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Author: Marco Rieckmann

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Future-oriented higher education: Which key competencies should be fostered through university teaching and learning?

Marco Rieckmann

Institute for Environmental and Sustainability Communication, Leuphana University of Lüneburg, Scharnhorststr. 1, D-21335 Lüneburg, Germany, Tel.: +49(0)4131-677-2936, Fax: +49(0)4131-677-2819, email: rieckmann@uni.leuphana.de

Abstract

Universities play an important role in shaping the future of the world society in terms of sustainable development by generating new knowledge as well as contributing to the development of appropriate competencies and raising sustainability awareness. During the last years, many universities have undertaken activities for implementing Higher Education for Sustainable Development (HESD). Many have asked which key competencies are most relevant for sustainable development and hence should be developed in future-oriented higher education. Different approaches for the selection of sustainability key competencies have been developed, but there is little international agreement in the debate around the most important key competencies. Consequently, this paper asks which individual key competencies are crucial for understanding central challenges facing the world society and for facilitating its development towards a more sustainable future, and thus identifies those competencies which should be fostered through university teaching and learning. The empirical design of the study is related to a Delphi study in which 'sustainability key competencies' are defined by selected experts from Europe (Germany, Great Britain) and Latin America (Chile, Ecuador, Mexico). The results show that twelve key competencies crucial for sustainable development can be identified; the most relevant ones are those for systemic thinking, anticipatory thinking and critical thinking.

1. Introduction

Today, humanity is facing a range of global social, economic, cultural and ecological changes which in the long term threaten the survival of the human species [1]. The German Scientific Advisory Council on Global Environmental Change describes these worldwide transformations as "*Global Change*" [2]. This reflects the manner in which global environmental change is closely intertwined with economic globalisation, cultural change and a growing North-South divide. In our time, the interconnectedness of ecosystems, societies and economies is growing quickly and complexity is increasing rapidly. "Almost all the problems we face nowadays are complex, interconnected, contradictory, located in an uncertain environment and embedded in landscapes that are rapidly changing" [3, p. 183]. Such problems have been described as "wicked problems" [4].

Because of the global environmental crisis "the development model of the North is historically obsolete" [5, p. 18]. However, it is also the failure of conventional development strategies to eradicate poverty and overcome inequality that shows the concept of copycat development as no longer useful and suggests the necessity of a new development path. Such a new direction has been seen, since the Rio Earth Summit in 1992, in the ideal of *sustainable development* which involves and requires fundamental societal transformations.

These transformations in terms of sustainable development require a far-reaching change of consciousness in individuals. Consequently, Agenda 21 (chapter 36) points to *education as key factor in achieving sustainable development*. The United Nations Decade of Education for Sustainable Development (2005-2014), agreed upon by the UN General Assembly in December 2002, [6] can be seen in this perspective as can the strategy for Education for Sustainable Development of the United Nations Economic Commission for Europe (UNECE), which was accepted in spring 2005 by over 50 countries, from North America to Europe to Central Asia [7].

In order for individuals to be in a position to engage with sustainability-related issues, a change of perspective in education is required, a reorientation towards "Education for Sustainable Development" (ESD). In this context and given these international developments of the past years, all educational institutions – from preschool to higher education – can and should consider it their responsibility to deal intensively with matters of sustainable development and to foster the development of sustainability-relevant key competencies [8].

Universities can play an important role for shaping the future of the world society in terms of sustainable development "by addressing sustainability through their major functions of education, research and outreach" [9, p. 250], which means they can generate new knowledge and contribute to developing appropriate competencies and raising sustainability awareness. Accordingly, the International Association of Universities (IAU) has adopted sustainable development as one of its top priority themes that need to be addressed urgently. As a consequence, the IAU states that

> leaders of higher education institutions and their academic colleagues are in a key position to contribute to an equitable and ecologically sound future by making sustainable development a central academic and organisational focus. This requires the generation and dissemination of knowledge through interdisciplinary research and teaching, policy-making, capacity-building, and technology transfer. It is critical that higher education institutions understand and accept their responsibility within the broader context of social and economic development, and the building of democratic, equitable and ecologically-minded societies. [10]

Embedding sustainable development in the curriculum poses a new challenge to the academic system. In this context, it can be asked if in the future higher education will be able to cope with these challenges. Scenarios which describe possible futures of the higher education system indicate that higher education institutions may meet their responsibility as key actors for sustainable development [11-13].

