



Concept paper

Is there a specific ESD methodology?

by Thomas Hoffmann (March 2014)

This paper 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).

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Before we analyse the meaning and the specific character of methods used within the framework of Education for Sustainable Development, we must take a step back and look firstly at some of the major related factors. We must ask what ESD is about, why this educational concept is necessary, and what aims it pursues. Then, we must examine the role played by the pertinent competences, before we focus on the above question of whether or not there is a specific ESD methodology.

1. Why ESD?

The international discussion on ESD is as vivid and manifold as the topics this educational concept covers and the competences it aims to be developed. Although there are cultural, systemic and political differences among the individual branches of this global discussion, there is general agreement on the main topics.

On the one side, this discussion is framed by the spheres of environmental degradation, including climate change, loss of biodiversity, degradation of soils, contamination of water, air pollution and the ubiquitous shortage of resources. On the other, worsening social disparities and injustices play a role, including poverty, hunger, health, human rights, flight, migration, urbanisation, segregation, population growth and the various negative impacts of globalisation. The sheer spectrum of themes embraced at local, national, regional and global level is vast. Once we recognise the increasing complexity of the living conditions of every individual under the impact of these interconnected developments and the accelerating dynamic of these joint processes, it becomes obvious that we must review the function as well as the aim of formal education. We have to bring it into line with a fundamentally changing reality, in which individuals are expected to acquire new competencies that differ from those formerly required.



We will have to adapt our roles as teachers, if we agree that it is the duty of school within and for every society to help the young generation acquire basic knowledge and understanding of their presence based on our collective history and traditions, our values and culture. This will also be necessary, if we also agree that, over and above this, school must also prepare the young generation to take charge of its own future.

Then, our perspective as teachers has to be threefold in terms of the time dimension: past, present and future. Therefore, developments both expected and forecast must be integrated into ESD-oriented teaching and learning. All over the world, living and working conditions are continuing to change rapidly, and with them the uncertainty affecting the future of every individual will increase.

Education for Sustainable Development therefore has to prepare the generations to come, such that they can cope with these realities and with expected developments. They must be trained in solution-oriented thinking and have at their disposal a variety of options, which will help them deal with open-ended situations. Learning methods thus do play an important role in the context of ESD, but we will look at this in more detail below.

2. What are the aims of ESD?

Various concepts have been developed for Education for Sustainable Development. They agree that Education for Sustainable Development should generally be understood as the pedagogic answer to the global challenges we face in daily life. The aim of ESD as a normative concept is to enable individuals to recognise and evaluate the global challenges of our present and future, such that they can help assure sustainable development in their own specific context and environment.

Therefore, all learners should be enabled to participate actively in the analysis and evaluation of non-sustainable development processes. They should be in a position to gear their own lives to sustainability criteria, and should be able to initiate sustainable development processes individually and in cooperation with others at both local and global levels. This will lay the foundations that will enable this generation and the generations to come to access the resource base they need. But how can we achieve these aims?

3. The importance of sustainable development (SD) competences

The various concepts for Education for Sustainable Development are based on a competences approach. Recognising that the more or less limited set of knowledge and abilities acquired by former generations was no longer adequate to cope with a globalised world, scientists and administrations alike have realised that learning and teaching will have to shift to adopt a competences-oriented approach.

To distil the wide-ranging discussion to its essence, we can define competences as active handling of knowledge and values. Furthermore, we must realise that competences cannot merely be communicated, but have to be developed by the individual. If we accept these two central findings of the discussion on competences, it becomes immediately obvious that this will have an enormous impact on the reality of school in general and the arrangement of individualised learning processes in particular.

In an effort to identify the crucial competences needed by the individual in order to achieve a more sustainable lifestyle, the discussion then shifted towards the core question, i.e. which specific competences are needed and therefore have to be developed by all learners. Since the beginning of the 1990s, when Chapter 36 of Agenda 21 looked at ESD, triggering a debate on the 'right' set of SD competences, a huge



number of competences has been proposed, with around fifty different approaches discussed at international level. This in turn spawned the recent discussion about the best or most suitable set of SD competences.¹

A closer inspection shows that these concepts and suggestions target different levels. They demonstrate different grades of abstraction and operability, and hence different typical applications. The 'Definition and Selection of Key Competencies' by the OECD led to the identification of nine competences structured according to the categories

1. using tools interactively,
2. interacting in heterogeneous groups and
3. acting autonomously.

