the quality assurance process was an eclectic mix as appropriate. In using a range of tools, we also aimed to triangulate the results so that we could confirm our findings rather than just relying on one main tool on which to base our conclusions and future actions.

5.1 Mindset

The main aim of the course was to help the teacher participants promote a sustainable mindset in their home economics students. It is possible to differentiate a private mindset from a professional mindset and in the ProfESus case, the main aim was that the home economics students should enter the workplace with the mindset that they should act sustainably as a first option. The sustainable mindset should therefore be seen as a professional skill on a par with being able to prepare food hygienically.

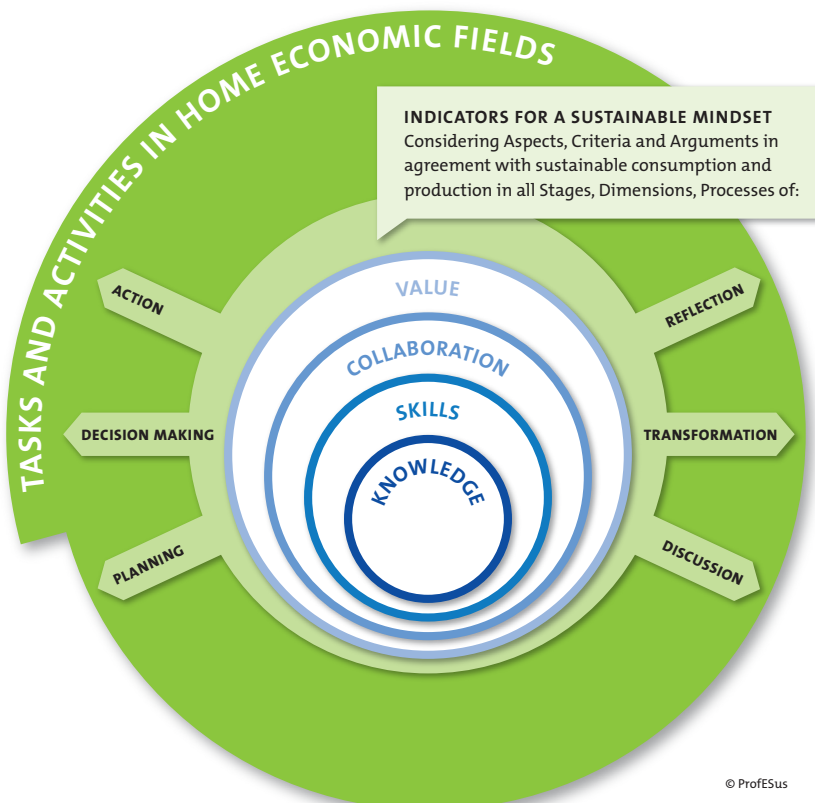
5.1.1 Distance from intended result

One big challenge for the measurement of quality was therefore that the evidence of positive effect lay much further away in the process, and so the project team needed to find evidence of a sustainable mindset in the students of their teacher participants. The Learning Activity Plan (LAP) template, discussed further below, was one way to find out, since one section of the LAP required the teacher participants to get some feedback from their students that would reveal the current state of their mindset, as well as requiring that our teacher participants observe the behaviour of their students.

5.1.2 Visibility of mindset

Another significant challenge is that mindset is largely invisible since it refers to what is going on in a person's mind. The team therefore needed to find acceptable proxies and indicators for a sustainable mindset. This was discussed at great length

over a long period of time. The main conclusion was that a sustainable mindset can mainly be inferred from a person's actions. Using the UNECE competences for Education for Sustainable Development was a helpful starting point but we also felt the need to develop a set of indicators that were more strongly focused on our target group of home economics and these are shown in the graphic below. The graphic was incorporated in the Learning Activity Plan template to help or prompt our teacher participants to identify a sustainable mindset in their students.



Graphic 14:
ProfESus Assessment
of a sustainable mindset

5.1.3 Whose mindset?

We have argued above that the main aim of the course is to promote a sustainable mindset in the students of our teacher participants, but we also know that behaviour change is easier with a good role model. Therefore, we agreed that it was reasonable to expect our teacher participants to adopt a sustainable mindset too. The advantage of this is that it is much easier to directly observe the teacher participants than their students. So, many of the quality assurance tools are centred on assessing the mindset of the teacher participants. Inevitably, an experimental pilot such as this attracted participants who were already sympathetic to the idea

of a sustainable mindset. This meant that rather than simply look for evidence of sustainability, we were also looking for evidence in the direction of increased sustainability. For those who were concerned that they were not sustainable enough, we included a session on Fake It til you make It, the psychological phenomenon whereby you can develop new habits in a desired direction by acting 'as if' you are already there. In our case this meant acting 'as if' you had a sustainable mindset until eventually you do have a sustainable mindset. That means that you take the sustainable option automatically without thinking about it. So, once more, the aim is for a sustainable mindset in the students of our teacher participants, but we observed the mindset of our teacher participants as a proxy for their students.

