Concept Paper

The concept of competencies in the context of Education for Sustainable Development (ESD)

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"The concept of competencies in the context of Education for Sustainable Development (ESD)" draws upon reflections, discussions and state of the art evidence from practical implementation of an international network of experts and leaders from ministries, universities, teacher training institutes and NGO's in India, Germany, Mexico and South Africa.

As a think tank, the ESD Expert Network jointly develops and realizes innovative concepts and strategies to strengthen individual competencies and institutional capacities to implement Education for Sustainable Development (ESD) in the participating countries. Concepts, materials and experiences are shared with a broader professional public through international conferences and the network's website www.esd-expert.net. The network and related implementation activities such as trainings for multipliers of ESD in schools and an ESD leadership training for young professionals are supported by the German Federal Ministry for Economic Cooperation and Development (BMZ) through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Both authors are part of ESD Expert Network. Thomas Hoffmann works for the Department of Education and Cultural Affairs Baden-Württemberg, Germany. Maik Adomßent is professor at the Leuphana-University Lüneburg, Germany. In this paper the authors discuss the importance of competencies that enable societies to become more sustainable. They examine the international discussion and present an overview of the main arguments and results.

Summary

The concept of competencies is seen as an essential landmark for orienting teaching and learning for Sustainable Development. Within the German discussion, Gestaltungskompetenz (shaping competence) is discussed as the central educational objective of ESD. Shaping competence encompasses 12 key competencies that are expected to enable active, reflective and co-operative learning toward sustainable development. The authors also present the Global learning approach, which identifies a wide range of concrete themes and topics which should be considered in the process of individual competence development. They describe why the concept of ESD competencies is an innovation in the field of education. ESD also means that teachers as well have to pick up competencies for teaching sustainability. Two models exist in the international discussion which will be presented in detail. According to this discussion, three domains of competencies can be formed, which are logically coordinated in the sense of being enabled to act sustainable: recognition, evaluation, and action.

I.   What are competencies?

"Competencies are the positive combination of knowledge, ability and willingness in the availability of the individual to cope successfully and responsibly with changing situations". (Weinert's, 2001)

Within the German discussion about competencies, one of the clearest findings was that learning and educating finally means the individualisation of school and lessons. The further discussion brought a variety of definitions and approaches of the understanding of competencies, among them some ground breaking ones that are introduced in the following.

Josef Leisen, a physic-educationalist explained 2009 the term in a typically scientific manner using the symbolic language of science, that

> Competence = knowledge + ability = action (or 'in prose': Competence = active handling of knowledge (and values).

In 2010, Gerhard Ziener derived his answer from a general understanding of education, saying that there are three dimensions of education in the sense of cultivation and culture. These three dimensions are: Increase in cognitive competition, increase in capacity to act, increase in ability to reflect. Ziener refers to the fact that this trinity has been called 'competence' in the discussions of teaching psychologists for four decades. The underlying value of this definition is that teaching along the concept of competencies means the learning of methods without content and knowledge. Gerhard Ziener is convinced that one can develop one's competencies only with the facts of a case and not without.

But the most important contributions to the discussion on competencies and learning were made by Jürgen Rost, a German psychologist and, from the very beginning, a leading actor in the debate on competencies. In 2010 he pointed out that:

> You can't communicate competences. They have to be developed.

This sentence, combined with the finding that competence-oriented lessons stand for the individualisation of lessons, has an immense bearing on school in general and on the culture of assignment in particular and will fundamentally change traditional structures in many education systems.

II.   Competencies and key competencies as a guiding principle of teaching and learning in ESD

With regard to education, the concept of competencies is seen as an essential landmark for orienting teaching and learning for Sustainable Development (de Kraker et al., 2010; Wals, 2010; Wiek et al., 2011; UNECE, 2011). But the whole discussion and its implementation is still at an early stage. Thus, it is not surprising that some differences occur as revealed by Rieckmann (2011), who compared European and Latin-American perceptions with regard to twelve key competencies, all of which are considered relevant for sustainable development

both in the North and the South. Systemic thinking, anticipatory thinking and critical thinking are the most important competencies justified in this study, followed by acting fairly and ecologically, cooperation in (heterogeneous) groups and empathy and change of perspective. The European results concentrate more on competencies associated with empathy and change of perspective, the Latin point of view assigns more weight to those of cooperation and participation (Rieckmann, 2012).