During the last years, many universities from all over the world have already initiated activities in terms of Higher Education for Sustainable Development (HESD) [14-17]. Against the background of global change and increasing complexity, Higher Education for Sustainable Development aims at enabling people to not only acquire and generate knowledge, but also to reflect on further effects and the complexity of behaviour and decisions in a future-oriented and global perspective of responsibility. Consequently, absolutely essential is a new learning culture which does not confirm academic tradition but examines its potential for a sustainable future, in an open-minded, reflexive and participative process.

The concept of HESD can be linked to the *future* at least in two ways: On the one hand, it aims to develop sustainability key competencies and, thus, to enable students to deal with wicked problems and to contribute to a sustainable future. On the other hand, it is about the future of higher education itself, because it raises the question of how higher education should look in the future in order to be able to take part in the sustainable development of (world) society. This paper addresses in particular the question of which key competencies are most relevant for sustainable development and hence should be developed in future-oriented higher education.

2. Theoretical Framework

2.1 (Higher) Education for Sustainable Development

The fundamental reorientations and transformations in terms of sustainable development require a far-reaching change of consciousness in individuals and thus the development of competencies to contribute to a (more) sustainable future. This can only be brought about by learning; hence sustainable development has to be understood as a learning process [18]. Education is expected both to make people more aware and better qualified to take part in shaping future developments responsibly, and to raise their awareness of the problems related to sustainable development and bring forth innovative contributions to all economic, social, environmental and cultural issues.

Given the "development state of the world society" [19, p. 35], education should enable individuals to reflect on their own actions by taking into account their current and future social and environmental effects – from a global perspective – and to intervene productively in shaping them in a sustainable manner. Individuals should be empowered to act in complex situations which may require the individual to strike out in new directions. Education for Sustainable Development (ESD) aims to *develop (key) competencies* that enable individuals to participate in socio-political processes and hence to move their society towards sustainable development [20, 21]. Vare and Scott [22, p. 194] argue that instead of promoting certain behaviours and ways of thinking ("ESD 1"), this competence-oriented concept of ESD focuses in particular on both "building capacity to think critically about [and beyond] what experts say and to test sustainable development ideas" and "exploring the contradictions inherent in sustainable living" ("ESD 2"). Concerning contents, it has to be emphasised that ESD is more than environmental education: "Education with the objective of achieving sustainability varies from previous approaches to environmental education in that it focuses sharply on developing closer links among environmental quality, human equality, human rights and peace and their underlying political threads" [23, p. 9].

One important component of ESD is "*envisioning a better future*", because it wants to establish "a link between long term goals and immediate actions, and motivates people to action by harnessing their deep aspirations" [24, p. 3]. Thus, ESD helps people to find out how to achieve change and it should empower them for change by providing "the values, knowledge, skills and competencies for sustainable living and participation in society" [25, p. 1].

Universities play an important role for the implementation of ESD. By *involving higher education in ESD*, UNESCO [26, p. 5] wants to "encourage and enhance scientific excellence, research and new knowledge development for ESD". Universities are key actors in the process of implementing sustainable development, "because they form a link between knowledge generation and knowledge transfer to society both by educating future decision-makers and through societal outreach and service" [27, p. 87–88]. Dealing with the concept of sustainable development, for universities, offers the opportunity to understand and face up to complexity as well as to cope with uncertainty and diverging norms and values, and it facilitates systemic institutional and organisational change of universities and provides them with spaces for future-oriented and transformative thinking and learning [28].

> Universities are called on to teach not only the skills required to advance successfully in a globalised world, but also to nourish in their students, faculty and staff a positive attitude towards environmental issues and cultural diversity; to help them understand how a richness of both nature and cultures can contribute to a better life in a safer world for all; to instil in young people the desire to contribute to their society and its environment; in short to the sustainability of their way of life and quality of living. [29, p. 13]

To cope with these challenges, universities have to become a "learning academia" [30, p. 13] – they should create teaching and learning settings which can be characterised by aspects as inter- and transdisciplinarity, participation, problem-orientation as well as the linking of formal and informal learning and, thus, should facilitate the development of key competencies needed for dealing with (un)sustainable development [31-33].

