



Universität Vechta  
*University of Vechta*

# INNOVATIVE LEARNING APPROACHES TO FOSTER SUSTAINABLE ENTREPRENEURSHIP COMPETENCIES WITH REGARD TO THE SDGS IN HIGHER EDUCATION

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Prof. Dr. Marco Rieckmann  
University of Vechta, Germany

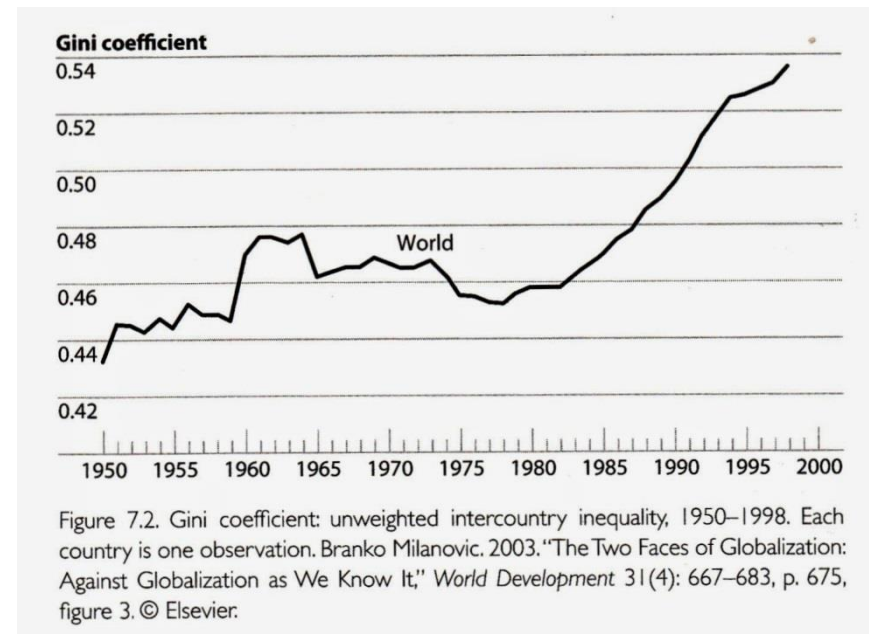
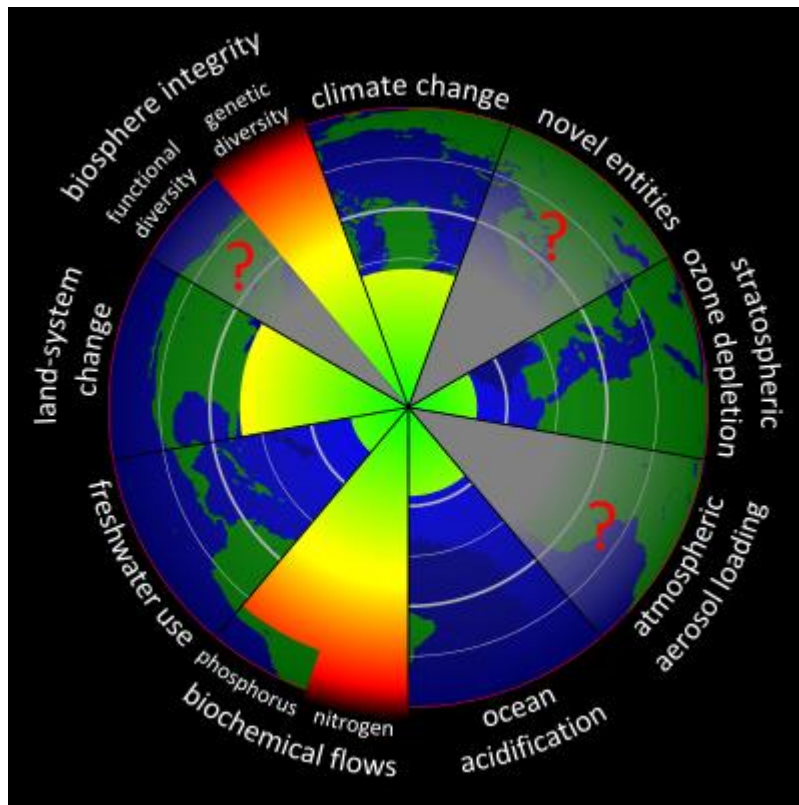
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- Need for transformation / Sustainable Development
- Concept of Education for Sustainable Development
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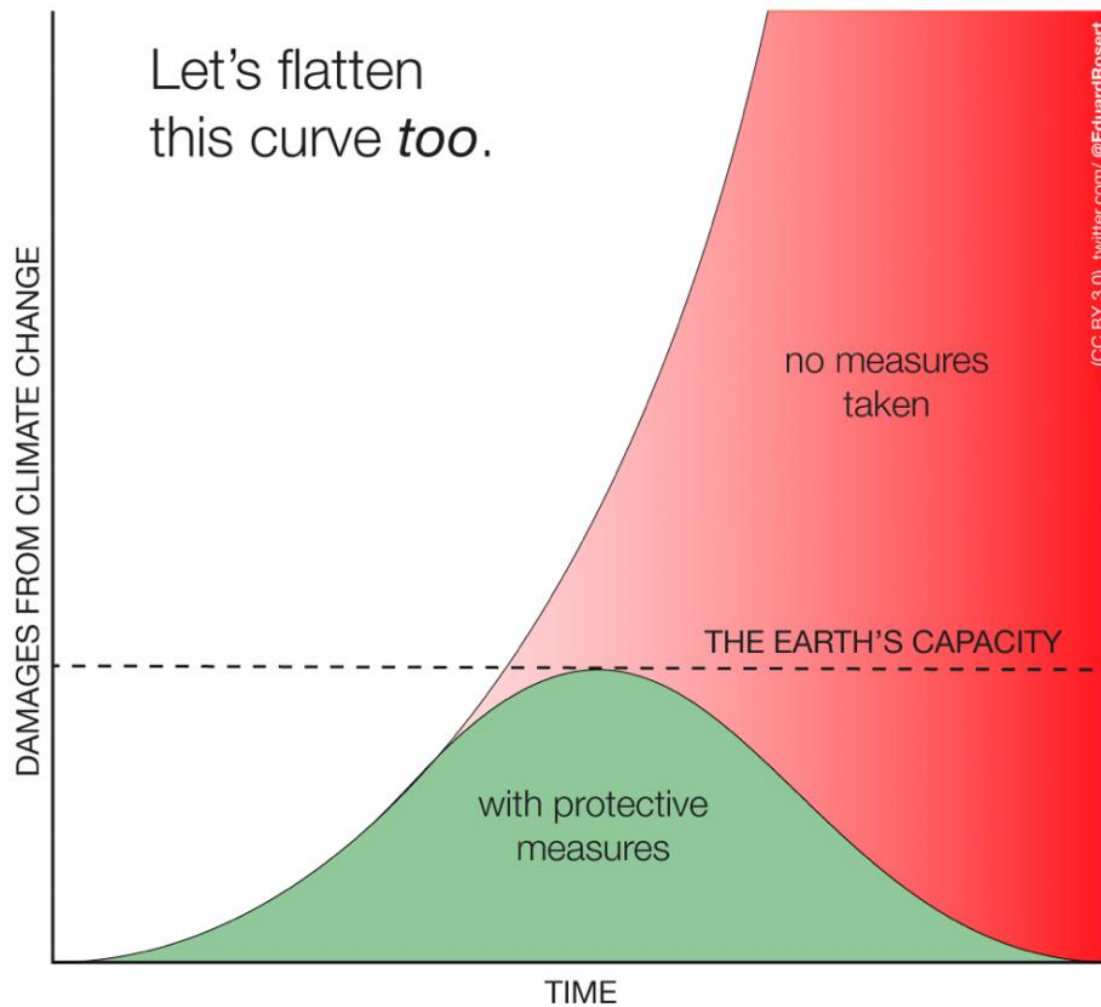




## Need for transformation



*Rockström et al. 2009;*  
*Steffen et al. 2015*



## GEO 6: Healthy Planet – Healthy People



- Global increases in anthropogenic greenhouse gas emissions and climate impacts have occurred, even while mitigation activities have taken place in many parts of the world.
- A major species extinction event, compromising planetary integrity and Earth's capacity to meet human needs, is unfolding.
- Education for sustainable development is essential for achieving the Sustainable Development Goals, promoting a more sustainable society and accommodating unavoidable environmental changes