As these key competencies identified in his research show similarities with other sustainability competence concepts, they may serve as a suitable starting point for further discussion.

Shaping Competence (Gestaltungskompetenz)

Sustainable development necessitates societal modernisation and may only be realised via the active participation of competent citizens. The concept of *Gestaltungskompetenz* (shaping competence) is characterised in particular by key competencies that are required for forward-looking and autonomous participation in shaping sustainable development. It may serve as a starting point for such an endeavour.

Gestaltungskompetenz (shaping competence) is discussed as the central educational objective of ESD:

> *"Gestaltungskompetenz* means the specific capacity to act and solve problems. Those who possess this competence can help, through active participation, to modify and shape the future of society, and to guide its social, economic, technological and ecological changes along the lines of sustainable development. *Gestaltungskompetenz* (…) means having the skills, competencies and knowledge to change economic, ecological and social behaviour without these changes merely being a reaction to existing problems. *Gestaltungskompetenz* makes an open future possible that can be actively shaped and in which various options exist". (de Haan, 2010, p. 318)

According to de Haan and Barth, shaping competence encompasses a set of key competencies that are expected to enable active, reflective and co-operative learning toward sustainable development. Shaping Competence is also seen to be in line with the assumptions of the 'situated learning' approach and comprises the following key competencies (de Haan, 2006; 2010, pp. 320-325). The principle thoughts can be summarised as follows:

1.   Competencies in forward-thinking

This is one of the crucial points in the ESD approach. In spite of the 'human gap', we – as humans – have to learn to deal with the future and therefore with uncertainty and expectations, as the future is definitely open. The analysis of the last decades taught us that we have to 'think beyond the present', as de Haan formulates. This means considering the future consequences of our actions at any time and everywhere in a global context. In contrast to concepts of learning from former generations, we can't be sure that our traditions ensure

that we will behave correctly. Our living conditions are not only globalised but at the same time highly dynamic – still showing an upward trend. Instead, we have to understand that learning in the context of globalisation and global challenges means preparing people to be able to cope with situations that might surprise us, that are different to what we have expected. This includes also the ability to estimate and value risks, danger and uncertainty, as well as creativity and imagination.

2.   Competence to create knowledge in an open-minded manner and while integrating new perspectives

Here, the focus lies on the dimension of space and the manifold of cultures. As we have to consider far-away times in our daily decisions and actions, we have to consider the consequences of our daily decisions for the planet as the base of our existence (and therefore for people all over the world).

3.   Competence in interdisciplinary work

It is very important that ESD is not a new subject at school, but a way of thinking, a certain perspective of thinking and understanding above all subjects and disciplines. This approach includes the analytic, problem-solving scrutiny that considers the complexity of the global challenges as well as the simple daily practice. In particular the complexity of most of the challenges causes the necessity of a wide interdisciplinary understanding and therefore learning. You cannot find solutions to global problems regarding them only out from one single point of view, like economics, politics, biology or geography. To be able to recognise behaviour as sustainable or not, you need an interdisciplinary understanding in general, including systemic thinking. All this requires the development of corresponding skills.

4.   Competence in cosmopolitan perception, transcultural understanding and cooperation

The global perception is central for this sub-competence. In a globalised world we need the capacity to identify, localise and understand the manifold phenomena we permanently perceive in our daily life. The regional or national perspective has definitely become too narrow to cope with that new situation. So the horizon-expanding perception is the indispensible assumption to make the grade (with our globalised reality, our complex societies and structures and all the other phenomena of our world). But this sub-competence not only covers the question of local versus global perception. It also includes the attitude of being interested in other cultures and the readiness to learn from each other all over the globe.

5.   Learning participatory skills

This sub-competence could be interpreted as the democratic learning dimension of ESD. It summarises the ability to plan and act with others but also to find collective decisions in a democratic and fair way. Sustainable development cannot be implemented by a governmental act, the allocation of technical innovations or the existence of efficient economies. It rather requires active and passive support from all societal groups to be durable. In this regard, all over the world we can observe the increasing drive of people to participate and act towards sustainability.