Such efforts are an element of *sustainable universities* which – as scenarios show [34] – can play a well-established role in the future. Other challenges sustainable universities need to meet are: institutional sustainability policies, mobilising staff and students, training of staff, inclusion of sustainability in research, inclusion of sustainability in continuing education and extension [35]. However, although already since 1990 declarations on Higher Education for Sustainable Development have been adopted and universities have implemented a wide set of activities in this area and have created networks [36], for preparing universities for the future much work still needs to be done and many issues still have to be discussed. For instance, the *selection and definition of sustainability key competencies* which should be acquired in higher education are still up for debate [37].

2.2 Competencies and Key Competencies

Societal change, the progress of technology and globalisation are accompanied by new challenges which have to be mastered: increasing individualisation and growing societal diversity, accompanied in parallel by expanding economic and cultural uniformity, the availability of a rapidly growing amount of information as well as the necessity to cope with increasing complexity and uncertainties [38, 39]. These conditions require creative and self-organised action, because the complexity of the actors, the action situation and the course of action do not allow for problem-solving processes which go strictly according to plan. Competencies describe the dispositions which individuals need in this environment for acting

and self-organisation in various complex contexts and situations. However, no agreement exists about what (key) competencies actually are and which are of importance.

Competencies may be characterised as individual dispositions to self-organisation which include cognitive, affective, volitional (with deliberate intention) and motivational elements; they are an interplay of knowledge, capacities and skills, motives and affective dispositions. Consequently, these components are part of each competency, not having to be regarded independently, but in their interaction. Competencies facilitate self-organised action in various complex situations, dependent on the given specific situation and context. Competencies can be developed: They are acquired during action – on the basis of experience and reflection. In the context of the debate on competencies, there is also reference to the notion of performance. While competency is considered as the precondition for self-organised action, the notion of performance means the execution of the action itself [40].

Furthermore, the term *key competency* seems of importance as it represents a qualitative extension that points out the special significance of certain competencies. Key competencies can be understood as multifunctional and context-independent competencies which are considered to be particularly crucial for implementing societal goals important in a defined normative framework (e.g. sustainability) and which are important for all individuals. They require a high degree of individual reflexivity [41-43].

Against this backdrop, it can be asked which competencies are of particular importance for sustainable development and, hence, could be seen as 'sustainability key competencies'.

2.3 Approaches for Selecting Key Competencies crucial for Sustainable Development

Sustainable development can be seen as a normative starting point for selecting relevant key competencies. During the last years, different approaches for the selection and definition of key competencies required for sustainable development have been developed, e.g. shaping competence [44], sustainability literacy [45], sustainability skills [46-48], and OECD`s DeSeCo key competencies [49], for instance. UNESCO [50, p. 29] formulated in its "International Implementation Scheme" for the ESD World Decade:

Unfortunately, simply increasing basic literacy, as it is currently taught in most countries, will not advance sustainable societies. Indeed, if communities and nations hope to make progress towards sustainability goals, they must focus on knowledge, skills, values, and perspectives that encourage and support public participation and community decision-making. To achieve this, basic education must be reoriented to address sustainability and expanded to include critical-thinking skills, skills to organize and interpret data and information, and skills to formulate questions.

In Germany, developing "*Gestaltungskompetenz*" ("shaping competence") [51] has been discussed as the central educational objective of ESD. "Shaping competence" encompasses a set of key competencies which are expected to enable active, reflective and co-operative participation toward sustainable development.

Those who possess this competence can help, through their active participation in society, to modify and shape the future of society, and to guide its social, economic, technological and ecological changes along the lines of sustainable development. [52, p. 22)

According to de Haan [53, 54], this "shaping competence" comprises the following key competencies:

- competency in anticipatory thinking
- competency in interdisciplinary work
- competency in cosmopolitan perception and change of perspectives
- competency in handling incomplete and complex information
- participatory competency
- competency in cooperation
- competency in dealing with individual decision dilemmas
- competency in self-motivation and motivating others
- competency in reflection on individual and cultural models
- competency in independent action
- competency in ethical action
- capacity for empathy and solidarity

Sustainable development necessitates societal modernisation and may only be realised via the active participation of competent citizens; therefore the concept of "shaping competence" is characterised in particular by key competencies that are required for forward-looking and autonomous participation in sustainable development.