<https://www.unenvironment.org/resources/global-environment-outlook-6>



# Living in the Anthropocene



„For the past three centuries, the effects of humans on the global environment have escalated. Because of these anthropogenic emissions of carbon dioxide, global climate may depart significantly from natural behaviour for many millennia to come. It seems appropriate to assign the term '**Anthropocene**' to the present, in many ways **human-dominated, geological epoch**, supplementing the Holocene — the warm period of the past 10–12 millennia.“

| Paul Crutzen: “Geology of Mankind”, in: *Nature* 415 (2002), H. 6867, S. 23.



mankind as „**a dominant geological force**“ (Crutzen/Stoermer 2000)



„**epoch of our making**“ (Syvitski 2012)

„**anthromes**“ statt „biomes“ (Ellis/Ramankutty 2008)







# Sustainable Development Goals

- 17 goals
- 169 targets
- 2015 adopted by the UN
- Succession of the MDGs
- SDGs concern the development of all countries worldwide



## Education 2030 Agenda and ESD

- **SDG 4, Target 4.7:** By 2030, *ensure that all learners acquire knowledge and skills needed to promote sustainable development*, including, among others, *through education for sustainable development* and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.



## Education for Sustainable Development (ESD)

- *“ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education.”*
- **Societal transformation:** “Empowering learners of any age, in any education setting, to transform themselves and the society they live in.”
- **Learning outcomes:** “Stimulating learning and promoting core competencies, such as critical and systemic thinking, collaborative decision-making, and taking responsibility for present and future generations.”

UNESCO (2014)



## Education for Sustainable Development (ESD)

- **Learning content:** “Integrating critical issues, such as climate change, biodiversity, disaster risk reduction (DRR), and sustainable consumption and production (SCP), into the curriculum.”
- **Pedagogy and learning environments:** “Designing teaching and learning in an interactive, learner-centred way that enables exploratory, action-oriented and transformative learning. Rethinking learning environments [...] to inspire learners to act for sustainability.”



UNESCO (2014)

## Education for Sustainable Development

- *Education for Sustainable Development* should promote the development of such key competencies / generic skills which enable individuals to contribute to sustainable development (cf. Barth et al., 2007; Rieckmann, 2012, 2018; Wals, 2010; Wiek et al., 2011).



