Education for Sustainable Development

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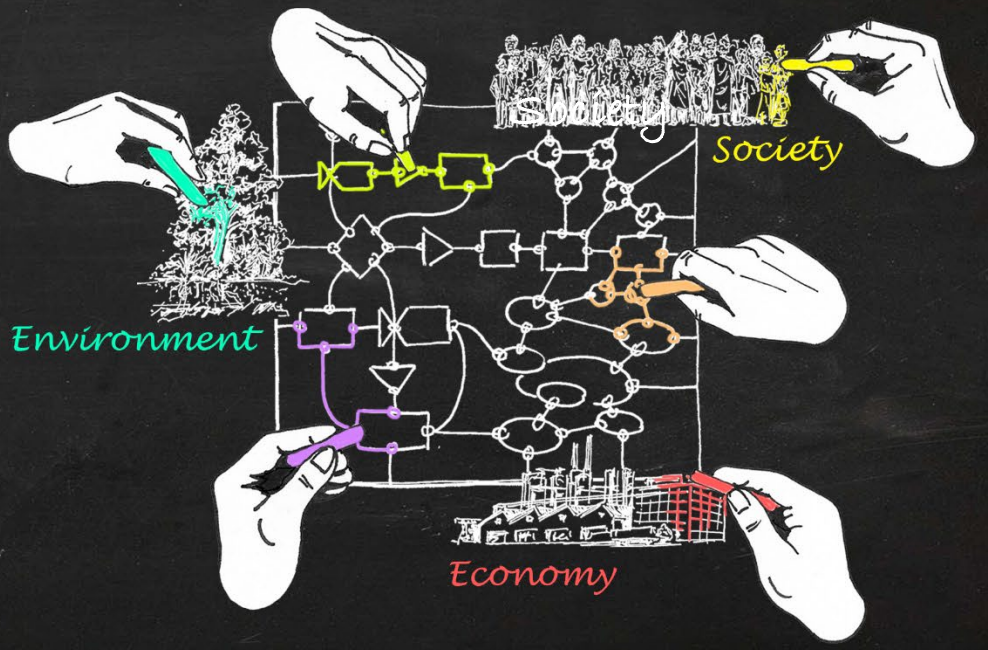
Integrating Education for Sustainable Development (ESD) approaches and sustainability topics into higher education

– experiences from the CDE, University of Bern



Dr. Isabelle Providoli, CDE, University of Bern

Further material and information:
www.esd.unibe.ch

Outline

- Introduction to Education for Sustainable Development (ESD)
- Sustainability competences needed
- Reflection on suitable teaching-learning arrangements

New form of science and education

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The UN 2030 Agenda for Sustainable Development **calls for a new form of science and education**, actively contributing to sustainability transformation.

Business as usual is no longer an option.

- What kind of research is required?
- **What kind of education is required?**

Requirements for research / education supporting Sustainable Development

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Demands for Sustainable Development …	Answers from Science …
… **understanding complex society-environment interrelations** (e.g. climate change, globalisation, global change, world trade, growing social and economic disparities, technology development, environmental destruction, …)	… **interdisciplinary cooperation**
… **managing complex society-environment interrelations**, so-called wicked problems, incomplete knowledge, high dynamics, contradictory agendas	… **transdisciplinary cooperation**
… **multiple interactions at all levels** (local to global)	… **multi-level-multi-stakeholder approach**
… **phases of acceleration and high dynamism**, non-linearity, insecurity	… **new ways of thinking**, flexible research approaches and methods, creativity, innovation, …
… **education that supports** SD research	… **innovative teaching learning arrangements**, focusing on building knowledge, skills and attitude/values

Source: K. Herweg, CDE

Sustainable Development as a vision

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Sustainable Development as a vision and guiding idea for society as a whole requires **actions and implementation at different levels**

Individual	**Society**		
local level	**local level**	**regional and national level**	**international level**
ethical, normative, political	normative, political, strategic		
reflect on values and act accordingly	discuss and agree upon values	negotiate, determine and enforce laws	negotiate goals
			
How do I want to act?	How do we want to act?	Which actions are binding for us?	How do we want to act in the future?