Gerhard de Haan provided a concept of *Gestaltungskompetenz* (shaping competence), which uses twelve sub-competences to identify the capacities needed to help shape ongoing social and natural development processes with a view to achieving greater sustainability.

In an effort not to fall into the trap of being excessively abstract, the *Cross curriculum framework for Global Development Education in the Context of Education for Sustainable Development* offers an approach that uses the criteria 'Recognising', 'Evaluating' and 'Acting' and is conceptualised down to the level of those school subjects, which show a high level of affinity with ESD (for instance geography, biology, politics, economy, and ethics). The framework sets out ways of arranging a learning setting to let learners develop their individual SD competences. And, to mention another German contribution to this discussion, Marco Rieckmann identified the SD competences considered the most important by a group of international experts from Chile, Mexico, the United Kingdom and Germany.

All of these suggestions include long lists of more or less important competences, which have to be developed by individuals. Although there can be no doubt that the competences mentioned are generally necessary, the sheer number is so overwhelming that students and teachers alike will get lost in the endless lists. The proposal of Arnim Wiek, Lauren Withycombe and Charles L. Redman, published in *Key Competences of ESD*, to identify a small number of key competences on the basis of about fifty concepts, which are being discussed at international level, is thus a remarkable approach. Each of the five key competences is wholly convincing, and their specific combination also reflects a very clear and comprehensible logic. The following explanations are therefore based on the *Key Competences of ESD* (Arnim Wiek et al., 2011). These are:

1. systemic thinking competence,
2. anticipatory thinking competence,
3. normative competence,
4. strategic competence,
5. interpersonal competence.

4. The role of methods in developing competences

Having settled on the above key competences, we now face the question of how to develop them. What is the best way to set up learning arrangements to develop and/or strengthen the intended key competences on the part of every learner? When we look at how to achieve optimum results, the importance of learning

¹ For further details on SD and ESD competences see Sanskriti Menon and Thomas Hoffmann, *Getting out of the Confusion of E-, S- and D-competences*. (<http://esd-expert.net/materials/concept-papers/>)



methods becomes obvious. The concept of competences-oriented learning based on constructivist learning theories stipulates that we do have to make the learners act in order to develop the intended competences.

This leads us directly to the question as to which methodological approach is best suited to supporting the intended individual learning and development processes. What learning arrangement is best suited to developing systemic competence or anticipatory thinking competence? To go one step further, we must identify the scientific and cognitive insights needed to lay the foundations for the development of SD competences and thus the emergence of appropriate consumption patterns. And we must provide the facts on which a decision can be made that will take us closer to achieving sustainable development.

There is no doubt that all this can be best realised if the school is not only a common place of learning, but a common sphere of experience, of taking responsibility and especially of experiencing first hand what should be learned in the context of sustainable development. The whole school approach meets these needs best since it not only considers and integrates all relevant contents, methods and competences, but actually integrates the school per se in the actively shaped and experienced sphere of sustainability. In this context school becomes a place where learners are responsible by example for the wellbeing of a tree, single steps of preparing healthy food, the decision as to which kind of paper, ink or other items are used in the school, to give but a few examples. The daily commitment demonstrated by these responsibilities and the daily first hand experience of being part of a sustainable sphere is without a doubt the most intense way of realising ESD. A number of schools are already pursuing the whole school approach, although they are still a small minority.

What does this mean for the realisation of ESD in schools which do not follow the whole school approach? They should place the emphasis on an integrated approach to the contents, methods and competences to be developed. It is vital that methods should not be seen as something to be learned for their own sake, but as something to be mastered as a way of developing the intended competences. Although this applies to all competences-oriented learning processes, it is particularly relevant for competence-oriented ESD concepts.

Nevertheless, there are two aspects of the importance of methods. Firstly, methods are vehicles to achieving an intended learning process, and secondly methodological competence is a basic competence that helps individuals cope with the challenges of the daily life. As we stated earlier, ESD mainly tries to prepare learners to cope successfully with the specific local or regional manifestations of global challenges, with rapidly changing living conditions and with the increasing level of uncertainty in their lives. This implies that they require a minimum of methodological competence, which they can apply in various settings. It would not, therefore, be enough if learning methods which mainly develop independent thought and action were used only here and there within the framework of a certain subject. Instead, appropriate learning methods and arrangements should be based on a common concept, which makes the learners increasingly familiar with this kind of learning.