6.   Competence in planning and implementation skills

The core of this sub-competence is the awareness to learn that we have to take into account the rapid changeability and temporary nature of knowledge relevant to planning. This means that we have to cope with permanently and rapidly and dynamically changeable conditions and structures instead of the much more static natural and social environment faced by former generations. The permanent readiness to learn, to prove, to correct and to adjust one's individual decisions, actions and behaviour is required. Only if we manage these challenges we can successfully develop the implementation skills we need for collective and permanent development with regard to sustainability and transform desire into action. Central elements are the ability to create cooperative networks and the willingness to learn from mistakes.

7.   The capacity for empathy, compassion and solidarity

There will be no sustainable development if we do not find a much fairer balance between rich and poor, the privileged and the disadvantaged. Repression must be overcome. 'We' must become a global dimensional term. And this will not work without empathy, compassion and solidarity. A global 'we' is the assumption of a common strategy of future-oriented solutions aiming for more justice. Therefore, the development of empathy and its relative values as well as a widened perception of time and space in our consciousness are central sub-competencies within the scope of ESD.

8.   Competence in self-motivation and in motivating others

Over the last twenty years, we learned that there is neither a lack of understanding of the global challenges, nor a lack of solution strategies – but a lack of action. To overcome this fundamental problem (and bridge the human gap), we have to move motivation into the focus of one of the ESD sub-competencies. The realisation of shaping competence has both an individual as well as a collective or social dimension. Accordingly, we have to develop the ability to motivate ourselves and encourage others to realise action towards sustainability. We need to reflect individual as well as social actions in different cultural structures. The ability to reflect on different dimensions of culture, society and space must be interlinked with the sub-competencies of empathy, compassion and solidarity.

Competence Acquisition

Following Barth et al. (2007), who also work with the concept of "shaping competence", acquiring competencies is hardly comparable with learning as mere knowledge acquisition. Competencies must be regarded as learnable but not teachable. This leads to the question whether and how they may be acquired via learning programs (Weinert, 2001). Methodical notes about competency acquisition or about didactic conceptions of imparting competence are usually of a rather general character, which is often not least due to a rather vague competency concept. Barth et al. understand key competencies as the interaction of cognitive and non-cognitive components, which at least have to be considered in any approach of

competence acquisition. In addition, two different explanatory approaches may be drawn upon (Barth, 2007):

> (1) The development of higher stages of consciousness as an indication of increased cognitive complexity and thus enhanced cognitive components is traceable, considering the construction of mental models.

> (2) The acquisition of non-cognitive components is explained with the concept of value interiorisation. In this sense, competence acquisition may be understood as learning of values and thus it assumes interiorisation processes: production and reproduction, reception and communication of values are central points. The learning individual must be enabled to discover and to analyse his/her own value system, and to revise it with respect to its adequacy to reality. To successfully impart competencies, those methods that involve an affective component are increasingly necessary, breaking through established patterns of action and leading to a re-evaluation of action possibilities (quoted from Barth et al., 2007, pp. 418-419).

This last point leads to the reciprocal and iterative relationship and awareness that has to be taken into account whenever designing learning settings empowering the learner to acquire ESD competencies (cf. Mogensen & Schnack, 2010). This challenging endeavour brings the critical role of teacher education to the fore.

Sets of ESD-related competencies for teacher education

Two publications on ESD-related competencies for teacher education have been published recently. Both are presented briefly in the following.

1. The UNECE Approach

The UNECE Steering Committee on Education for Sustainable Development established an Expert Group on Competencies in Education for Sustainable Development in 2009. Its mandate, among others, was to develop

> 'A range of core competencies in ESD for educators, including defining these, as feasible, to serve as a tool to facilitate the integration of ESD into all educational programmes at all levels, as well as guidelines for the development of these competencies among educators.' (UNECE, 2011, pp. 2-3)

In line with the UNESCO pillars, formulated by the International Commission on Education for the Twenty-first Century in 1996, the suggested framework of core competencies in ESD for educators identified by the above-mentioned Expert Group (Table 1) intends to serve 'as a guide to what educators should know, what they should be able to do, how they should live and work with others, and how they should be if they are to contribute to ESD. The competencies are clustered around three essential characteristics of ESD – a holistic approach; envisioning change; and achieving transformation (p.3).'