Figure 6: Model for implementation of Sustainable Development at different levels, modified after Probst and Piller, 2019

https://www.academy2030.org/understanding-sd

The UN Sustainable Development Goal (SDG) 4

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- Education is at the heart of the UN 2030 Agenda
- Education as a stand-alone goal (SDG 4)
  - ✓ Ensures inclusive and quality education for all
  - ✓ Promotes lifelong learning
- Targets on education are under several other SDGs (e.g. health, growth and employment, sustainable consumption and production and climate change)
- Education can accelerate progress towards the achievement of all SDGs

What is Education for Sustainable Development?

Target 4.7 By 2030, ensure that all learners acquire the **knowledge and skills needed to promote sustainable development**, including, among others, through **education for sustainable development** …

> Education for Sustainable Development" (ESD) is the "**totality of all actions by which people seek to promote the competences of learners in such a way as to enable them to shape sustainable development"**
> *(Riess, Mischo et al. 2018, p. 298)*

- Holistic, inter- and transdisciplinary learning methods
- Sensitize people and enable them to shape future developments in a responsible way
- Make innovative contributions to all **economic, social, ecological and cultural topics**
- Make a positive contribution to society

Barth & Michelsen 2013; Barth & Rieckmann 2016

UNESCO
ESD for 2030 framework

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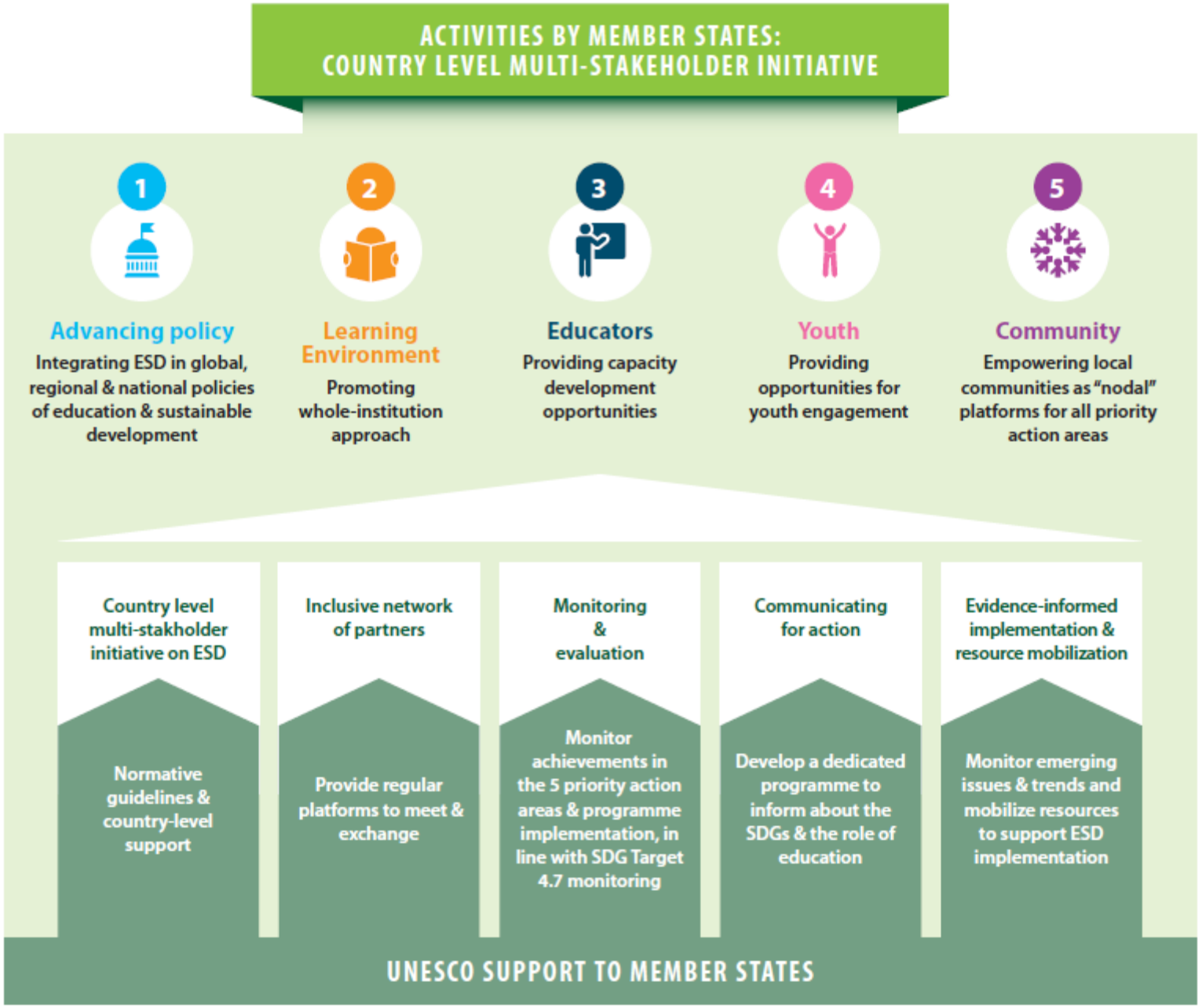
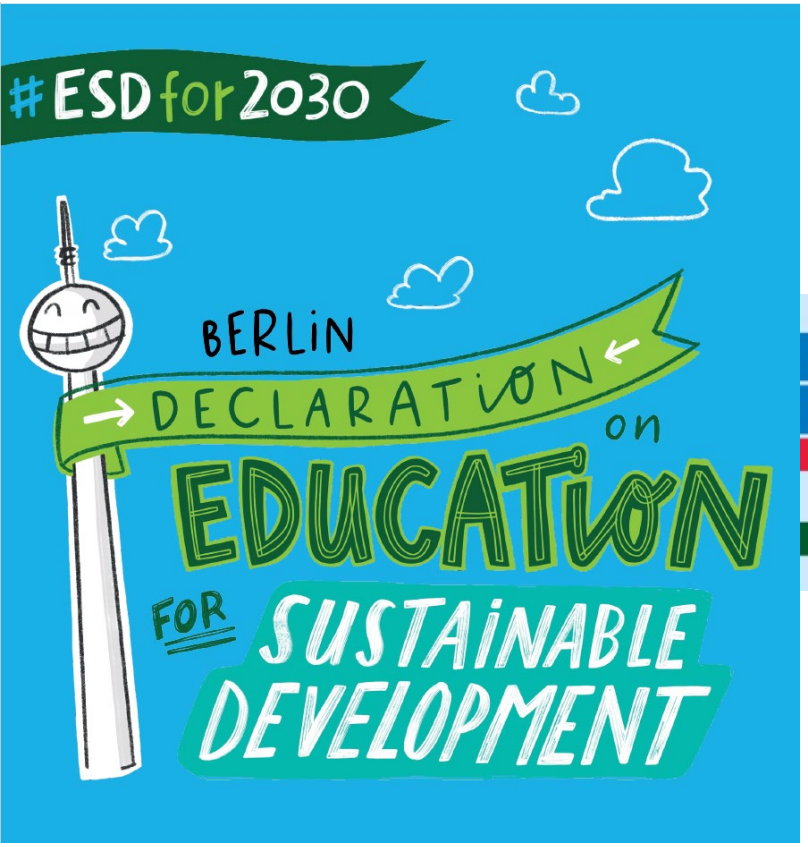
UNESCO, 2020. ESD road map


ACTIVITIES BY MEMBER STATES:
COUNTRY LEVEL MULTI-STAKEHOLDER INITIATIVE
1
Advancing policy
Integrating ESD in global, regional & national policies of education & sustainable development
2
Learning Environment
Promoting whole-institution approach
3
Educators
Providing capacity development opportunities
4
Youth
Providing opportunities for youth engagement
5
Community
Empowering local communities as "nodal" platforms for all priority action areas
Country level multi-stakholder initiative on ESD
Normative guidelines & country-level support
Inclusive network of partners
Provide regular platforms to meet & exchange
Monitoring & evaluation
Monitor achievements in the 5 priority action areas & programme implementation, in line with SDG Target 4.7 monitoring
Communicating for action
Develop a dedicated programme to inform about the SDGs & the role of education
Evidence-informed implementation & resource mobilization
Monitor emerging issues & trends and mobilize resources to support ESD implementation
UNESCO SUPPORT TO MEMBER STATES