5.2 Personas or target group

When assessing the quality of an educational course, it is useful to consider both qualitative aspects as well as quantitative aspects. To this end we borrowed an approach from marketing and computer user design whereby you envisage the main categories of your proposed customers and users and what their attributes may be. The personas that we built up varied in age, education level and motivation as well as the amount of time they would have to implement what they had learned. It helped in the design of the course to have these specific imaginary people in mind (see Image) as our typical course participants. Once the course was underway though, we realised that there were an additional two personas that we had not thought of and that these could usefully be kept in mind during any revision and updating of the course (see conclusion section). So, as we built the course we could ask, how would this seem to Gerda or how would Adelheid react to this proposed task? This is a useful strategy with a new course when you have no real participants to which to refer.



ProfESus personas

Gerda, Austria

What she does She teaches students who will be working in the full range of home economics, guest-oriented areas. It's a high-level teacher-training course. Sustainable development is already highly integrated into the course but entrepreneurship only appears briefly. She is part of a young and highly-qualified staff.

Pedagogical approach She uses traditional lectures and demonstrations but also a great deal of teacher-led project-based work, practical sessions, simulations and competency-based learning.

What she thinks She thinks that competency-based learning is the best approach to adult training closely followed by lectures and demonstrations and then practical sessions. Gerda thinks high quality professional development is very valuable and she's more than ready to implement sustainability in her teaching as long as you give her a few pointers.

What she feels She wishes she had more influence over the curriculum and worries about keeping her job. She'd love to have the chance to experiment with some new ideas rather than be told what to do.



Adelheid, Germany

What she does She teaches basic level students who will be working across the full range of home economics, guest-oriented areas. Sustainable development may get a quick mention in the course although entrepreneurship is a small but compulsory part of the course. Her colleagues are mainly in the second half of their working life and have qualified on the job.

Pedagogical approach She uses traditional lectures and demonstrations but also a great deal of teacher-led project-based work and competency-based learning. Work experience is an important part of the training.

What she thinks Adelheid believes that lectures and demonstrations combined with work experience is the best way of ensuring her students have the skills they need. For Adelheid it is important that any professional development she is recommended to do is fully resourced. She may need a good deal of grounding in the importance of sustainability to her students' future work lives as it is not something she pays much attention to right now.

What she feels Adelheid is frustrated by the lack of motivation of her students and can also get overwhelmed by the amount and variety of tasks she must do.

5.2 PERSONAS OR TARGET GROUP

5.3 ORIGIN OF THE LEARNING OUTCOMERS



Elsa, Finland

What she does Elsa's courses include catering, hospitality and entrepreneurship to pre-university level. Her colleagues are mainly, like her, in the second half of their working lives. Both sustainability and entrepreneurship are well integrated into the courses.

Pedagogical approach She uses a variety of approaches including teacher-led project-based learning, simulations, competency and mastery learning and work experience. The key to success is engaging students so that they transfer sustainability principles over into their own personal and professional lives.

What she thinks Elsa believes that project-based learning and simulations (learning by doing) are the most effective tools she uses. Elsa and her colleagues are always learning and she is a firm advocate of having a wide and effective personal learning network. She thinks that she integrates sustainability in her teacher quite well and could provide examples of good practice.

What she feels She is frustrated by lack of time to do the job well.



Dzidra, Latvia

What she does She teaches on courses for cleaning, catering and hospitality at a lower vocational level in which sustainability and entrepreneurship are only mentioned briefly. However, a significant proportion of her students are interested in running their own business. Dzidra has been teaching for over 20 years as have many of her colleagues.

Pedagogical approach Dzidra was trained on the job. She uses a variety of approaches including lectures and demonstrations, hands-on sessions, competency-based learning and project-based learning both teacher-led and student-determined. She's keen to implement sustainability in her teaching after you give her a few pointers.

What she thinks She believes that work experience is the best way to learn the skills. Dzidra has an active personal learning network and learns from action-research projects.

What she feels She is frustrated by the low pay.