In view of their own framework, the Expert Group acknowledges different interpretations of the term 'competencies' and offers explanatory remarks for their choice of defining features and use of the term (p. 6; 9-10).

Table 1: Competencies for educators in education for sustainable development (Source: UNECE, 2011)

	HOLISTIC APPROACH *Integrative thinking and practice*	ENVISIONING CHANGE *Past, present and future*	ACHIEVING TRANSFORMATION *People, pedagogy and education systems*
Learning to know *The educator understands….*	• The basics of systemic thinking; • ways in which natural, social and economic systems function and how they may be inter-related; • the interdependent nature of relationships within the present generation and between generations, as well as those between rich and poor and between humans and nature; • his or her personal world view and cultural assumptions and seeks to understand those of others; • the connection between sustainable futures and the way we think, live and work; • his or her own thinking and action in relation to sustainable development.	• the root causes of unsustainable development; • that sustainable development is an evolving concept; • the urgent need for change from unsustainable practices towards advancing quality of life, equity, solidarity, and environmental sustainability; • the importance of problem setting, critical reflection, visioning and creative thinking in planning the future and effecting change; • the importance of being prepared for the unforeseen and a precautionary approach; • the importance of scientific evidence in supporting sustainable development.	• why there is a need to transform the education systems that support learning; • why there is a need to transform the way we educate/learn; • why it is important to prepare learners to meet new challenges; • the importance of building on the experience of learners as a basis for transformation; • how engagement in real-world issues enhances learning outcomes and helps learners to make a difference in practice.
Learning to do *The educator is able to….*	• create opportunities for sharing ideas and experiences from different disciplines/places/cultures/generations without prejudice and preconceptions; • work with different perspectives on dilemmas, issues, tensions and conflicts; • connect the learners to their local and global spheres of influence.	• critically assess processes of change in society and envision sustainable futures; • communicate a sense of urgency for change and inspire hope; • facilitate the evaluation of potential consequences of different decisions and actions; • use the natural, social and built environment, including their own institution, as a context and source of learning.	• facilitate participatory and learner-centred education that develops critical thinking and active citizenship; • assess learning outcomes in terms of changes and achievements in relation to sustainable development.

	HOLISTIC APPROACH *Integrative thinking and practice*	ENVISIONING CHANGE *Past, present and future*	ACHIEVING TRANSFORMATION *People, pedagogy and education systems*
Learning to live together *The educator works with others in ways that....*	• actively engage different groups across generations, cultures, places and disciplines.	• facilitate the emergence of new worldviews that address sustainable development; • encourage negotiation of alternative futures.	• challenge unsustainable practices across educational systems, including at the institutional level; • help learners clarify their own and others world views through dialogue, and recognise that alternative frameworks exist;
Learning to be *The educator is someone who....*	• is inclusive of different disciplines, cultures and perspectives, including indigenous knowledge and worldviews.	• is motivated to make a positive contribution to other people and their social and natural environment, locally and globally; • is willing to take considered action even in situations of uncertainty.	• is willing to challenge assumptions underlying unsustainable practice; • is a facilitator and participant in the learning process; • is a critically reflective practitioner; • inspires creativity and innovation; • engages with learners in ways that build positive relationships.

2. The ENSI Approach (Environment and School Initiatives)

As part of a multi-national project with partners from eight different countries, the ENSI approach can be regarded itself as an action research approach. The study stresses the role of reflective practice in teacher education, because only this will lead to a 'thorough re-thinking of teacher training curricula' (Sleurs, 2008, p. 1).

The ENSI model takes into account the overall competencies for ESD as well as the professional dimension of teaching (Figure 1). In the instructions provided on how to read the model, both levels are addressed (following paragraphs quoted from Sleurs, 2008, pp. 26-29):

Professional Dimension (blue triangle):

> We have to move beyond the idea of the teacher as an instructor. We rather have to envisage teachers as individuals who are in a dynamic relationship with their students, their colleagues and the wider society. It is within this dynamic relationship that we create the conditions that enable genuine learning to develop and progress in ESD. This means that teachers are no longer simply the communicators of knowledge, but members of an institution which has a collective focus on the way all its members learn and develop, and all of those people are involved in the dynamics of a society that is seeking to confront the issues of sustainability. For all these levels, teachers need specific competencies, which are explained with the five domains. In addition to these, overall competencies are required.