May 2021

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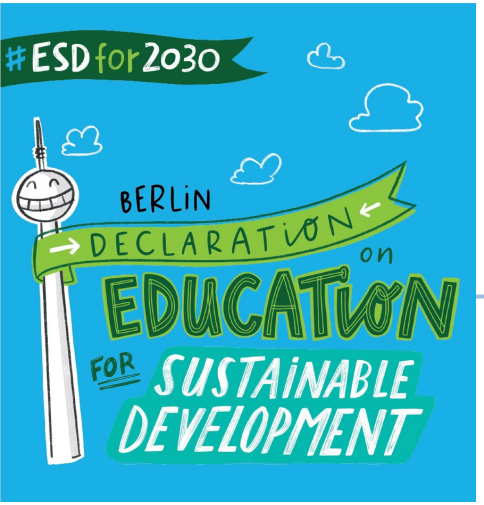
We are confident that education is a **powerful enabler of positive change of mindsets and worldviews** and that it can support the integration of **all dimensions of sustainable development**, of economy, society and the environment, ensuring that **development trajectories** are not exclusively oriented towards **economic growth to the detriment of the planet**, but towards **the well-being of all within planetary boundaries**.



Preamble

- ESD enables learners to develop **their cognitive and non-cognitive skills**, such as **critical thinking** and **competences for collaboration, problem solving, coping with complexity and risk, building resilience, thinking systemically and creatively**.

- ESD empowers learners to **take responsible action as citizens**, fulfilling their right to quality education as defined in SDG 4 -Education 2030.

- ESD must be based on and **promote respect for nature, as well as human rights, democracy, the rule of law, non-discrimination, equity and gender equality**.

- ESD should promote **intercultural understanding, cultural diversity, a culture of peace and non-violence, inclusion and the notion of responsible and active global citizenship.**


DIMENSIONS OF LEARNING
HEAD
Understand sustainability challenges and their complex interlinkages, and explore alternative solutions
HEART
Build core values and attitudes for sustainability, cultivate empathy and compassion for other people and the planet, and motivate to lead the change
HAND
Take practical action for sustainable transformations in the personal, societal and political spheres

How can we capacitate the young generation to become future change agents?

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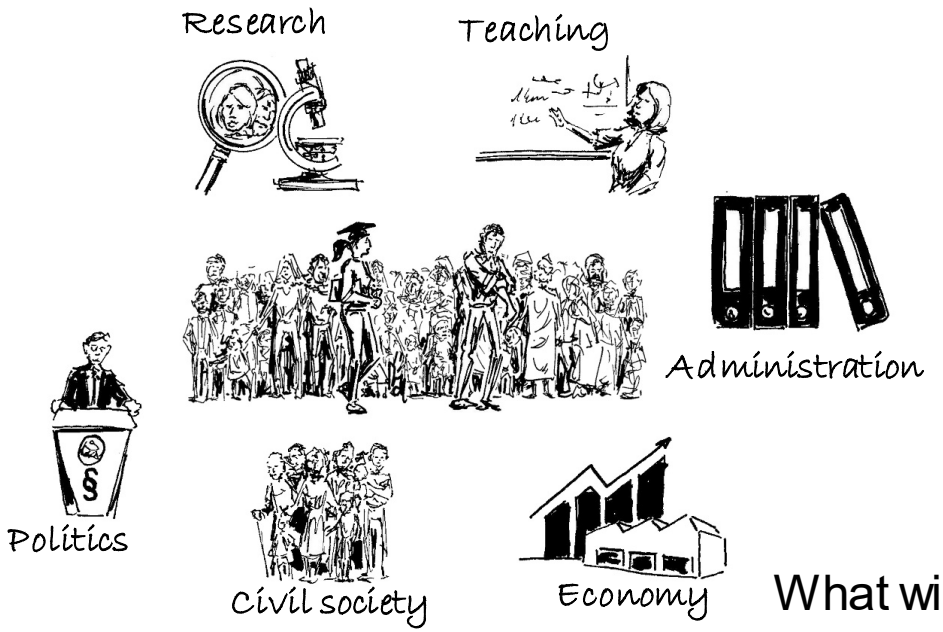

What will be their **future fields of work**?