Sporadic experience with learning settings of this kind would not produce the intended result. This can only be reached, if there is a clear integrative approach, under which learners are trained to recognise, to evaluate and to act autonomously in line with the tenets of sustainability. The self-evident use of ESD-adequate learning strategies and methods, along with appropriate learning settings and an integrative cross-subject concept, could be a cornerstone in realising Education for Sustainable Development, especially when combined with a whole school approach.

Although the article *Key Competences of ESD* also mentions various methodological ways to develop the identified key competences of ESD, they do not propose specific examples for realisation. We would like to bridge that gap and provide an example, which we see as being suitable for the above purposes.



5. Key competence, topic and method – an integrated approach to ESD learning. The example of climate change in geography lessons

To give a practical example of the mainly theoretical considerations above, we will take the example of climate change. This topic covers a central aspect of ESD and is usually part of geography lessons. It is particularly suitable to reveal how the interaction between content, the development of specific SD-competences and the role of the selected learning methods can result in an integrated approach of ESD learning. In principle, this is a subject-specific approach. In this very example, the content climate change and the applied learning methods such as mystery, scenario technique and concept map are closely related to geography to foster the development of the intended competences to be developed by the learners. Different or even identical topics dealt with in other subjects need other subject-specific approaches, which include different sets of subject-specific learning methods.

In line with the five key competences proposed by Arnim Wiek and his colleagues, students should develop systemic and anticipatory thinking skills as well as normative, strategic and interpersonal competences. These competences mirror the steps needed for successful planning and acting and their selection should be based on a specific trend-setting idea. Without doubt, in the light of the current global situation, this idea is sustainability. But the full potential of ESD would not be exploited if the pertinent teaching did not combine the development of these competences with important aspects of the global challenges facing us, such as climate change, soil degradation, poverty and hunger. We will explain this idea below taking the example of the climate change process as a learning unit of geography.

Of the global challenges which contribute to the degradation of ecosystems, climate change stands out and should be regarded as the key factor since it has an enormous impact on various parts of the ecosystem as a whole and fosters degradation processes of different kinds. At the same time, as the latest IPCC report states, there is a 95% probability that climate change itself is the result of the specific energy use of the world's population, which causes the CO₂ emissions, which finally drive the rise in the average global temperature.

From a scientific point of view, geography students should understand the basics and the specific logic of the complex interdependency of reasons, dimensions and consequences of the climate change process, as well as the different climate scenarios forecast for the period up to 2030 or 2050 on the basis of the available data and existing models. Furthermore, the students should have a vision of the (climatic) future they want. They should be familiar with the adaptation strategies under discussion and with competing strategies and approaches. The following table and explanations propose ways of combining the understanding of these scientific aspects and the development of ESD key competences with the help of selected learning methods.

Key competence, topic and method as integrated approach of ESD – the example of climate change in geography lessons

Key competence	Learning method	Scientific aspects
Systemic thinking competence	<ul style="list-style-type: none"> mystery 	<ul style="list-style-type: none"> reason – dimensions – consequences: the logic of climate change
Anticipatory thinking competence	<ul style="list-style-type: none"> scenario technique 	<ul style="list-style-type: none"> climate prediction 2030/2050 according to IPCC
Normative competence	<ul style="list-style-type: none"> <i>Zukunftswerkstatt</i> (future workshop) 	<ul style="list-style-type: none"> future climate scenarios, drafts of social orders



Key competence	Learning method	Scientific aspects
Strategic competence	<ul style="list-style-type: none">• strategy planning• concept map	<ul style="list-style-type: none">• actions to limit a further temperature increase• adaptation to climate change strategies
Interpersonal competence	<ul style="list-style-type: none">• team work	<ul style="list-style-type: none">• competing strategies and approaches

Systemic thinking

To understand the complex structure of multi-interdependent processes and the specific dynamics of climate processes in general and the climate change process in particular at least in its basic structures, the mystery method has proved valuable. This learning method involves students being given two, sometimes even three different beginnings of story lines, which appear to be mysterious because they seem to be completely unconnected. To solve this mystery the students are then asked to reconstruct the complex narration with the help of information cards, which describe or explain single steps of the whole story. The result of this activity is similar to a concept map. The single cards might not only be arranged in a complex logic, but might also be interconnected with the help of pointing arrows. Doing this, the students learn to think not only in a linear, but more and more in a systemic way and hence develop and strengthen their individual systemic thinking competence. The application of this learning method with a story related to climate change, which finally leads to a concept map showing the reasons, dimensions and consequences of the climate change process, has proved to be a very good way to develop the intended competence.

