

# Teacher Education for Sustainable Development (TESD)

Ogun State Sustainability Education Program  
Prof. Dr. Marco Rieckmann



Universität Vechta  
*University of Vechta*

# Education for Sustainable Development

## Education for Sustainable Development

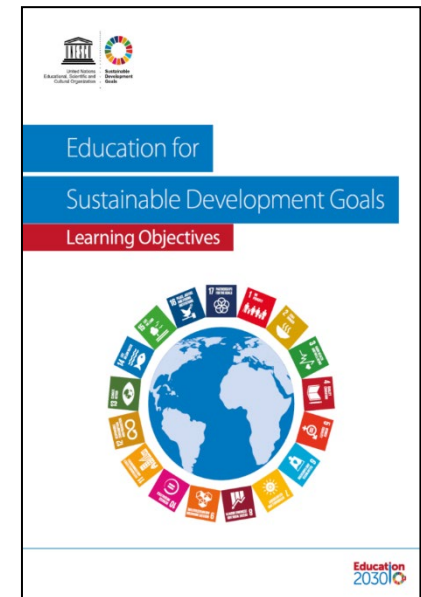
Education for Sustainable Development aims to promote the development of such key competencies / generic skills which enable individuals to contribute to sustainable development (cf. Brundiers et al. 2021; Redman & Wiek 2021; Rieckmann 2018).