Images: Courtesy Pixabay

5.3 Origin of the learning outcomes

The United Nations Economic Commission for Europe, UNECE, has been working on the definition of competences in Education for Sustainability, ESD. The ProfESus team used these competences to guide the creation of the ProfESus curriculum learning outcomes. A competency framework tends to be developed for broad applicability and so an early task for the ProfESus team was to identify which of the competences were the most relevant for our proposed course. One challenge is that while the UNECE ESD framework listed competences in a matrix as shown below, they did not propose degrees of competency.

	HOLISTIC APPROACH	ENVISIONING CHANGE	ACHIEVING TRANSFORMATION
Learning to know (knowledge)			
Learning to do (skills)			
Learning to work with others (collaboration)			
Learning to be (values)			

So, we overcame that challenge by first of all requiring that our course participants assess themselves and secondly by inviting participants to identify the three most relevant competences (from a carefully selected shortlist) that they used in each unit of Module 2 for example.

To give the ProfESus course a structure we used Chapter 16 of the Routledge Handbook of Higher Education for Sustainable Development that describes five clusters of sustainability competences for engineering students:

- Future thinking
- Systems thinking
- Strategic thinking
- Values thinking
- Collaboration

However these five headings are used pretty much as a standard throughout the sustainability literature.

5.4 International standards

We used three major international tools in the ProfESus project. The first was the UNECE ESD competency framework discussed above. The second was the European Checklist for Blended learning and the third was the ISO AA1000 Stakeholder Engagement standard from 2015 which we used to guide our management of the Quality Board amongst others.

5.4.1 ECB check

The ECB check tool is offered free of charge as a way of monitoring the quality of elearning or any course that includes a substantial part of elearning. It is possible to sign up to the ECB check website and arrange for mutual feedback from peer organisations, as well as doing the check independently but not certificated. As a trial, the ProfESus course tried out the independent self-assessment option. The ECB check system covers many different aspects of the online learning experience, not just the content and its presentation. A check was carried out after the first pilot and showed that the ProfESus course scored well in most aspects. It scored badly on the issue of learners being able to choose their own learning paths and this is because the course has been deliberately designed to be a shared learning experience and this can only be done as a cohort.

Another issue highlighted by the ECB check was the low level of tutor support during the online modules. This was imposed by lack of financial resources and partly compensated for by requiring our participants to volunteer as peer moderators, but the lack of tutor support was noted by participants as an area for improvement.

The project team was not so focused on accessibility issues which resulted in another low score on ECB check, but these could be attended to by the institutions that adopt the course in the future.

The final low-scoring area on the ECB check tool was that of grading and assessment. The project team intentionally veered away from grading, partly because of a lack of tutor resources, partly because it is not usual to grade professional development, but also for a much more powerful pedagogical reason and that is that the course attempts to alter mindset as well as bolstering knowledge. It is extremely difficult and problematic to grade mindset. However, the lack of grades was an issue that was mentioned by a few participants and by a quality board expert.

In conclusion the ECB check process is a worthwhile exercise that highlights issues which the team could either justify, such as the learning paths issue, or note to improve such as the tutor support issue.

Tutor support on
online moduls.

5.4.2 Quality board

The Quality Board approach worked well in previous European projects and was adopted as part of the quality assurance process in ProfESus. This meant that the project partners suggested external experts from their existing networks who would examine various aspects of the course and give us feedback. We also recruited board members from the various multiplier events that we held and extended an invitation to join us as a board member on the project website and in our newsletters.

This was part of the stakeholder engagement as advocated by the AA1000 Stakeholder Engagement standard which should be part of any sustainability approach.

The eight quality board volunteers are featured on the ProfESus website and range from Zambia in the south to Finland in the North and from Ireland in the west to Latvia and Slovenia in the east. The quality board examined the course prior to the pilot and then once again after the pilot was complete. As outsiders, the quality board were able to point out issues which we, as partners, were perhaps too close to the course to notice. We got feedback on the type of tasks, the language used, the issues covered and much else besides which we then used in our revision of the course after the pilot run was over.

5.5 Blended learning

The course was designed in blended learning format. The first and last modules were one-week face to face sessions while the middle two modules were offered online. This allowed the participants from many different countries to meet each other and exchange experiences at the beginning and end of the course, while allowing them to focus on their own students at home during the two online modules. There is a tendency to see online learning as inferior to face to face sessions however it was very important that a great deal of the learning should happen in the local context with the teacher participants' own students in order for meaningful change to happen. So common is this perspective that we included the question:

Should Modules 2 and 3 happen face to face?

in our evaluation survey of the participants. Having been through the pilot experience, the majority agreed that it was appropriate for Modules 2 and 3 to happen online with a few also noting that they could not imagine how they could have occurred face to face. Thus, the decision to offer the course in blended learning format is justified as the best option.