Overall Competencies for ESD (red triangle): There are three overall competencies: Teaching; Reflecting/visioning; Networking.

> ESD needs a different and more constructive focus on *teaching*. Teachers have to gain the insight through constructivism, that acquiring competencies is a self-steered and active process, which can be fostered but not created. For example communication, the first competence needs to promote more of a balanced dialogue between teachers and learners and between learners themselves. This means that the traditional tasks undertaken by teachers such as teaching, instructing and communicating will change as ESD develops. Besides the communication within the educational institution, publication of projects and efforts is crucial (exhibitions, theatres, songs, cabaret books, public media, web-pages …) so that parents and the community are invited to take part in this school process.

> The second two competencies have even greater emphasis in ESD, because ESD has to take into account future orientation as well as local and global orientation. *Visioning* and creating new perspectives are important tasks because the transformative role of education is a key issue in ESD. Action will change as a product of reflecting and visioning, because such future action will take into account reflection on what has happened, and use this as a means to envision a transformation that will create new solutions and new ideas. Action research is an effective tool to foster such reflection and visioning in order to improve teacher competencies.

ESD as a common concern has to be realised within an interdisciplinary team. No one can do ESD alone, it is a common effort and everyone brings his or her strengths and weaknesses to the project. *Networking* with other partners in and out of school is also necessary in order to create a learning environment with an ongoing spiral containing visioning, planning, acting and reflecting. ESD concerns real-life problems and issues and requires the creation of learning opportunities in society. Publishing competencies are also important with networking (compare with the section on teaching).
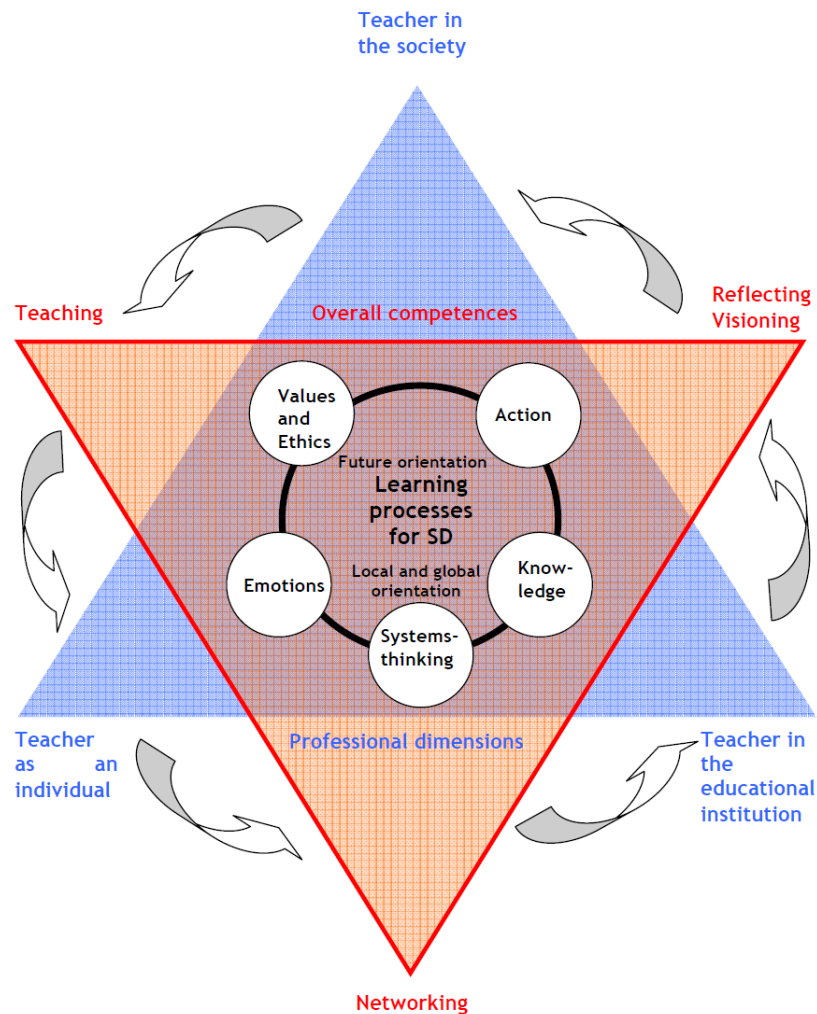

Figure 1: Dynamic model for ESD competencies teacher education (source: Sleurs, 2008, p. 26)

As one can see, it seems evident that the qualification profile for teacher trainers must be seen as an even bigger challenge.