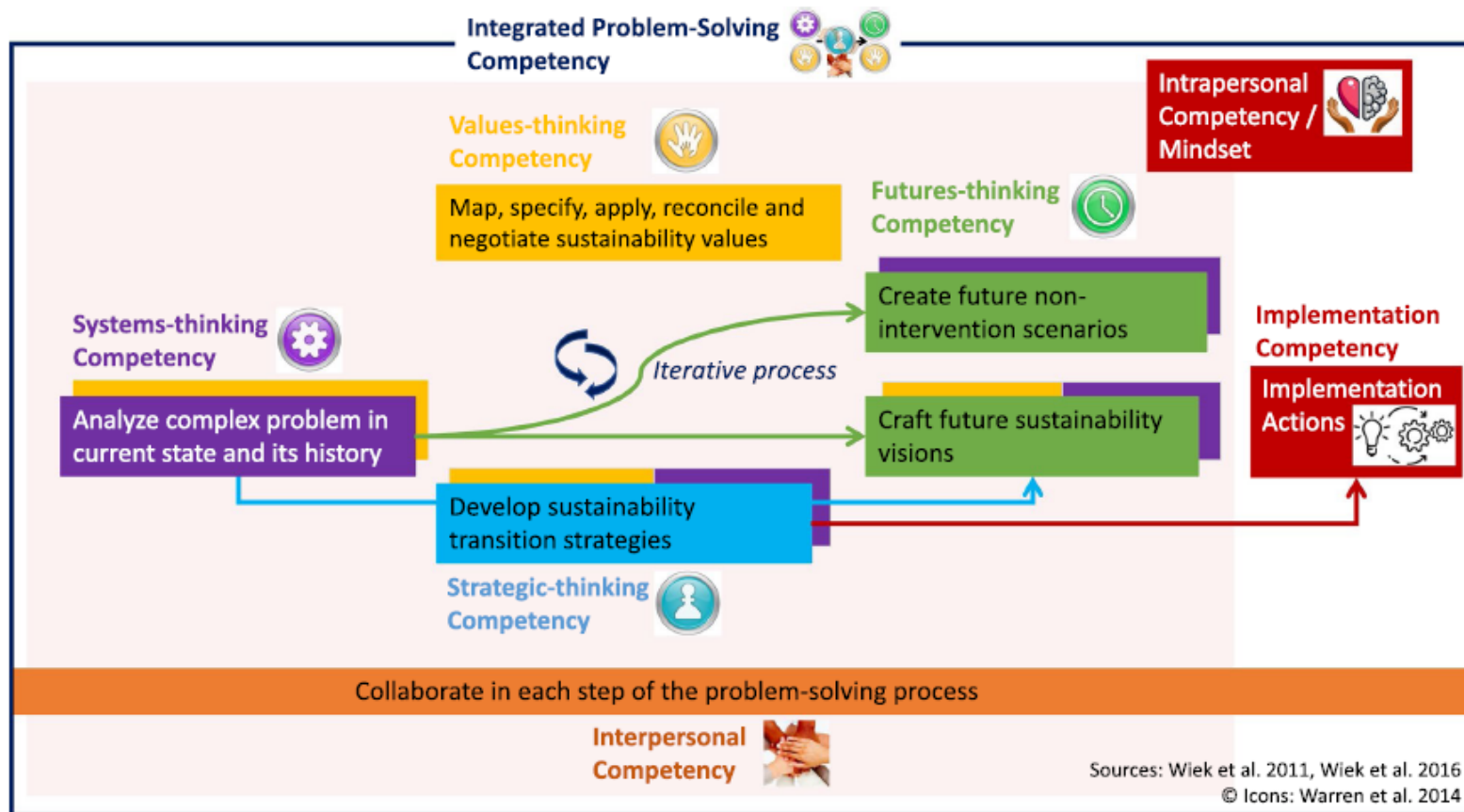
## Education for SDGs

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.

*UNESCO 2017*



# Sustainability Competencies



Brundiers et al. 2021

## Transformative education / value orientation

- Conservation of natural resources
- Human dignity
- Justice
- Contribution to value clarification and a critical discourse on values
- Suggestions to reflect on one's own values and to take a stand on them
- Broadening the learners' horizon of values
- Conceptual change: changing fundamental orientations (values and attitudes) through education.

*Rieckmann 2020, 2018*

## ESD as citizenship education

- "The aim of ESD must be to empower citizens in their critical political agency, to elevate them from their role as mere consumers, and to motivate them to participate in shaping their surroundings." (Fedorchenko 2021, p. 35)
- ESD should be political; contentious issues should be presented as controversial, but the teacher can take a stance (cf. Weselek & Wohnig 2021)
- Not only addressing individual (consumption-related) issues, but also structural issues
- Enhancing the agency of citizens ("sustainability citizens")

*Rieckmann/Schank 2016; Rieckmann 2020*

## Action-oriented transformative pedagogy

- Learner-centredness and accessibility
- Action and reflection orientation
- Transformative and transgressive learning
- Participatory orientation
- Discovery learning
- Networked learning
- Vision orientation
- Combining social, self-centred and method-oriented with subject-based learning

*Rieckmann 2018; UNESCO 2017*



## ESD methods

- *Collaborative real-world projects* such as a service-learning project and campaigns for different sustainability topics, etc.
- *Vision-building exercises* such as future workshops, scenario analyses, utopian/dystopian story-telling, science-fiction thinking, and fore and back-casting, etc.
- *Analysis of complex systems* including community-based research projects, case studies, stakeholder analysis, actor analysis, modelling and systems games, etc.
- *Critical and reflective thinking* including through fish-bowl discussions and reflective journals, etc.

UNESCO 2017

## Whole-institution approach

- Educational institutions as places of learning and experience for sustainable development.
- Integration of sustainability into all areas of the educational institutions: curriculum, operations, organizational culture, learner participation, leadership and management, community relations, ...
- Institution as a role model for learners
- Need for staff training

*Holst 2023, UNESCO 2017*

## Teacher education

- Teacher education plays a significant role for advancing ESD
- The support of teachers has been a key condition to the successful adoption and implementation of ESD (UNESCO 2014)
- The ESD for 2030 Programme includes a priority key action area explicitly aiming to “strengthen the capacity of educators, trainers and other change agents to become learning facilitators for ESD” (UNESCO 2020)
- Teacher Education for Sustainable Development (TESD) as the area of policy, practice, and research focused on the integration of ESD-related concepts and objectives into teacher education

*Fischer et al. 2022; King et al. 2022*

## ESD competencies

- Development of sustainability competencies (cf. Brundiers et al. 2021; Redman & Wiek 2021; Rieckmann 2018)
- ESD competencies, which can be described as the ability of educators to support learners in developing sustainability competencies through a range of innovative teaching and learning practices (cf. Bertschy et al. 2013)
- Approaches / models for ESD competencies: CSCT model (Sleurs 2008), UNECE model (UNECE 2012), KOM-BiNE model (Rauch & Steiner 2013) and the approach developed by Bertschy et al. (2013) (cf. Rieckmann & Barth 2022; Corres et al. 2020)