## Sustainability Key Competencies

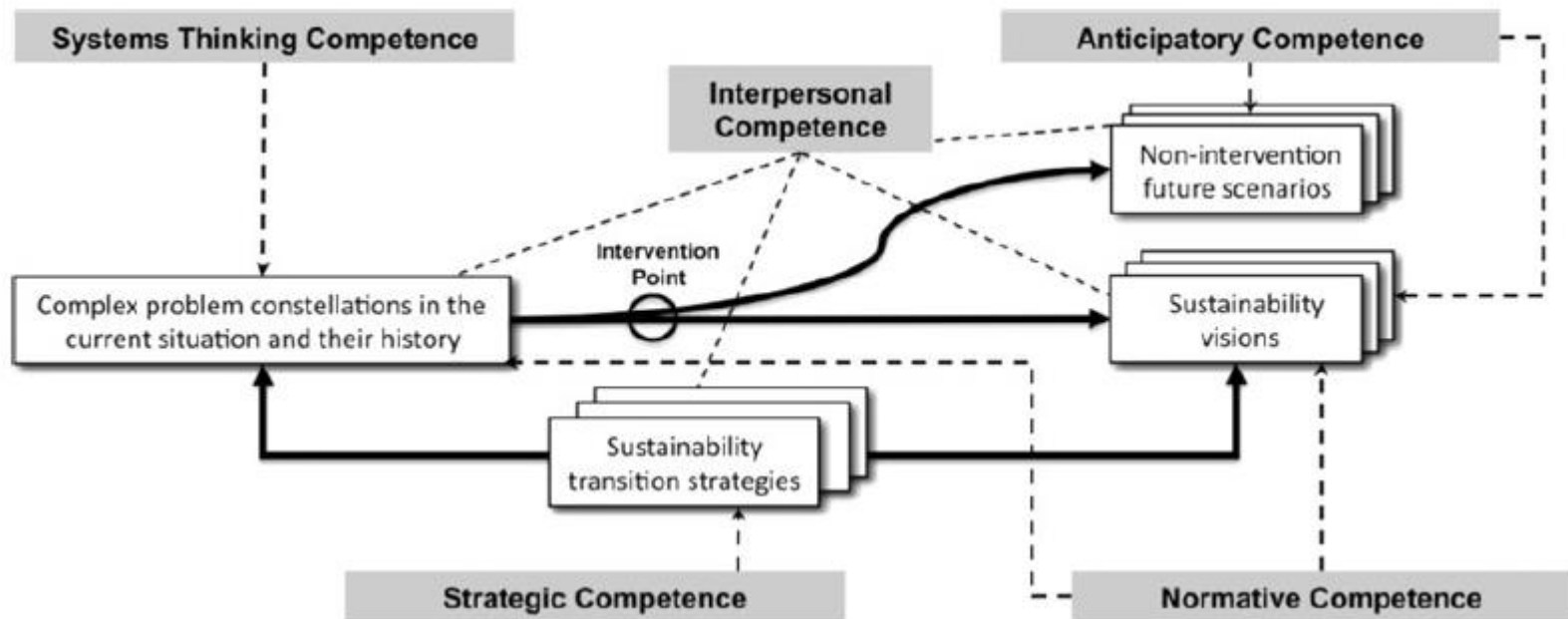
*Results of the Delphi Study - twelve key competencies crucial for sustainable development:*

- 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

*Rieckmann, 2012*



# Key Competencies in Sustainability



Wiek et al., 2011



# Values

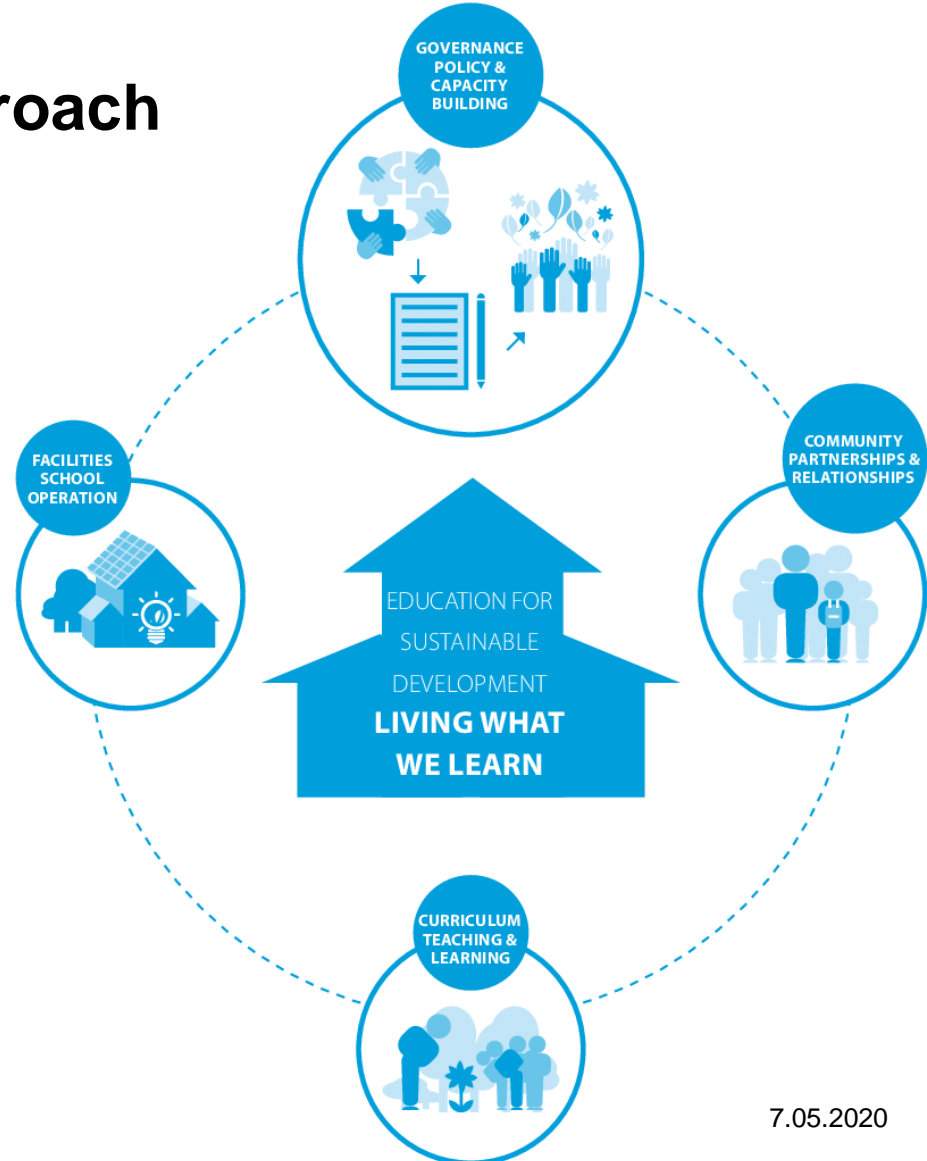
- Conservation of natural resources
- Human dignity
- Justice
- ...
- *Discourse on values*