Anticipatory thinking

Anticipatory thinking competence is crucial in understanding that we can shape the future to a certain degree. To contribute actively to sustainable development it is necessary to know that specific actions will have specific consequences. This general finding explains the crucial importance of anticipatory thinking as part of the range of SD competences.

To develop and strengthen this competence in the thematic context of climate change, the analysis of possible climate futures has proved to be a useful method. The methodological approach could be designed as scenario technique. This learning method focuses on a specific point in the future, for instance 2030 or 2050, with the help of both concrete quantitative data, models and qualitative findings. Using current knowledge of what climate change might mean by that predefined point in the future, learners are called on to develop a best case, a worst case and a trend scenario of the climate futures. The discussion of the different scenarios side by side makes students aware which decision would cause which climatic future, and thus develops anticipatory thinking skills.

Normative skills

One of the remarkable shortcomings in the sustainable development discussion is that there is no generally agreed definition of a sustainable society or a sustainable way of life. Instead, the discussion is dominated by a vast variety of individual imaginations and visions, which are all too often counterproductive in their combined outcome. To find a common understanding of the sustainable future people aim to achieve for their family, village, community, country or for the entire world, a normative competence is absolutely crucial. These are the skills that enable the individual and society to look at the future they want.

In the context of climate change this might be a climatic future with limited rather than extreme climatic consequences for the respective area. To train and strengthen this key competence with learners, students



should be asked to imagine a desirable climate future. The methodological approach of a *Zukunftswerkstatt* (or future workshop), which stimulates and encourages the students to take their visions beyond scientific facts and figures, opens their minds for more or less utopic visions, which might enrich the collective vision of a common path.

Strategic competence

The fourth key competence of this ESD approach is strategic competence. Students must develop the ability to realise the intended results. In the context of climate change, aspects such as actions to limit further temperature rise or strategies for climate change adaptation are thus important. Learning methods such as strategy planning and/or concept maps, which visualise the planning of single steps that must be taken in order to achieve the intended result can support the development of this competence. Beyond these more cognitive learning steps, a discussion of common procedure would be appropriate and would also incorporate aspects of the fifth key competence.

Interpersonal competence

Finally, it is obvious that no individual can influence the climate change or the complex processes involved alone, but that these are generally collective cross-sectoral tasks. Therefore, the fifth key competence deals with interpersonal competence. In the context of climate change, we must address the competing strategies and approaches currently being discussed with a view to resolving or at least mitigating this global challenge.

A debate or work sharing within the scope of team work could be used to develop and strengthen this specific ESD key competence. Different groups of students could be asked to discuss selected approaches to tackling climate change as preparation for a concluding debate. These preparatory tasks could be organised in the form of a group jigsaw as well as in variations of work-sharing within the scope of team work. Instead of a final debate, a business game, an expert interview or a forum for discussions could be held at the very end of this learning process.

6. Final notes: Is there an ESD methodology?

We note that subject-specific and contextualised methods obviously play an important role in the learning process in general and in the development and strengthening of SD competences in particular. Methods as instruments act as a kind of promoter and as such, they either accelerate or deepen, but in any case support, the initiated learning process. Furthermore, methodological competence enables the individual to recognise realities, evaluate processes and decisions and act according the principles of sustainability. In addition, methodological competence empowers individuals, with their independent and self-contained abilities, to judge and act, to change perspectives or to act inter-culturally or socially in heterogeneous groups. Consequently, the importance of methods in the context of ESD is self-evident. But methods are not important for their own sake, but only in combination with topics and as a supporting instrument for the individual development of SD competences.

Finally, we do have to state, however, that there is no explicit ESD methodology in the sense of specifically created new learning methods. But, as shown above, there is a specific choice of existing learning methods, created in the context of competences-oriented learning and well suited to supporting the development of the specific SD competences that enable individuals to contribute to the general transformation process.

What all these methods have in common is that they strengthen mainly self-contained working and learning processes, which ask the learners to act in groups and force them to reflect critically on complex and dynamic structures in a systemic way. This specific character makes a learning method appropriate as a way of supporting Education for Sustainable Development.



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