III. Concept of ESD competencies – an innovation in the field of education

Innovation seems to have the character of a buzzword that is frequently used in close combination with knowledge. As both knowledge production and knowledge communication are also characteristics of education, innovation and education are in a rather close relationship (Adomßent, 2011). So one question would be whether innovation can be more than 'the first global policy craze of the twenty-first century' (Steve Fuller, 2007) and, secondly, innovation has to be discussed against the backdrop of sustainability.

A recent definition of innovation mirrors its origin in economics/economic sciences, stating that innovation can be seen as the 'successful exploitation of new ideas' that may either be entirely new to the market or involve the application of existing ideas that are new to the innovating organisation or often a combination of both. Thus,

> 'innovation involves the creation of new designs, concepts and ways of doing things, their commercial exploitation, and subsequent diffusion throughout the rest of the economy and society.' (UK Innovation Report, 2003)

This description covers the most frequently used meanings of the term, encompassing 'invention' (the act of creating something new), 'innovation' (first introduction of new products, processes, organisational forms, etc.), 'adoption' (taking on something new); and 'diffusion' (process of spreading something new and making it acceptable) (Kristof, 2010).

Furthermore, two different innovation models have to be taken into account: While the 'Schumpeterian' innovation (Schumpeter, 1934) originally strictly referred to the process of achieving technological improvements that can be characterised as radical and trend-breaking, 'Usherian' innovation (Usher, 1929) tends to be gradual and incremental and is facilitated by the learning process that occurs through cumulative experience (Weaver et al, 2000). Since breakthroughs also have a genealogy traceable to earlier discoveries, both forms of innovation can be seen as complementary (Figure 2).
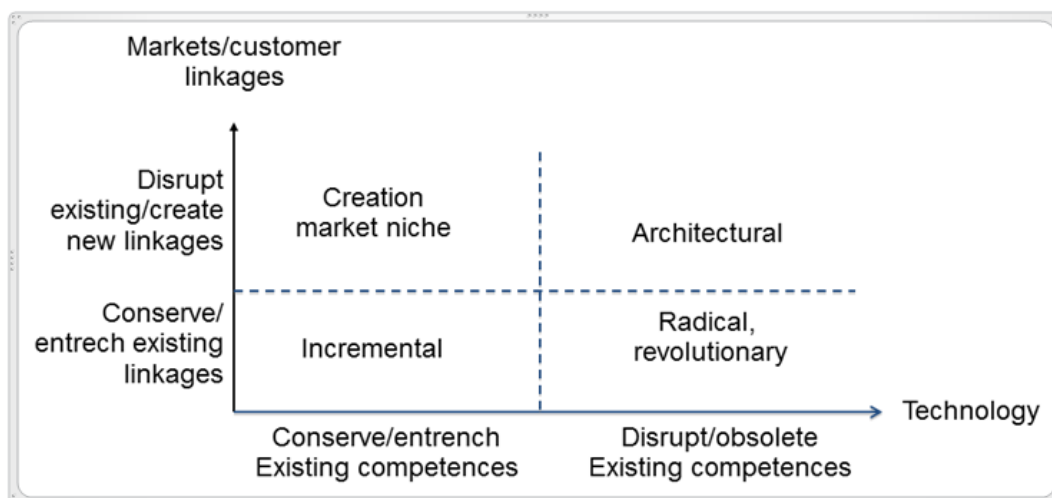

Figure 2: Typology of innovation (source: Abernathy & Clark, 1985). Note the use of the term 'competencies'

Until now, innovation research has been dominated by the economic mainstream. Sustainability-related activities mainly refer to the ecological dimension of sustainability, whereas conceptual amalgamation with economic and social dimensions only stands at the beginning (von Hauff & Jörg, 2010). With regard to environmental policy, improvement in efficiency is discussed at different levels: While factor 5[1] seems to be reasonable to achieve through optimisation or by redesigning parts of the system (equalling the evolutionary understanding of innovation), factor 10 may only be realizable through system innovation in a revolutionary sense.