Although different approaches for the selection and definition of key competencies which are crucial for sustainable development have been developed, it can be stated that in the international debate there does *not exist an agreement about the most important key competencies* [55] and the *question of the global relevance* of these key competencies is still up for debate [56]. There is a need for the selection and elaboration of the key competencies relevant for sustainable development.

3. Research Question and Objective

Against the backdrop of this theoretical framework, this paper asks: *Which individual key competencies are crucial for understanding central challenges facing the world society and for facilitating its development towards a more sustainable future, and thus should be fostered through future-oriented university teaching and learning?*

Given this focus of research, two sub-questions are relevant:
- Is it possible to select key competencies which are equally important for sustainable development both in the North and the South?
- Which differences must show within the competence concepts in order to meet the different circumstances in different regions of the world?

Consequently, the research objective is to select and define key competencies which are relevant for shaping the world society in terms of sustainable development and hence should be developed in future-oriented academic teaching and learning. As a constitutive element of sustainable development is its global orientation, sustainable development requires international dialogue and exchange about possible societal transitions towards sustainability. Therefore, in a discourse among ESD experts from countries of the North and the South, a global perspective on key competencies crucial for sustainable development should be facilitated and the often Eurocentric focus of the discourse on sustainability key competencies should be challenged. Against the background of different economic, socio-cultural and political conditions in the North and the South, furthermore it is of importance to analyse which particular key competencies are relevant for different regions of the world.

This paper aims to contribute to the further development of the (H)ESD competence debate, the North-South dialogue on education in the world society and hence, the definition of teaching and learning objectives of future-oriented higher education.

4. Methodological Approach

The empirical design of the study[1] is related to a *Delphi study*. This is a multi-round questioning procedure which relies on a panel of experts. The main idea of the Delphi method is that in each round the experts answer questionnaires, then in the next round get an anonymous summary of the experts' answers from the previous round and are encouraged to revise their earlier answers in light of the replies of other members of their panel. It is believed that during this process the range of the answers will decrease and the quality of the results will be improved. The Delphi method facilitates the solution-oriented analysis of uncertain phenomena by initiating and structuring a process of group communication and is characterised by a consensus-orientation and the prevention of the dominance of one opinion in the group of experts [57-60].

In a two-round questioning procedure, key competencies relevant for the research question have been selected and defined by ESD experts from Germany and Great Britain – as countries from the North – and Chile, Ecuador and Mexico – as countries from the South. The selection of the countries was determined in particular by the access to the field (existing contacts, language) and the presence of a discourse on the issues of study in the respective countries. As experts persons were considered who deal scientifically or conceptually with ESD – thus have published scientific articles in the field of ESD or are involved in concept development and/or policy making concerning this educational approach (in associations, ministries, education councils etc.) – and who have an importance for the ESD discourse in their home country. The relevant experts were identified through a 'snowball sampling' by contacting already known experts. Doing so, it could be ensured that the most important experts of each country have found their way into the pool of experts.

The dimensions of the questionnaire were: global problems, understanding of sustainable development, objectives of Education for Sustainable Development, key competencies for sustainable development, and individual possibilities for participating in sustainable development. In the introduction of the questionnaire the concepts of competence, key competencies, globalization and world society assumed in the study were presented to the participants in order to establish a common understanding of these concepts. The study was carried out in English, Spanish and German.

From September to October 2008, the *first, explorative round* of the Delphi study was conducted which aimed at the collection of categories for the second, standardised round of the survey. Therefore, only 24 experts who are of particular importance for the discourse on ESD in the selected countries were invited. From this group, 18 experts participated in the survey what means a response rate of 75%. The questionnaire of the first round contained primarily open questions. The qualitative analysis of the data was carried out based on the coding paradigm of Qualitative Content Analysis developed by Mayring [61].