# Whole-institution approach

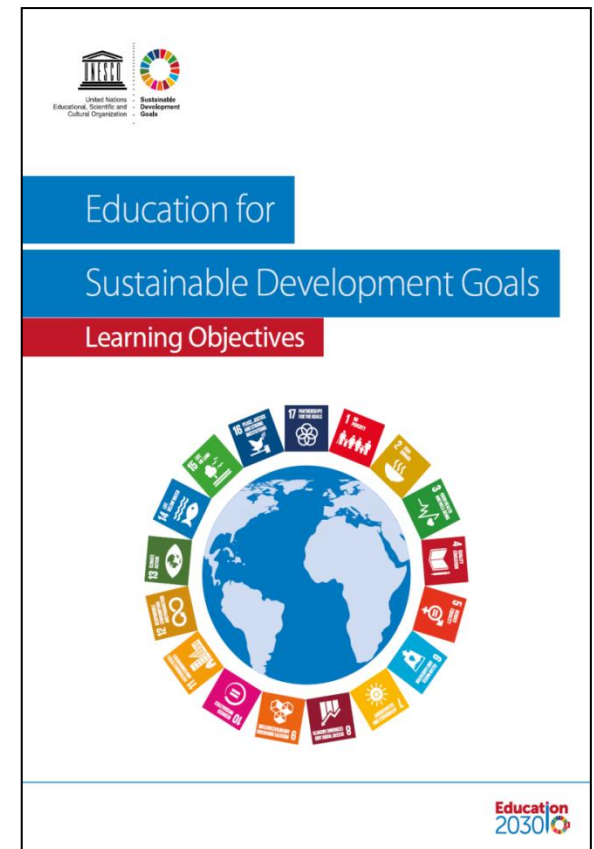


*UNESCO 2017*

# The Role of ESD for Achieving the 2030 Agenda

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

<http://unesdoc.unesco.org/images/0024/002474/247444e.pdf> (Lead authors: Marco Rieckmann, Lisa Mindt, Senan Gardiner)



# The Role of ESD for Achieving the 2030 Agenda

- ESD enables all individuals to contribute to achieving the Sustainable Development Goals (SDGs) by equipping them with the *knowledge and competencies* which are needed to not only understand what the SDGs are about, but to become engaged in promoting the transformation needed.
- ESD promotes *key competencies* needed for achieving the SDGs.
  - Systems thinking competence
  - Anticipatory competence
  - Normative competence
  - Strategic competence
  - Interpersonal competence
  - Personal competence
  - Critical thinking
  - Integrated problem-solving competence

UNESCO, 2017

# The Role of ESD for Achieving the 2030 Agenda

- ESD also brings forth specific cognitive, socio-emotional and behavioural learning outcomes which enable individuals to deal with the particular challenges of each SDG:
  - The ***cognitive domain*** comprises *knowledge and thinking skills* necessary to better understand the SDG and the challenges in achieving it.
  - The ***socio-emotional domain*** includes *social skills* that enable learners to collaborate, negotiate and communicate to promote the SDGs as well as *self-reflection skills, values, attitudes and motivations* that enable learners to develop themselves.
  - The ***behavioural domain*** describes *action competencies*.