## RSP framework for ESD competencies

The educator needs to have:

- a critical understanding of sustainable development and ESD
- a grounding in the pedagogy of education for sustainable development (ESD)
- ability to practice an action-oriented, transformative pedagogy

<https://aroundsenseofpurpose.eu>

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*Millican 2022*

## RSP framework for ESD competencies

,Distilling' the UNECE competences (refining, filtering, extracting essential elements), see Vare et al. 2019

<https://aroundersen.seofpurpose.eu/framework/table/>

Millican 2022

Thinking Holistically	Envisioning Change	Achieving Transformation
<b>Integration:</b>		
<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 environment 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 to changes that will support sustainable development.
<b>Involvement:</b>		
<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.
<b>Practice:</b>		
<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.
<b>Reflexivity:</b>		
<b>Criticality</b> The educator helps learners to evaluate critically 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.

## For example: Futures Competence

The educator helps learners to explore alternative possibilities for the future and to use these to consider how behaviours might need to change.

**Learning objectives:** The educator helps learners to...

- 5.1 Envision a range of futures, considering and evaluating likely impacts (potentials and risks) attached to different scenarios
- 5.2 Identify and analyse the steps that would need to be taken to reach desired and possible future scenarios
- 5.3 Recognise relations and possible evolutions between the past, present, near future and far future

## For example: Futures Competence

### Underpinning Components for the educator

In order to achieve the above Learning Outcomes the educator should be able to:

UC 5 Utilise future studies techniques such as simulation games, future newspaper, scenario analysis and back casting

UC 5.1a Creatively imagine a number of different future scenarios while sharing worldviews and ideas, and discuss whether they are sustainable

UC5.1b Understand how the world might change as we project into the future and how these changes might be considered from different perspectives

UC5.2 Know about possible ways to make societal change become real through individual and collective actions

UC5.3a See how changes that take place are linked to past actions and evolve over time

UC5.3b Analyse and look for causes of change from different perspectives





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# Education for Sustainable Development Practical examples



## pbm002 Education for Sustainable Development

Monday, 14:00 - 18:00

Prof. Dr. Marco Rieckmann

## Task: Development of ESD lessons / projects

Development of ESD lessons / projects against the background of the theory developed in the course

Reflection on the theories and concepts

Derivation of criteria for "good practice" in ESD

Development of an ESD concept (lessons, project,...)

Presentation of the results (15 minutes)

Elements of the ESD concept

- Topic
- Objectives: competencies, learning objectives,...
- Target group
- Pedagogical design / methodological approach
- Possibilities of evaluation



## pbx015 Sustainable Development in the Oldenburger Münsterland – Practical Projects with Regional Partners

Prof. Dr. Marco Rieckmann  
Katrin Hedemann, Alexandra Reith

## pbx015 Sustainable Development in the Oldenburger Münsterland

- Interdisciplinary Specialization Area
- 4 contact hours per week
- 23 students (Teacher Education, Educational Sciences, Social Work)
- Service Learning

GEFÖRDERT VOM



Bundesministerium  
für Bildung  
und Forschung

**FONA**

Forschung für Nachhaltigkeit

**senatra**

Service Learning und nachhaltige  
Transformation an Hochschulen

## Task: Projects with and for practical partners from the region

Conducting a project with and for practical partners from the region

Engagement with theory

Implementation of the project in cooperation with the practical partner

Presentation of the results (max. 15 minutes)

Elements of the project

- Practical partner
- Topic or task/question
- Theoretical background
- Objectives
- Implementation
- Evaluation

## Partners from the region

- Tree Association Vechta e.V.: Public relations and networking
- Adult Education Center Cloppenburg: Action days for sustainability
- Goldenstedt Municipality (Climate Protection Management): Safety and sustainability on the way to school
- MINT4YOUth project at the University of Vechta: Educational trails with ESD focus

## Conclusion

- Sustainability transformation is needed
- ESD can empower learners to be able to contribute to this transformation
- Crucial for the strategic implementation of ESD are:
  - Whole-institution approach
  - Development of the ESD competencies of teachers