Table 1: Sample of the first Delphi round

		Germany	Great Britain	Mexico	Chile	Ecuador
Science	female	1	0	1	0	1
	male	1	2	2	1	0
NGOs / Public authorities	female	1	1	1	0	1
	male	3	2	0	0	0
Total		**6**	**5**	**4**	**1**	**2**

Subsequently, the categories built in this qualitative data analysis formed the basis for elaborating the item batteries used in the second round's internet-based questionnaire. In this *second round*, which was carried out between December 2008 and February 2009, 70 experts from the selected countries participated which means a response rate of 36%. The resulting data were analysed statistically with the software SPSS. Frequency analyses as well as reliability and factor analyses were conducted and the mean values[2] of the European and Latin-American experts as well as the rankings of the items for each of these expert groups were compared.[3]

Table 2: Sample of the second Delphi round

		Germany	Great Britain	Mexico	Chile	Ecuador
Science	female	4	2	11	0	2
	male	8	5	7	3	2
NGOs / foundations	female	3	0	1	1	1
	male	1	3	1	0	1
Public authorities	female	1	0	2	0	0
	male	7	1	1	2	0
Total		**24 (34.3%)**	**11 (15.7%)**	**23 (32.9%)**	**6 (8.6%)**	**6 (8.6%)**

5. Results and Discussion

As is not possible to show all results of the Delphi study in this paper, only selected results related to the ESD objectives and sustainability key competencies are presented and discussed in the following sections (for all results of the Delphi study, see [62]).

5.1 Objectives of Education for Sustainable Development

Data show that Education for Sustainable Development is seen both as a central instrument and a precondition for sustainable development by the experts. All experts name "creating and changing values, attitudes and awareness" and "developing competencies" as the most important objectives of ESD. However, European experts attach relatively more importance to "transferring knowledge and understanding" than their Latin-American colleagues (cf. Table 3).

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[2] The comparison of means showed that only for 15% of the variables the mean of the responses of the European respondents is higher than that of the Latin-American. Because of this tendency of the Latin-American experts to tick more high-positive values, the comparison of mean values is only of limited significance. Therefore, the rankings of the individual items (in terms of the arithmetic mean) of the two groups of respondents are compared to draw conclusions about similarities and differences between the responses of experts from Europe and Latin America.

[3] Regression analysis of 112 dependent variables show that only the independent variable "region" has a significant influence on the dependent variables. Therefore, only comparisons with regard to the regional origin of the respondents are carried out.

Table 3: ESD objectives (Question: In your opinion, what are the essential objectives of Education for Sustainable Development?; 10 = I fully agree, 1 = I do not agree at all)

Rank	All Experts	European Experts	Latin-American Experts
1	creating and changing values, attitudes and awareness (9.3)	creating and changing values, attitudes and awareness (8.9)	creating and changing values, attitudes and awareness (9.7)
2	developing competencies (9.1)	*transferring knowledge and understanding (8.7)*	developing competencies (9.5)
3	more just and sustainable society (9.0)	developing competencies (8.7)	more just and sustainable society (9.5)
4	promoting sustainable behaviour and responsible action (9.0)	more just and sustainable society (8.6)	promoting sustainable behaviour and responsible action (9.4)
5	transferring knowledge and understanding (8.8)	promoting sustainable behaviour and responsible action (8.5)	changing educational institutions (9.2)
6	changing educational institutions (8.7)	empowerment (8.4)	facilitating motivation (9.1)
7	facilitating motivation (8.6)	changing educational institutions (8.3)	*transferring knowledge and understanding (9.0)*
8	empowerment (8.4)	facilitating motivation (8.2)	empowerment (8.3)
9	imposing pressure upon political actions (7.6)	imposing pressure upon political actions (7.3)	imposing pressure upon political actions (8.0)

A factor analysis of the answers of all experts shows that three factors can be distinguished (75.4 % explained variance; reliability analysis: Cronbach's alpha 0.84, 9 items):

- Factor 1 *„Education: awareness creation and competence development":* facilitating motivation; developing competencies; changing educational institutions; creating and changing values, attitudes and awareness; transferring knowledge and understanding
- Factor 2 *„Promoting sustainable development":* imposing pressure upon political actions; promoting sustainable behaviour and responsible action; more just and sustainable society; changing educational institutions
- Factor 3 *„Empowerment":* empowerment

Thus, *direct (individual)* and *indirect (societal)* objectives of Education for Sustainable Development can be differentiated.