UNESCO, 2017



# SDG 1 No Poverty | End poverty in all its forms everywhere

## *Cognitive learning objectives*

1. The learner understands the concepts of extreme and relative poverty and is able to critically reflect on their underlying cultural and normative assumptions and practices.
2. The learner knows about the local, national and global distribution of extreme poverty and extreme wealth.
3. The learner knows about causes and impacts of poverty such as unequal distribution of resources and power, colonization, conflicts, disasters caused by natural hazards and other climate change-induced impacts, environmental degradation and technological disasters, and the lack of social protection systems and measures.
4. The learner understands how extremes of poverty and extremes of wealth affect basic human rights and needs.
5. The learner knows about poverty reduction strategies and measures and is able to distinguish between deficit-based and strength-based approaches to addressing poverty.



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## *Socio-emotional learning objectives*

1. The learner is able to collaborate with others to empower individuals and communities to affect change in the distribution of power and resources in the community and beyond.
2. The learner is able to raise awareness about extremes of poverty and wealth and encourage dialogue about solutions.
3. The learner is able to show sensitivity to the issues of poverty as well as empathy and solidarity with poor people and those in vulnerable situations.
4. The learner is able to identify their personal experiences and biases with respect to poverty.
5. The learner is able to critically reflect on their own role in maintaining global structures of inequality.



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## *Behavioural learning objectives*

1. The learner is able to plan, implement, evaluate and replicate activities that contribute to poverty reduction.
2. The learner is able to publicly demand and support the development and integration of policies that promote social and economic justice, risk reduction strategies as well as poverty eradication actions.
3. The learner is able to evaluate, participate in and influence decision-making related to management strategies of local, national and international enterprises concerning poverty generation and eradication.
4. The learner is able to include poverty reduction, social justice and anti-corruption considerations in their consumption activities.
5. The learner is able to propose solutions to address systemic problems related to poverty.



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## Key competencies in sustainable entrepreneurship

- |  |  |
|--|--|
| ■ strategic management competency                      | ■ strategic management and action competency           |
| ■ action competency                                    | ■ systems thinking competency                          |
| ■ systems thinking competency                          | ■ embracing diversity and interdisciplinary competency |
| ■ embracing diversity and interdisciplinary competency | ■ foresighted thinking competency                      |
| ■ foresighted thinking competency                      | ■ normative competency                                 |
| ■ normative competency                                 | ■ interpersonal competency                             |
| ■ interpersonal competency                             |  |

*Lans et al., 2014*

*Ploum et al., 2018*

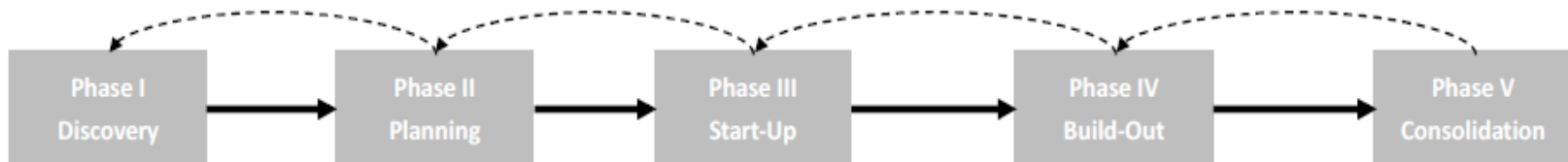
other predictors of entrepreneurial behavior: gender,  
entrepreneurial self-efficacy, entrepreneurial intentions

*Ploum et al., 2018*



## Key competencies in sustainable entrepreneurship

- Recently, Foucrier and Wiek (2019) have developed a “Process-Oriented Framework of Competencies for Sustainability Entrepreneurship”. With this framework they describe sustainability entrepreneurship competencies and link them to the actual phases of entrepreneurship.





