GreenSkills4VET

IO.2

Framework for GreenSkills4VET

FGSVET

The difficulty lies not in the new ideas,
but in escaping the old ones,
which ramify, for those brought up as most of us have been,
into every corner of our minds.

John Maynard Keynes
The General Theory of Employment, Interest and Money

Henrik Peitsch - Mail: eurobbos@eurobbos.eu
Christian Scheiding - Mai: scheiding@uni-kassel.de

1   Introduction

At an UNESCO meeting in Bonn in 2004 experts emphasised the importance of Technical and Vocational Education and Training (TVET) for achieving the objectives of ESD. In the *Bonn Declaration on Learning for Work, Citizenship and Sustainability* they stated that:

> *"Preparation for work should equip people with the knowledge, competencies, skills, values and attitudes to become productive and responsible citizens who appreciate the dignity of work and contribute to sustainable societies. We call on all stakeholders to adopt this broader perspective for TVET." (UNESCO 2004)*

In this statement, the experts not only focused on the professional competences but also on the importance of citizenship empowerment and the necessity to shape sustainable societies. For that, they argue for widening the perspective of the most common use of a narrowed concept of sustainability.

For the development of efficient materials for training and teaching (IO 4), a Framework is necessary. This Framework is worked out based on the results of IO 1 (s. Comparative Analysis Report).

2   For what uses is FGSVET intended?

This FGSVET will be transformed into a Manual (IO 3) for creating teaching materials for selected learning fields of specified occupations – Logistics and Health Care.

The uses of the Framework include:

The criteria for the planning of learning and teaching material in terms of:
- the adoption of given professional competences in Logistics and Health Care;
- the implementation of work based and school based learning;
- the assumptions of sustainability (SDGs) and key competences on ESD in VET;
- the assumptions of EQR/NQR and ECVET
- their teaching objectives;
- their teaching contents;
- the assumptions of OER.

The planning of self-directed learning, including:
- raising the learner's awareness of his or her present state of knowledge;
- self-setting of feasible and worthwhile objectives;
- selection of materials;
- self-assessment.

Aiming the following goals:
- to identify and define key competences necessary for Sustainable Development in VET;
- enhancing the following competences (see Recommendation p 13):
    - o Learning to learn,
    - o Digital competence,
    - o Social and civic competences.

3   What criteria must the Manual (IO 3) meet?

For a most successful practical use, the Manual to be developed on the base of this FGSVET has to be comprehensive, transparent, coherent and transferable.

Comprehensive: The Manual should specify on selected subjects a full range of knowledge, skills and attitudes/values/ethics (competences) and a description of their objectives, contents, applicable tasks and assessment tools.

Transparent: For the most effective practical use all information have to be very clearly formulated, explicit available and readily comprehensible to users.

Coherent: The description is free from internal contradictions. With regard to educational systems, coherence requires that there is a harmonious relation among their components.

Transferable: The created examples must enable teachers and learners to transfer the Framework to different occupations, subjects and contents.
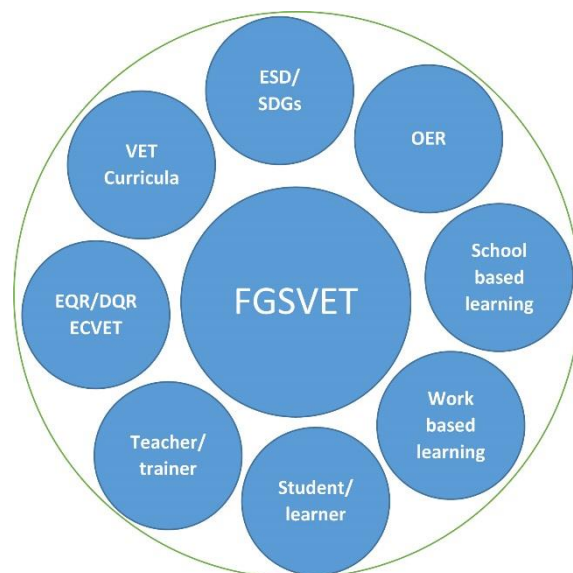
4   References and content of the FGSVET

The aim of the project is to implement a new thinking not only of the obsolete manner how we ran our economic system but also to find new pathways of learning and teaching. Therefor the elements shown in Fig 1 have to be taken into account for the FGSVET.