Tutor support on
online moduls.

5.5.1 Can online learning be transformative?

It is a peculiarity of the sustainability field that applies to few other education topics, that the aim is not just additional knowledge and skills but transformation (see the section above on mindset). Note also that the third column in the UNECE ESD competency framework matrix is also devoted to promoting transformational processes. Therefore, it is relevant to ask whether the online learning part of the ProfESus course can contribute to the transformation process. We could recognise this through the comments made in the learning diary, the types of learning activities proposed by our teacher participants in Module 3, the plans for the future they expressed in Module 4 and any continued activity once the course had ended. The online section of the course was designed to get our participants interacting with their local environment including their educational institution and even their own households through a 3-week zero waste project. It was very important that the tasks during the online part of the course were closely tied to the local context of our participants so that they could try out various approaches rather than simply read about them. In the end, the zero-waste week exercise that was analysed, planned and then executed over three weeks of Module 2 was often mentioned as transformative by the participants in their feedback. So, the ProfESus team would say that the answer to the question is, yes, online learning can lead to transformation.

5.5.2 Online tutoring

A quirk of EU funding means that online tutoring is not an eligible cost. This led the project team to consider whether peer feedback and assessment could fulfil that function. It is well-established that the most engaging online learning is heavily supported by tutors, especially at the beginning of a course before the participants have found their online voice. So, a solution had to be found when we discovered that we could not fund many hours of online tutoring. Our solution was to appoint volunteers from the course participants to act as a peer moderator for a specific one-week unit as well as to divide the fifty or so participants into smaller groups of about 12 persons each. The smaller groups were to reduce the amount of reading that participants felt obligated to do of their colleagues' input, though they were free to see what was going on in the other groups. The roster of peer moderators was drawn up at the end of the first face to face module. The designated peer moderator was meant to take an early look at the tasks for their unit, preferably be the first to post for each of the three main tasks and encourage the participation of their fellow group members. Since this was a new role for many participants, some did not fully grasp the responsibilities at first.

There were two designated tutors from the project team for each unit whose role was to monitor, but not take part in, activity. The tutors then gave evaluative feedback to the project team on the units for which they were responsible, though the peer moderators did not as we did not want to burden the volunteer peer moderators further.

As previously noted, the lack of tutor interaction was a weak point and we strongly recommend an enthusiastic and involved tutor presence in future iterations of the ProfESus course.

5.5.3 Participants

A major source of feedback on the quality of the ProfESus course was the participant themselves. Partly this was deliberately designed into the course through the learning diary, the weekly short feedback surveys and the way in which the learning activity plan template was designed and required from every participant in Module 3. There were also separate surveys after each of the four modules and the project partners also noted feedback during the two face to face modules when they were interacting directly with the participants on a daily basis.

There was of course a bargain struck between the project team and the course participants that they would give a higher than typical level of feedback in return for free access to a course that would normally have a high price attached to it.

5.6 Tools

In this section we describe some of the main tools used to carry out quality assessment and evaluation in addition to the strategies already described such as using the ECB check tool, forming a quality board and using the UNECE ESD competency framework.

5.6.1 Learning diary

Participants started their learning diary entries during the face to face Module 1 week and were required to continue making weekly entries throughout module 2. The course included prompts to guide each learning diary entry but there was always the option to explore issues not covered in the prompts.

The learning diaries were a route into the minds of the teacher participants and were one of the major ways in which we could tell in what way and to what degree the sustainability message had got through both to our teacher participants and in many cases to their students when they recounted anecdotes about what had happened in class.

Learning Diary:
the route in the mind!

Here are a sample of the learning diary responses:

After Module 1, face to face in Vienna:

I learnt that goals are universal and must be implemented by all. It made me reflect upon what my nation is doing to address the SDGs.

After Unit 1 in Module 2:

“If we embed sustainability in curriculum and instruction, learners will be become alive hence successful”. I found this statement from Jamie Cloud to be quite powerful an informing. It will be at the back of my mind in everything I plan and teach henceforth.

After Unit 2 in Module 2 taking the ecological footprint test:

My colleagues have already taken the test and they are like whaaaaat???? reallllll-ly? Hope they get to change after seeing the results. Will keep bringing it up. My students are next.