The results of the Delphi study confirm the importance of Higher Education for Sustainable Development. In order to facilitate a sustainable future, universities should include sustainability issues in their curriculum and, hence, contribute to creating sustainability awareness and developing sustainability key competencies.

5.2 Key Competencies for Sustainable Development

The experts involved in the Delphi study selected and defined 19 key competencies which are critical for sustainable development. In their opinion, the most important key competencies are: competency for systemic thinking and handling of complexity, competency for anticipatory thinking, and competency for critical thinking (cf. Table 4).

Table 4: Key competencies for sustainable development (Question: In your opinion, which individual key competencies do persons need for understanding global problems of unsustainability and contributing to the shaping of the world society in terms of sustainable development?; 10 = I fully agree, 1 = I do not agree at all)

Rank	All Experts	European Experts	Latin-American Experts
1	Systemic thinking and handling of complexity (9.5)	Systemic thinking and handling of complexity (9.3)	Systemic thinking and handling of complexity (9.7)
2	Anticipatory thinking (9.3)	Anticipatory thinking (9.2)	*Cooperation in (heterogeneous) groups (9.6)*
3	Critical thinking (9.3)	Critical thinking (9.0)	*Participation (9.5)*
4	Acting responsibly (9.1)	*Empathy and change of perspective (8.9)*	Critical thinking (9.5)
5	Recognizing and analyzing problems of unsustainable development (9.0)	Recognizing and analyzing problems of unsustainable development (8.7)	Acting responsibly (9.5)
6	Cooperation in (heterogeneous) groups (9.0)	Acting responsibly (8.6)	Anticipatory thinking (9.5)
7	Participation (9.0)	Open-mindedness and disposition to innovations (8.6)	Interdisciplinary work (9.4)
8	Empathy and change of perspective (8.9)	Handling of intercultural relationships (8.5)	Recognizing and analyzing problems of unsustainable development (9.4)
9	Open-mindedness and disposition to innovations (8.8)	*Cooperation in (heterogeneous) groups (8.4)*	Understanding of nature (9.3)
10	Interdisciplinary work (8.7)	*Participation (8.4)*	Recognizing one's own role in the global community (9.1)
11	Recognizing one's own role in the global community (8.7)	Concern and acting for justice (8.3)	Open-mindedness and disposition to innovations (9.1)
12	Concern and acting for justice (8.6)	Recognizing one's own role in the global community (8.2)	Concern and acting for justice (9.0)
13	Handling of intercultural relationships (8.6)	Interdisciplinary work (8.1)	*Empathy and change of perspective (8.9)*
14	Understanding of nature (8.5)	Evaluation (8.0)	Handling of information (8.8)
15	Handling of information (8.3)	Handling of information (7.9)	Planning and realising projects (8.7)
16	Communication and use of media (8.2)	Understanding of nature (7.8)	Handling of intercultural relationships (8.7)
17	Planning and realising projects (8.1)	Ambiguity and frustration tolerance (7.8)	Communication and use of media (8.7)
18	Evaluation (8.0)	Communication and use of media (7.7)	Evaluation (8)
19	Ambiguity and frustration tolerance (7.5)	Planning and realising projects (7.5)	Ambiguity and frustration tolerance (7.2)

Data show that the experts from Europe and Latin America attach varying degrees of relevance to different key competencies. While the European experts attach relatively more importance to the competency for empathy and change of perspective, their Latin-American colleagues indicate a relatively higher relevance for the competencies for cooperation in (heterogeneous) groups and participation.

The 19 key competencies selected by the Delphi respondents can be subsumed in a *set of twelve key competencies* which include all relevant dispositions and aspects which were indentified in the study (for a detailed description of this process of summarising the key competencies, see [63, 64]):
- Competency for systemic thinking and handling of complexity
- Competency for anticipatory thinking

- Competency for critical thinking
- Competency for acting fairly and ecologically
- Competency for cooperation in (heterogeneous) groups
- Competency for participation
- Competency for empathy and change of perspective
- Competency for interdisciplinary work
- Competency for communication and use of media
- Competency for planning and realising innovative projects
- Competency for evaluation
- Competency for ambiguity and frustration tolerance

Both for experts from Europe and Latin America the *most relevant key competencies* are those for systemic thinking and handling of complexity (for the importance of this competency, see also [65]), anticipatory thinking and critical thinking. In addition to the question *which* key competencies are crucial, the experts were also asked *why* the key competencies indicated by them are important for sustainable development. Their answers show that especially the complexity, uncertainty, risks and the high velocity of societal (global) change are seen as challenges which make necessary and relevant in particular these key competencies.