In this context the FGSVET has to provide explicit criteria on some of the stated references as a guideline.

In this paper we focus on

1. providing a model of the acting fields in VET and learning dimensions for a sustainable economy and ESD
2. implementing a schema for developing competence oriented teaching material,
3. key competences for sustainable vocational education and training,
4. a grid of competences of ESD in Logistics.

Fig. 1 Main references of the FGSVET

5   Dimensions of professional acting fields and competences for a sustainable economy - ESD

The grid shown in Table 1 marks the relevant dimensions for creating innovative teaching and learning material.

	Perspective of the commercial model development	Perspective of the competence development
Result level	**Dimension of Performance:** − Sustainable development as a social and political model − Sustainable development as a business model in logistics	**Dimension of Competences:** Competence for sustainable management of the teachers, trainers and trainees **Recognising - Assessing - Acting** − Professional competence − Method competence − Shaping competence − Ethical-moral competence − Social competence − Abstraction competence − Civic competence / active citizenship in a local and global manner

Activity und learning level	**Dimension of activity:** – Employer-employee relationship – Working system – Job – Collaboration and teamwork **Action premises:** – Participation – Value creation on the company level – Lifelong learning – IKT/ICT – Sustainability	**Dimension of learning:** Didactic and curricula for sustainable economic in VET **Learning premises:** – Learning to know – Learning to do – Learning to live together – Learning to be – Self organized learning – Participating in the learning and teaching process – OER competences

Tab. 1 Model of competences for sustainable economy adapted from Schlömer (2009: 104)

According to the results worked out in IO1, niches have to be found in the existing curricula to formulate competences. These competences have to implement ESD and VET aspects and have to refer to the requirements of the job and the needs of new learning concepts – OER. Despite of this the competences have to incorporate perspectives for a transformation to the central themes of sustainability of the economy and society. (Barth 2015; Brand & Wissen 2017; Griffin et al. 2012).

6   10 steps for creating competence oriented teaching material

A strategy for planning the development of the teaching material is necessary to enhance the quality of the results. Schott et al. (2012: 161) worked on this matter based on a large empirical research and worked out a pattern for compiling teaching lessons. It goes back to the concept of "GovI" – "Goal-valid Instruction" from the same authors. The scheme (s. Tab 2) can also be used for the development of teaching materials. The structure consists of three phases and four modules with ten steps. This instruction should be the guideline for the development of the aimed outcomes of the project.

10 steps for creating competence oriented teaching material, separated in 3 phases and 4 modules		
PHASE 1: **Objective**	**MODULE 1: Concretion of the learning target in accordance to the aimed competences**	
	STEP 1:	Defining the general learning target and sub-goals according to a demand analysis and their embedment in concerning subject areas as well as consideration for transfer
	STEP 2:	Specification of the sub-goals and identifying the relations between them
	MODULE 2: Competence-oriented lessons/teaching materials	
	STEP 3:	From the gross teaching subjects to the net teaching subjects [1]
PHASE 2: **Analysis of the scope of design**	STEP 4:	Analysing the shaping possibilities concerning the needs of the learners, the net teaching subjects, the boundary conditions and the possibilities to arrange the learning environment.
PHASE 3: **Construction of teaching materials**	STEP 5:	Construction of the reconstructed, situationally learning tasks
	STEP 6:	Construction of the reconstructed, situationally learning environment
	MODULE 3: Competence oriented assessment	
	STEP 7:	Construction of *relevant* tasks
	STEP 8:	Considerations of *formative* learning assessment
	STEP 9:	Construction of the *summative* learning assessment
	MODULE 4: Quality assessment	
	STEP 10:	Quality assessment of the lessons

Tab. 2   10 steps for creating competence oriented teaching material in accordance to Schott et al. (2012: 161)

---

[1] Net teaching subjects: the increasing part of learning – behaviour modification. Gross teaching subjects: the whole amount which has to be learned

7 European Qualifications Framework (EQF)

The whole material created has to consider the level of the VET according to the EQF. In Germany the level of the vocational education is 4.