## Action-oriented transformative pedagogy

- empowering and motivating learners to become active sustainability citizens who are capable of critical thinking and able to participate in shaping a sustainable future

*UNESCO 2017*

## Action-oriented transformative pedagogy

- Competencies cannot be taught, but have to be developed (cf. Weinert, 2001).
- Teaching and learning approaches are needed which are learner-centred and facilitate competence development (cf. Vila et al., 2012; Schaeper, 2009; Barth et al., 2007).
- Universities need a shift from teaching to learning



## Action-oriented transformative pedagogy

- Universities should create teaching and learning settings which facilitate:
  - Self-organised learning
  - Experiential learning
  - Active learning
- Possible teaching and learning approaches:
  - Project-based learning
  - Service learning
  - Research-based learning
  - Inter- and transdisciplinary learning
  - ...



# Innovative Approaches in Higher Education for Sustainable Development and Entrepreneurship

	n	%
experiential learning (EE)	147	17,7
collaborative learning	138	16,6
problem-based learning (HESD)	61	7,4
project-based learning	59	7,1
learner-centered learning (EE)	56	6,8
transformative learning (HESD)	37	4,5
reflective learning	35	4,2
real-world learning (EE)	35	4,2
place-based learning	34	4,1
social learning	31	3,7
active learning	28	3,4
service-learning (HESD)	24	2,9
interdisciplinary learning	23	2,8
traditional (lecture-based) learning	21	2,5
coaching & mentoring	16	1,9
virtual learning	11	1,3
transdisciplinary learning	10	1,2
creative learning	8	1,0
other	55	6,6

## What have teachers to learn?

- Teachers have to facilitate the process of competence development
- Different role: Teachers as facilitators
- Teachers need competencies for implementing ESD (cf. UNECE, 2012)
  - Sustainability competencies
  - Knowledge about ESD teaching and learning approaches
  - Pedagogical competencies for facilitating ESD teaching and learning approaches
- Capacity building for teachers is needed in order to enable them to create learning settings in which students can improve their competencies (cf. Barth/Rieckmann, 2012; UE4SD, 2015).

# Rounder Sense of Purpose ESD Competences

Thinking Holistically	Envisioning Change	Achieving Transformation
Integration:		
<b>Systems</b> The educator helps learners to develop an understanding of the world as an interconnected whole and to look for connections across our social and natural worlds and consider the consequences of actions.	<b>Futures</b> The educator helps learners to explore alternative possibilities for the future and to use these to consider how behaviours might need to change.	<b>Participation</b> The educator helps learners to contribute towards changes that will support sustainable development.
Involvement:		
<b>Attentiveness</b> The educator helps learners to understand fundamentally unsustainable aspects of our society and the way it is developing and increases their awareness of the urgent need for change.	<b>Empathy</b> The educator helps learners to respond to their feelings and emotions and those of others as well as developing an emotional connection to the natural world.	<b>Values</b> The educator develops an awareness among learners of how beliefs and values underpin actions and how values need to be negotiated and reconciled.
Practice:		
<b>Transdisciplinarity</b> The educator helps learners to act collaboratively both within and outside of their own discipline, role, perspectives and values.	<b>Creativity</b> The educator encourages creative thinking and flexibility within their learners.	<b>Action</b> The educator helps the learners to take action in a proactive and considered manner.
Reflection:		
<b>Criticality</b> The educator helps learners to critically evaluate the relevance and reliability of assertions, sources, models and theories.	<b>Responsibility</b> The educator helps learners to reflect on their own actions, act transparently and to accept personal responsibility for their work.	<b>Decisiveness</b> The educator helps the learners to act in a cautious and timely manner even in situations of uncertainty.



## Conclusion

- Education for Sustainable Development as a key driver for change
- Development of sustainability competencies
- Need of a transformative, action-oriented pedagogy
- Development of the competencies of the educators

**Prof. Dr. Marco Rieckmann**  
University of Vechta

**Phone +49. (0) 4441 15 481**

**[marco.rieckmann@uni-vechta.de](mailto:marco.rieckmann@uni-vechta.de)**

**Thank you very much for your  
participation!**



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