**Thank you for your attention!**

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*Linkedin / TikTok / Instagram:*  
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## References

- Bertschy, F., C. Künzli, & M. Lehmann. 2013. Teachers' Competencies for the Implementation of Educational Offers in the Field of Education for Sustainable Development. *Sustainability* 5(2071-1050): 5067–5080.
- Brundiers, K./ Barth, M./ Cebrián, G./ Cohen, M./ Diaz, L./ Doucette-Remington, S./ Dripps, W./ Habron, G./ Harré, N./ Jarchow, M./ Losch, K./ Michel, J./ Mochizuki, Y./ Rieckmann, M./ Parnell, R./ Walker, P./ Zint, M. (2021): Key competencies in sustainability in higher education – toward an agreed-upon reference framework. In: *Sustainability Science* 16, S. 13–29. <https://doi.org/10.1007/s11625-020-00838-2>, <https://rdcu.be/b5U45>.
- Corres, A./ Rieckmann, M./ Espasa, A./ Ruiz-Mallén, I. (2020): Educator Competences in Sustainability Education: A Systematic Review of Frameworks. In: *Sustainability* 12 (23), 9858. <https://doi.org/10.3390/su12239858>.
- Fedorchenko, L. (2021). Kritisch, ganzheitlich und progressiv – zivilgesellschaftliche Perspektiven auf das neue UNESCO-Programm „BNE 2030“. *ZEP – Zeitschrift für internationale Bildungsforschung und Entwicklungspädagogik*, 44(2), 35. <https://doi.org/10.31244/zep.2021.02.06>
- Fischer, D., King, J., Rieckmann, M., Barth, M., Büssing, A., Hemmer, I. & Lindau-Bank, D. (2022). Teacher Education for Sustainable Development: A Review of an Emerging Research Field. *Journal of Teacher Education*, 1–16. <https://doi.org/10.1177/00224871221105784>
- Holst, J. (2023): Towards coherence on sustainability in education: a systematic review of Whole Institution Approaches. *Sustainability Science*, 18(2), 1015–1030. <https://doi.org/10.1007/s11625-022-01226-8>
- King, J., Rieckmann, M., Fischer, D., Barth, M., Büssing, A. G., Hemmer, I. & Lindau-Bank, D. (2022). International Trends in Research on Environmental and Sustainability Education in Teacher Education. In M. A. Peters (ed.), *Springer eBook Collection. Encyclopedia of Teacher Education* (pp. 1–6). Springer. [https://doi.org/10.1007/978-981-13-1179-6\\_468-1](https://doi.org/10.1007/978-981-13-1179-6_468-1)
- Millican, R. (2022). A Rounder Sense of Purpose: Competences for Educators in Search of Transformation. In P. Vare, N. Lausset & M. Rieckmann (eds.), *Competences in Education for Sustainable Development. Critical Perspectives* (pp. 35–43). Springer International Publishing. [https://doi.org/10.1007/978-3-030-91055-6\\_5](https://doi.org/10.1007/978-3-030-91055-6_5)