	KNOWLEDGE	SKILLS	COMPETENCE
Level 4	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Exercise self-management within the guidelines of work or study contexts that are usually predict-table, but are **subject to change**; supervise the routine work of others, taking some responsibility for the evaluation and **improvement** of work or study activities

Tab. 3 Descriptors defining level 4 of EQF according to European Commission (2017)

8 Core competences of Global Development Education and VET

There are some differences in the use of the term competence between ESD and the common use in VET in Germany. Also within the EQR and the NQRs. But as the Fig. 3 shows, they are highly compatible. For the FGSVET the concept of the Curriculum Framework Education for Sustainable Development will be used. (KMK 2016)
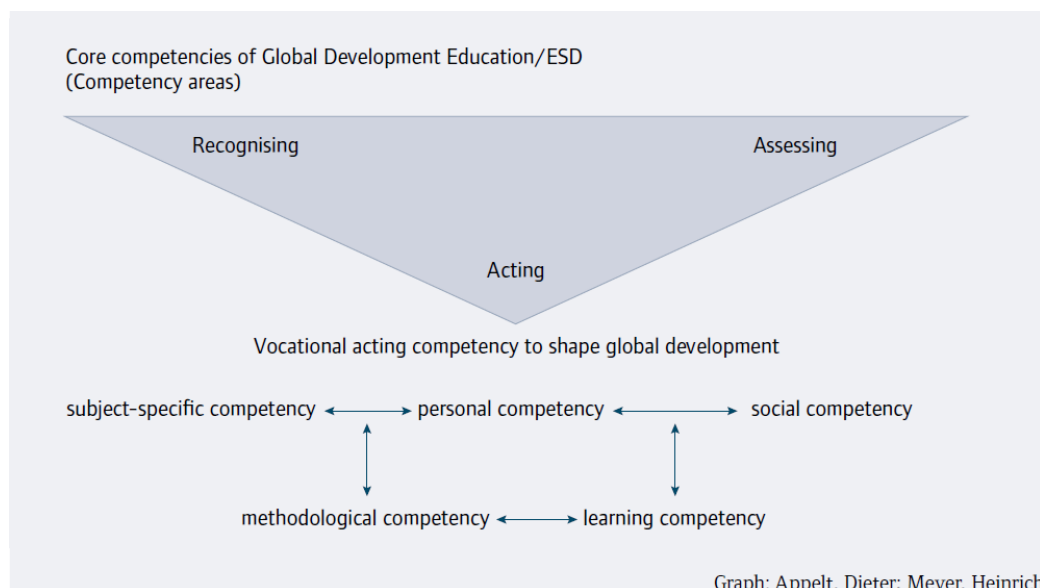

Fig 3 Connection of the competency models (KMK 2016: 380)

8.1 Cross-cutting key competences for achieving all SDGs

At the UN General Assembly on the 25th September in 2015, the 2030 Agenda for Sustainable Development was adopted. (UNESCO 2017). The formulated competences include cognitive, affective and volitional and motivational elements. They involve knowledge, capacities and skills, motives and affective dispositions and their interdependences. This cross-cutting key competences have to be integrated into the competences discussed above.

(1)	**Systems thinking competency:** the abilities to recognize and understand relationships; to analyse complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.
(2)	**Anticipatory competency:** the abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one's own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.
(3)	**Normative competency:** the abilities to understand and reflect on the norms and values that underlie one's actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.
(4)	**Strategic competency:** the abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.
(5)	**Collaboration competency:** the abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.
(6)	**Critical thinking competency:** the ability to question norms, practices and opinions; to reflect on own one's values, perceptions and actions; and to take a position in the sustainability discourse.
(7)	**Self-awareness competency:** the ability to reflect on one's own role in the local community and (global) society; to continually evaluate and further motivate one's actions; and to deal with one's feelings and desires.
(8)	**Integrated problem-solving competency:** the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the abovementioned competences.

Tab. 4 (UNESCO 2017: 10)

8.2 Curriculum Kaufmann/-frau für Spedition und Logistikdienstleistung - (Freight forwarding and logistics services clerk)

The school-curriculum contains only very reduced remarks on competences. It also says less about the teaching/learning subjects.