After Unit 3 in Module 2 doing a visioning exercise:

I found this to be quite informative; that I can sit down and think of a scenario as I would like it to be and create a vision of how I would love it to be besides putting strategies that can help me get there. This really builds on the urge to get there. It kind of makes it look real and gives one the drive to get there. Furthermore, it builds the feeling from just being a thought, an imagination or a desire to something that can actually be achieved.

After Unit 5 in Module 2 implementing a zero-waste week:

I must admit that the zero-waste challenge was a real challenge for me. I realized that I can never do it alone in my household but must be assisted by all members in the house, visitors included :-)) since what they bring along may significantly contribute to your waste basket.

Reflective exercises such as a learning diary have been found to be extremely useful to help embed new pedagogic practice and we highly recommend close attention to this tool to learn more about the progress towards sustainability.

5.6.2 LAP

The learning activity plan (LAP) template is described extensively in Chapter 4 of this handbook. As far as quality assurance is concerned, the main purpose of the LAP was to guide teachers in the direction of a high-quality learning activity through making decisions about what to enter in each part of the template. In time, a teacher would not need the template, as taking the sustainable option and applying the Green Pedagogy approach would have become second nature. So, the LAP template should be seen as a prompt to changing behaviour and pedagogical approach rather than a perpetual professional necessity. We do understand that completing a LAP properly takes a great deal of time and that it is therefore not practical as a daily activity of a practicing teacher.

5.6.3 Google forms

The ProfESus team made extensive use of Google forms for many aspects of the quality assurance processes. They were used for example to get feedback from the quality board and from the course participants at the end of each of the four modules. Google forms are free and automatically collate results. They offer a range of different types of input so that you can get quantitative and qualitative data. Research (Hjeltnes et al, 2016) has shown that different features emerge from qualitative and quantitative survey items therefore it is important to require both types of response.

5.6.4 Moodle feedback

Most learning management systems allow for short, rapid, frequent low-level feedback in some form or other. Having presented the course in the Moodle management system we were able to require participants to answer a short 3 – 6 question survey at the end of each unit of Module 2. This helped the team to understand if the participants thought they had achieved the specific milestones for that week and which UNECE competences they tied these achievements to. In this way the ProfESus team was not only able to see which tasks were working but also were familiarising the participants with linking tasks with the UNECE ESD competences.

5.6.5 Success case method

The use of this method reflects the importance we attach to the learning value of case studies within the course. It is also a way of looking to the future using the best cases as the way forward. The success case method is a way of paying specific attention to the best and worst cases to find out how the course could be improved. A case here refers to a participant in the ProfESus course. The worst cases are those that led to an early dropout from the course. And in the case of the ProfESus course

we identified three main reasons for early dropout. One was due to lack of technical confidence once we transitioned from the face to face Module 1 to the online Module 2. This points to the need for the online platform to be as simple and intuitive to use as possible. It also points to the need to make clear our expectations of the level of technical competence required in our participants as well as including a longer technical introduction during the first face to face module. One dropout was due to lack of time to engage with the seven hours of work needed per week to complete the online modules. The third main reason for dropouts was that the course was not theoretical enough. This is an example where perhaps the framework of the course needs to be explained more thoroughly so that these types of misunderstandings do not occur. In a way these last dropouts are a vindication of our approach since we wanted the course to be very practical and hands-on rather than academic.

What about the best cases? These cropped up in unexpected places. Two of our participants were not in mainstream education but working as a corporate trainer and in a social enterprise. This pointed to the need to widen the scope of our target group in our description of personas by adding two new personas. One participant attributed her new job to the fact that she was pursuing the ProfESus course at the time. Another group of participants saw a need to adopt the ProfESus course in their country adapted to language and context. These are excellent success cases.

5.7 Conclusion

The ProfESus project team has used international quality approaches coupled with tailored survey tools in order to achieve a triangulation of results. The project has also borrowed from different fields such as business marketing and computer user design as well as the education community to come up with a suite of approaches that would help us monitor and improve the quality of the course. The approaches reflect many of the sustainability perspectives which we are promoting within the course such as interdisciplinarity, stakeholder involvement, self-reflection as well as a future-oriented approach.

For a new product, a strategy such as establishing a quality board is very useful. For an institution adopting the course, the most useful quality assurance tools are the LAPS and learning diary coupled with completion of the ECB-check tool in order to get an overview of the different aspects of the course.

Using the suite of tools and strategies described in this chapter showed that the ProfESus course was largely a success as judged by the partners, the external quality board and the participants (and in some cases also their students). The tools showed us where we should improve and this, we have implemented in the open source version we make available to anyone who needs it.

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