Path-dependency is an issue to be discussed here, since societal ability to innovate and for structural change under sustainability aspects is mainly important in sectors where institutional, societal and physical realities/circumstances (pre-)determine future developments (Stirling, 2009). This deep-rooted incrementalism in normal innovation processes is the reason why many authors see systemic approaches not only as reasonable but as imperative for the development of more sustainable futures (Meyer-Krahmer, 2002).

By comparing theories of innovation, one more point is relevant with regard to sustainable development. It is striking that older theories of innovation seem to be based more on control (e.g. of ideas, of knowledge, of data, and of intellectual property rights), while newer theories of innovation tend to comprise a wider scope (cf. Wilbanks & Wilbanks, 2010). This 'open source model of innovation' (Alakeson & Sherwin, 2004) has worked its way into many spheres in recent years and is exemplified by approaches such as

- *open innovation* in a networked environment: addressing the ability to use the world outside as an institution to generate internally useful knowledge (cf. Chesbrough, 2009);
- *user driven innovation*: innovation comes from being close to the problem; in this case the knowledge required to innovate is 'sticky' and does not move far from the user (cf. von Hippel, 2005);
- *distributed innovation*: addressing collaborative communities like networks where individual actions 'snap together' into coherent group performances (Lakhani & Panetta, 2007).

All examples denote a significant shift in perspective on innovation (and related policies) – from focusing solely on technology to increased consideration of 'softer' innovation factors such as organisation, qualification, communication, mentalities, attitudes and behaviour. This leads to core principles of knowledge communication and knowledge production – thus, including education.

Innovation is steered by paradigms that guide both knowledge creation and objectives for improvement. Knowledge itself is regarded as the foundation for discovery and innovation as well as for coping. Thus, converting knowledge marks a fundamental challenge for

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[1] Factor 5: Key to sustainable development, means the availability of a factor of five in efficiency improvements for entire sectors of the economy, without losing the quality of service or well-being.

sustainability. But knowledge has always been a crucial dimension for the transformation of human society. What is new, however, is the notion that within contemporary societies, 'knowledge acts on knowledge' (cf. Sales & Fournier, 2007).

> 'Knowledge is now being applied systematically and purposefully to define what new knowledge is needed, whether it is feasible and what has to be done to make knowledge effective. It is in other words applied to systematic innovation.' (Drucker, 1993: p.42)

All processes and domains of knowledge are intimately tied to powerful communicative relationships. Thus, communication acts as 'the main catalyst for reflexive creativity, through training and diffusion, exchange, recombination, integration of knowledge and innovation' (Sales et al, 2007: p.4). Broken down against the backdrop of the sustainability paradigm, this is exactly where ESD comes in.

IV.   Learning for change – Global Learning Approach

When looking at societal accommodation processes towards sustainable development, the communicative interplay between the individual and society as well as intermediary authorities is instructive. At the individual level, citizens develop competencies and play a role in society leading to sustainable behaviour by acquiring new knowledge and new skills. By contrast, the institutional level is characterised by learning organisations which try to improve the quality of their own structure and performances in sustainability by setting new priorities and implementing new procedures and new practices. Al least, a learning society can be understood as the sum of the learning processes of different organisations and individuals with their own perspectives in which there is a cumulative effect. Taking this together, it creates new agendas, new partnerships, and new ways of interaction and participation (Goldstein, 2005).

This is in line with the higher-level concept of global learning that has been developed from the perspective of development deficits in a global society context. The environmental perspective is interlinked with social deficits which themselves cause or strengthen environmental degradations.

As a consequence of this basic conviction, the model of global learning locates every human acting as part and assumption of development processes into a structure of coherence issues on different levels of action. This model shows a range of levels of action reaching from the individual to the family or social group level, the communitarian, regional and national level and further to the transnational units and finally to the global level. Beside this distinction of the different levels of our individual as well as collective action, we have to differ the spheres of reality in which we act. The model therefore shows the four main spheres in detail: society, economy, politics and environment. Within this coordinate system of our life, every individual action, including its consequences in other spheres or on other social and spatial levels, can be located and better understood.