Learning field 15: **Straighten forwarding and logistic processes upon economic parameters**	**3. Year of training** **Time appoximate value: 80 hours**
Goal: The students search – also English – **information** about political, economic, social and **ecological developments** and **decisions** at national, European and global level. The students use ICT systems and they are able to present their results. They analyse and evaluate decisions of the economic policy according to the impact on the business and their own life. They investigate market developments and offers on the cargo market. They assess the effect of enterprise cooperation and enterprise union on the business, the position in the market and the business result. They select specific information and prepare them. The students develop and take their position and ethical and moral values, tolerate dissent, decide issue-related and use decision-making models. They assist in the **reorganisation** of forwarding and logistic processes and straighten the planning, realisation and assessment of business processes according to changing frame conditions.	
Contents: Transport facilities **Environmental concepts and environmental policy** Regulatory policy, monetary policy, fiscal policy, labour market policy Currency risks	

Tab. 5 KMK Rahmenlehrplan (KMK 2004: 23)

8.3 Grid of competences of ESD in Logistics

Not all of the listed core competences can be implemented in the specific VET competences. The following example integrates some acquired competences in concern of the curriculum for the education and training of Kaufmann/-frau für Spedition und Logistikdiensleistung (freight forwarding and logistics services clerk).

8.3.1 Recognising

	Core competences	VET competences logistics	Cross-cutting key competences
		The trainees/students are able to (…)	
Recognising	1. Acquisition and processing of information (…) acquire information on issues of globalisation and development and process it topic-relatedly.	(…) *acquire* information (with limited support) on questions of globalisation from suitable media that – are related to the learning targets of specific learning fields – are related to actions of vocational qualification – illustrate sector-specific situations in different countries/ – regions of the world Allow the comparison of aspects such as conditions of production, structures and characteristics of Vocational Education, professional work, and decisive factors of different employment and economic systems. (…) *abstract* from the collected information significant statements with the help of key questions and assignments on issues of globalisation, applying suitable methods of text analysis and vocation related studies.	
	2. Recognising diversity (…) recognise the socio-cultural and natural diversity in the one world.	(…) *identify* and compare in their own occupation and working world as well as in that of other countries and regions – by considering cultural and/or social/economic/political/environmental/societal characteristics.	
	3. Analysis of global change (…) analyse processes of globalisation and development by using the concept of sustainable development.	– (…) *differentiate* dimensions of global change in occupations and vocational problems. – (…) *identify* related changes in occupational activities, economic interdependencies, conflicts and political influence.	
	4. Differentiation between levels of action (…) recognise levels of action – from the individual to the global level – and their respective function for development processes.	– (…) identify levels of action in occupation and labour – from the individual to the global – and illustrate them by examples. – (…) describe options of sustainable development processes on chosen levels of action.	

8.3.2 Assessing

	Core competencies	VET competencies	Cross-cutting key competences
		The trainees/students are able to (…)	
Assessing	5. Change of perspectives and empathy (…) realise, appreciate, and reflect upon own and others' values, and their significance for life.	• (…) *change* perspectives to include people, cultures, religions and ethnic identities affected by globalisation, especially in relation to occupational and economic situations • (…) *identify themselves* with behaviour patterns of others in occupational situations and explain them in relation to relevant social and economic structures • (…) *interpret* differences in trade, cooperation and exchange relations between countries, economic regions and companies in light of the working and business processes in occupations and in relation to occupational activity in connection with supply, production and sale as well as consumption and use of goods.	
	6. Critical reflection and comment (…) comment on issues of globalisation and development by critically reflecting and orientating at the international consensus, at the principle of sustainable development and at human rights.	• (…) *reflect* on the visions and interests of political and economic decision-makers and power brokers, on possible future scenarios of global development and relate these to the guiding principle of sustainable development. • (…) *analyse* and *assess* the options of individuals and groups to shape the organization of the occupational sector, of their work and company, of technical, economic and social systems as well as their employability through lifelong learning. • (…) *comment* in a well-founded way on democratic control of economic power and options of co-determination for employees.	
	7. Evaluation of development projects (…) work out approaches to evaluate development projects (here and in other parts of the world), with respect to diverse interests and general conditions, and come to self-reliant conclusions.	• (…) *evaluate* projects of economic cooperation in doing so • (…) *take into* account various interest groups and starting positions as well as the normative reference of people involved and the political framework.	