## References

- Rauch, F., & R. Steiner. 2013. Competences for education for sustainable development in teacher education. CEPS Journal 3: 9–24.
- Redman, A. & Wiek, A. (2021). Competencies for Advancing Transformations Towards Sustainability. Frontiers in Education, 6, paper 785163. <https://doi.org/10.3389/feduc.2021.785163>
- Rieckmann, M. 2018. Chapter 2 - Learning to transform the world: key competencies in ESD. pp. 39-59. In: Leicht, A., J. Heiss, & W. J. Byun (Hrsg.): Issues and trends in Education for Sustainable Development, Paris: UNESCO, <http://unesdoc.unesco.org/images/0026/002614/261445E.pdf>.
- Rieckmann, M. (2020): Emancipatory and transformative Global Citizenship Education in formal and informal settings: Empowering learners to change structures. In: Tertium Comparationis. Journal für International und Interkulturell Vergleichende Erziehungswissenschaft 26(2), 174–186. [https://www.waxmann.com/index.php?eID=download&id\\_artikel=ART104545&uid=frei](https://www.waxmann.com/index.php?eID=download&id_artikel=ART104545&uid=frei).
- Rieckmann, M. & Barth, M. (2022). Educators' Competence Frameworks in Education for Sustainable Development. In P. Vare, N. Lausset & M. Rieckmann (eds.), Competences in Education for Sustainable Development. Critical Perspectives (pp. 19–26). Springer International Publishing. [https://doi.org/10.1007/978-3-030-91055-6\\_3](https://doi.org/10.1007/978-3-030-91055-6_3)
- Rieckmann, M./Schank, C. (2016): Sozioökonomisch fundierte Bildung für nachhaltige Entwicklung - Kompetenzentwicklung und Werteorientierungen zwischen individueller Verantwortung und struktureller Transformation. In: SOCIENCE 1 (1), S. 65-79. Unter: <http://www.rce-vienna.at/SOCIENCE/vol1.pdf>
- Rockström, J.; W. Steffen; K. Noone; Å. Persson; F. S. Chapin; E. Lambin et al. (2009): Planetary boundaries: exploring the safe operating space for humanity. In: Ecology and Society 14 (2), <http://www.ecologyandsociety.org/vol14/iss2/art32/>
- Sleurs, W. 2008. Competencies for ESD (Education for Sustainable Development) teachers. A framework to integrate ESD in the curriculum of teacher training institutes, [http://www.unece.org/fileadmin/DAM/env/esd/inf.meeting.docs/EGonInd/8mtg/CSCT%20Handbook\\_Extract.pdf](http://www.unece.org/fileadmin/DAM/env/esd/inf.meeting.docs/EGonInd/8mtg/CSCT%20Handbook_Extract.pdf)

## References

- Steffen, W.; Richardson, K.; Rockstrom, J.; Cornell, S. E.; Fetzer, I.; Bennett, E. M. et al. (2015): Planetary boundaries: Guiding human development on a changing planet. In: Science 347 (6223). DOI: 10.1126/science.1259855.
- UNECE – United Nations Economic Commission for Europe. 2012. Learning for the Future: Competences in Education for Sustainable Development.  
[http://www.unece.org/fileadmin/DAM/env/esd/ESD\\_Publications/Competences\\_Publication.pdf](http://www.unece.org/fileadmin/DAM/env/esd/ESD_Publications/Competences_Publication.pdf).
- UNESCO (2014): Shaping the Future We Want. UN Decade of Education for Sustainable Development (2005-2014). Final Report. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000230171>
- UNESCO (2017): Education for Sustainable Development Goals. Learning Objectives. Paris: UNESCO.  
<http://unesdoc.unesco.org/images/0024/002474/247444e.pdf>
- UNESCO (2020): Education for Sustainable Development. A roadmap. Paris: UNESCO,  
<https://unesdoc.unesco.org/ark:/48223/pf0000374802>
- Vare, Paul; Arro, Grete; Hamer, Andre de; Del Gobbo, Giovanna; Vries, Gerben de; Farioli, Francesca et al. (2019): Devising a Competence-Based Training Program for Educators of Sustainable Development: Lessons Learned. *Sustainability* 11 (7), 1890. DOI: 10.3390/su11071890.
- Vare, P./Scott, W. (2007): Learning for a Change: Exploring the Relationship between Education and Sustainable Development. In: *Journal of Education for Sustainable Development* 1(2): 191–198.
- Wals, A. E. J. (2011). Learning Our Way to Sustainability. *Journal of Education for Sustainable Development*, 5(2), 177–186. <https://doi.org/10.1177/097340821100500208>
- Weselek, J. & Wohnig, A. (2021): Befähigung zu gesellschaftlicher und politischer Verantwortungsübernahme als Teil Globalen Lernens – Was heißt hier Neutralität? *ZEP – Zeitschrift für internationale Bildungsforschung und Entwicklungspädagogik*, 44(2), 4–10. <https://doi.org/10.31244/zep.2021.02.02>
- World Bank (2020): Reversals of Fortune. Poverty and Shared Prosperity 2020. Washington DC.  
<https://www.worldbank.org/en/publication/poverty-and-shared-prosperity>