Relating these results to higher education, it can be stated that universities have to create particular learning settings in which students can improve their competencies for understanding complexity and long-term effects of present-day actions as well as for questioning common assumptions.

Regarding the *differences between the competencies rankings of the European and Latin-American experts*, the question arises how these differences can be explained. The relatively higher importance of the competency for participation for the Latin-American experts is consistent with the fact that in the Latin-American sustainability discourse, there is also a political dimension of sustainability and democracy is seen as an important prerequisite for sustainable development [66]. In this context, also cooperation competencies are of high importance, because they enable individuals to create bottom up-alternatives working together with others. In addition, cooperation and community play a major role in the indigenous tradition of Latin-American countries.

The European respondents consider the competency for empathy and change of perspective as relatively more important than their Latin-American counterparts. It can be stated that this competency is addressed in various concepts coming from Europe, such as shaping competence [67] and the DeSeCo key competencies [68]. Empathy and change of perspective play an important role in the European sustainability discourse, because it is about crossing the horizon of the Eurocentric thinking and incorporating the voices of the South, while in the South it comes in the first place to make their own perspectives heard.

These results show that key competencies have a different relevance and meaning in various contexts. Against this background, it becomes clear that universities have to take into account such differences, when thinking about which key competencies students should develop in higher education. However, this does not mean that certain contexts and conditions do not have to be questioned and challenged – this can even be the goal of developing certain key competencies.

6. Conclusion

There is not just one future, but many possible futures [69]. It depends on our present actions which future will become reality.

Universities may play very different roles in the future and may be more or less able to cope with global change and the complexity and uncertainty linked to these changes [70-72]. The

discourses on sustainable universities and Higher Education for Sustainable Development give some guidance as to what strategies could be used and what measures could be taken to ensure that universities can meet these challenges.

One important element is that universities create such teaching and learning settings in which future professionals are enabled to cope with issues of sustainable development and to deal with wicked problems in their future fields of work and, thus, will contribute to a sustainable future.

The data gained in a Delphi study which involved 70 ESD experts from Germany and Great Britain as well as Ecuador, Chile and Mexico show, on the one hand, that key competencies can be selected and defined which can be considered as *important teaching and learning objectives of higher education in the North as well as the South*. The most important key competencies are those for systemic thinking and handling of complexity, anticipatory thinking and critical thinking. On the other hand, it has also become evident that universities must *adapt their teaching and learning objectives to regional and cultural particularities*, which, however, may also be changed by developing certain key competencies.

In conclusion, it can be said that this study contributes to *further develop and internationalise the competence debate in Higher Education for Sustainable Development*, as it has involved experts from selected European and Latin-American countries in a joint discourse and, hence, goes beyond the often Eurocentric focus of the HESD competence debate. It reveals the common ground for the selection and definition of sustainability key competencies in a North-South context. Finally, this paper can be understood as a *conceptual basis for the elaboration and implementation of university curricula* which are oriented to the acquisition of key competencies critical for sustainable development.

Regarding *generalisability and transferability of the results*, it can be said that they reflect the views of the experts at the time of the survey. They are constructs of the experts who are influenced by their respective contexts, and, hence, the results cannot be regarded as representative. Nevertheless, they have a relevant significance, because experts from practice and science were consulted who have a strong influence on the ESD discourse in their home countries. Therefore, it can be assumed that the essential elements of the ESD discourses of the selected countries are reflected in the results.

In this paper, the question remains open how the identified key competencies can be developed through university teaching and learning and how, subsequently, the learning outcomes can be assessed. Barth et al. [73], for instance, analyse processes of developing sustainability key competencies in formal and informal academic learning settings and thus give some insight how the development of the identified key competencies can be fostered through university teaching and learning. However, *further research is needed on the development and*, even more necessary, *on the assessment of sustainability key competencies in higher education*.

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