8.3.3 Acting

	Core competencies	VET competencies	Cross-cutting key competences
		The trainees/students are able to (…)	
Acting	8. Solidarity and shared responsibility (…) realise areas of personal responsibility for humans and the environment, and accept the respective challenge.	• (…) *determine* their personal co-responsibility in areas of occupational action. • (…) *develop* alternative activities and scenarios and test these either as role play in their learning group or in their training company/school.	
	9. Understanding and conflict resolution (…) contribute to overcoming socio-cultural barriers and self-interest by communicating and cooperating, and contribute to conflict resolutions.	• (…) *develop* strategies and use methods of intercultural learning to overcome barriers and resolve conflicts that often arise in interpersonal communication within and between companies due to different cultural backgrounds. • (…) *try out* and stabilize these strategies at the workplace. • (…) *reflect* on these situations with their classmates/colleagues.	

10. Ability to act in times of global change (...) ensure the ability to act socially in times of global change, most of all in personal and professional fields, by openness and readiness to innovate as well as by an appropriate reduction of complexity, and bear open situations.	• *(...) analyse, develop and consolidate* their openness and willingness to innovate in occupational contexts and develop alternative activities for scenarios related to their work. • *(...) be flexible* with their ideas and competencies in light of the unpredictability of the future. • *(...) accept* failure and uncertainty with equanimity.	
11. Participation und active involvement Students are able and willing, based on their autonomous decision, to pursue objectives of sustainable development in private, school and professional fields, and to participate in their implementation in society and politics.	• *They are ready* to involve themselves in chosen activities according to their own convictions and priorities and work towards societal, private and occupational goals in line with the principle of sustainable development.	

Tab. 6 according to KMK (2016: 377 ff.)

9 Example of FSGVET

The following chart shows an exemplary compilation of competences, tasks, operators, performance and an expected level of solving the tasks.

Core competences	VET competences The trainees/students are able to (...)	Tasks	Operator	Cross-cutting key competences	Performance	Level
1. Acquisition and processing of information (...) acquire information on issues of globalisation and development and process it topic-relatedly.	*acquire* information about political, economic, social and ecological developments and decisions at national, European and global level	State the limitation of CO_2 emission on the national and European level. Name at least three impact of a high emission of CO_2 on the global climate.	name	(1), (6)	The actual limits are named. Three impacts are named (global warming, sea-level rise, desertification)	at least 50 % of the tasks have to be solved

References

Barth, M. (2015): Implementing Sustainability in Higher Education. Learning in an age of transformation. London.

Brand, U. & Wissen, M. (2017): Imperiale Lebensweisen. Zur Ausbeutung von Menschen und Natur im globalen Kapitalismus. München.

European Commission (2017): Descriptors defining levels in the European Qualifications Framework (EQF), retrieved from https://ec.europa.eu/ploteus/content/descriptors-page, [29.05.2017].

European Parliament (2006): Recommendation of the European Parliament and of the Council - of 18 December 2006 – on key competences for lifelong learning (2006/962/EC). Official Journal of the European Union L394/13 retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32006H0962, [21.5.2017].

Griffin, P.; McGaw, B. & Care, E. (Eds.) (2012): Assessment and Teaching of 21st Century Skills. Dordrecht.

KMK (2004): Rahmenlehrplan für den Ausbildungsberuf Kaufmann für Spedition und Logistikdienstleistung/Kauffrau für Spedition und Logistikdienstleistung.

KMK (2016): Curriculum Framework Education for Sustainable Development. Berlin.

Schlömer, T. (2009): Berufliches Handeln und Kompetenzen für nachhaltiges Wirtschaften. Ein Referenzmodell auf der Grundlage theoretischer und empirischer Exploration. Mehring.

Schott, F.; Ghanbari, S. A. (2012): Bildungsstandards, Kompetenzdiagnostik und kompetenzorientierter Unterricht zur Qualitätssicherung des Bildungswesens. Eine problemorientierte Einführung in die theoretischen Grundlagen. Münster.

UNESCO (2017): Education for Sustainable Development Goals Learning Objectives. Paris.

UNESCO (2004): Learning for Work, Citizenship and Sustainability. The Bonn Declaration.

WBGU (2011): Hauptgutachten. Welt im Wandel Gesellschaftsvertrag für eine Große Transformation. Berlin.