While actions of the majority of former generations did not have consequences on all levels and, in general, affected fewer spheres, we have to understand that our conditions have changed. A globalised life includes consequences on more and more levels and in more and more spheres. The model of global learning therefore illustrates these links, introducing the aspect of coherence in two dimensions. The vertical coherence connects the local with the global dimension, including all levels in-between. Meanwhile, the horizontal coherence illustrates the links and interdependencies between the four spheres at different action levels. These thoughts form the background of a competence-oriented model of global learning.

Acting sustainable

According to this approach, the authors formed three domains of competencies, which are logically coordinated in the sense of being enabled to act sustainable. The three aspects are recognition, evaluation, and action. The central theme of this arrangement illustrates a **concept of learning** which could be described as **'From awareness to action'**: you learn to recognise your individual and all superior spatial situations and evaluate the phenomena you are observing according to their grade of sustainability. On this basis, you act according to the ideas of sustainability. The domains and their allocated core competencies in particular will be introduced close to the original formulations (de Haan, 2007).

Recognition

A more detailed look at the competency domains clarifies that recognition underlines the necessity of acquiring and analysing global development. Consequently, the core competencies of this domain which have to be developed by the learners are:

- to gather information on globalisation and development issues and process it thematically;

- to recognise socio-cultural and natural diversity in a globalised world;

- to analyse globalisation and development processes applying the guiding principle of sustainable development;

- to recognise different structural levels from the individual to the global and identify their respective functions for development processes.

Evaluation

The critical reflection of different values and living conditions is a key area of focus as well as the possibilities to develop an individual identity. The competencies which need to be developed are evaluation of inconsistencies and conflict potential between global development objectives. Empathy and the ability to change perspectives are indispensable core competencies without which sustainable development cannot work. The core competencies which learners have to develop in this respect are to:

- contemplate their own and unfamiliar value orientations in their greater meaning of life choices;

- be able to form an individual opinion on sustainable development and human rights after critically contemplating globalisation and development issues;
- be able to evaluate development aid measures and come to independent evaluation allowing.

Action

It is one of the crucial accomplishments of this competency model that the authors do not mainly take the cognitive dimensions of ESD into account, but design a concept that includes the domain of action. The focus is placed on conflict management, communication, creativity and the willingness to innovate as preliminary requirements for active involvement in development processes. According to complex situations and rapid transformation and changes, the ability to cope with uncertainty and contradiction is indispensible. Therefore, the core competencies learners must develop are to:

- recognise areas of personal co-responsibilities for humankind – that means to live in solidarity – and the environment and take up the global challenge(s);
- overcome socio-cultural and special interest-determined obstacles in communication, cooperation and conflict management;
- ensure society's ability to act on global change, especially on a personal and professional level, through openness and a willingness to innovate as well as through a reasonable reduction of complexity and be able to tolerate the uncertainty of open-ended situations;
- be able to promote the goals of sustainable development in private, school and professional lives and take an active role in putting these goals into practice on a social and political level.

V. Conclusion

As opposed to the **shaping competence model**, the **model of global learning** identifies a wide range of concrete themes and topics which should be considered in the process of individual competence development.

To enable societies to become sustainable, it is important to unlock as many forms of knowledge as possible, which means combining the traditional knowledge that exists alongside modern knowledge with scientific knowledge. This allows existing 'below-the-radar-innovations' that remain mostly isolated and unconnected despite otherwise reasonably robust informal knowledge networks to link up with more sustainable subsets of knowledge (Wamae, 2009).

As a matter of fact, there are two sides of education for sustainable education that can be seen as complementary:

- Learning *for* sustainable development: By both facilitating changes in what we do and promoting (informed, skilled) behaviours and ways of thinking, where the need for this is clearly identified and agreed.
- Learning *as* sustainable development: By building the capacity to think critically about (and beyond) what experts say and testing sustainable development ideas, as well as by exploring the contradictions inherent in sustainable living (Vare & Scott, 2007).

The relationship between educational outcomes and social change can then be regarded in a two-fold manner, where learning leads to change either by establishing and communicating facts or by offering tools to facilitate choice between alternative futures. Or, thirdly, open-ended learning is strived for by making it understood that what is (and can be) known in the present is not adequate and that no desired end-states can be specified (Scott & Gough, 2003).

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