What **typical situations** will they have to master?

What **competences** do they need to master these situations and **to foster sustainable development?**

Competences

Menti.com Code: 15 62 07 6

Which competences do students need to be able to foster sustainable development in their future work / private life?

List competences you think they will need?

"Be able to analyze complex problems"
"Be able to listen"
"Be carrying"
Etc.

Sustainability competences

Which key competences are needed for learners to become "Sustainability citizens"?

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Rieckmann 2018

- ***Systems thinking competency:*** the ability to recognize and understand relationships, **to analyse complex systems**, to perceive the ways in which systems are embedded within different domains and different scales, and to deal with uncertainty;
- ***Anticipatory competency****:* the ability to understand and evaluate **multiple futures – possible, probable and desirable** – and to create one's own visions for the future, to apply the precautionary principle, to assess the consequences of actions, and to deal with risks and changes;
- ***Normative competency:*** the ability to understand and reflect on **the norms and values that underlie one's actions** and to negotiate sustainability values, principles, goals and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions;
- ***Strategic competency:*** the ability to collectively develop and implement **innovative actions that further sustainability** at the local level and further afield;

Sustainability competences (continued)

- ***Collaboration competency:*** the ability to learn from others; **understand and respect the needs, perspectives and actions of others (empathy);** understand, relate to and be sensitive to others (empathic leadership), deal with conflicts in a group; and facilitate collaborative and participatory problem-solving;
- ***Critical thinking competency:*** the **ability to question norms, practices and opinions; reflect on own one's values, perceptions and actions;** and take a position in the sustainability discourse;
- ***Self-awareness competency:*** the ability **to reflect on one's own role** in the local community and (global) society, continually evaluate and further motivate one's actions, and deal with one's feelings and desires;
- ***Integrated problem-solving competency:*** the overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution that promote sustainable development – integrating the above-mentioned competencies.

Effective teaching-learning arrangements

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How can we design **effective teaching-learning arrangements** to build the **required competences**?

ESD should lead to **the development of competences for action.**

Education and training concept should be based on the **concept of competences.**

What competencies do students need to master future work situations?

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Change of perspective: teachers must reflect what students must be able to do in the end.

At the end of the programme/course …

- … what do you need to know (**academic knowledge**)?
- … what do you need to be able to do (**professional skills**)?
- … what should your attitude and values be (**critical awareness**)?

Relevant knowledge has to be learned **in prototypical situations**, this situation can later be remembered functioning as an anchor for the associated knowledge.

Key pedagogical approaches in ESD

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A LEARNER-CENTERED APPROACH

- ✓ Active development of knowledge rather than transfer/passive learning
- ✓ Educator: facilitator or learning processes

ACTION-ORIENTED LEARNING

- ✓ Learner engage in action and reflect on their experiences
- ✓ Educator: create learning environment that prompts reflexive through processes.

TRANSFORMATIVE LEARNING

- ✓ Empowers learners to question and change their ways of seeing and thinking about the world.
- ✓ Educator: facilitator who challenges learners

Rieckmann 2018

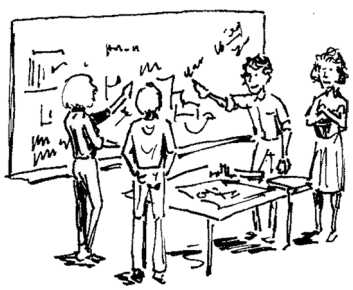
Teaching-Learning-Arrangements

Creating Spaces for Transformative Moments

"We do not create transformative moments but can create spaces for them to arise." (Gutiérrez 2016)

following a few principles makes transformative moments more likely:

- Work on a **real-world context**, with complex problem settings and solution-oriented
- Bring together **students from various disciplines**
- Enable students to take a more active role (**student-centred approach**)
- Allow students to **interact with actors** from practice, enable **experiential learning** outside the classroom, include **learning through action**
- Focus on jointly developed **solutions**
- **Motivate** for working towards SD – allow **emotional engagement**
- …



Zone of proximal development

to make progress, learners need to be "**nudged**" out of their comfort zone without being overwhelmed and falling into the panic zone.

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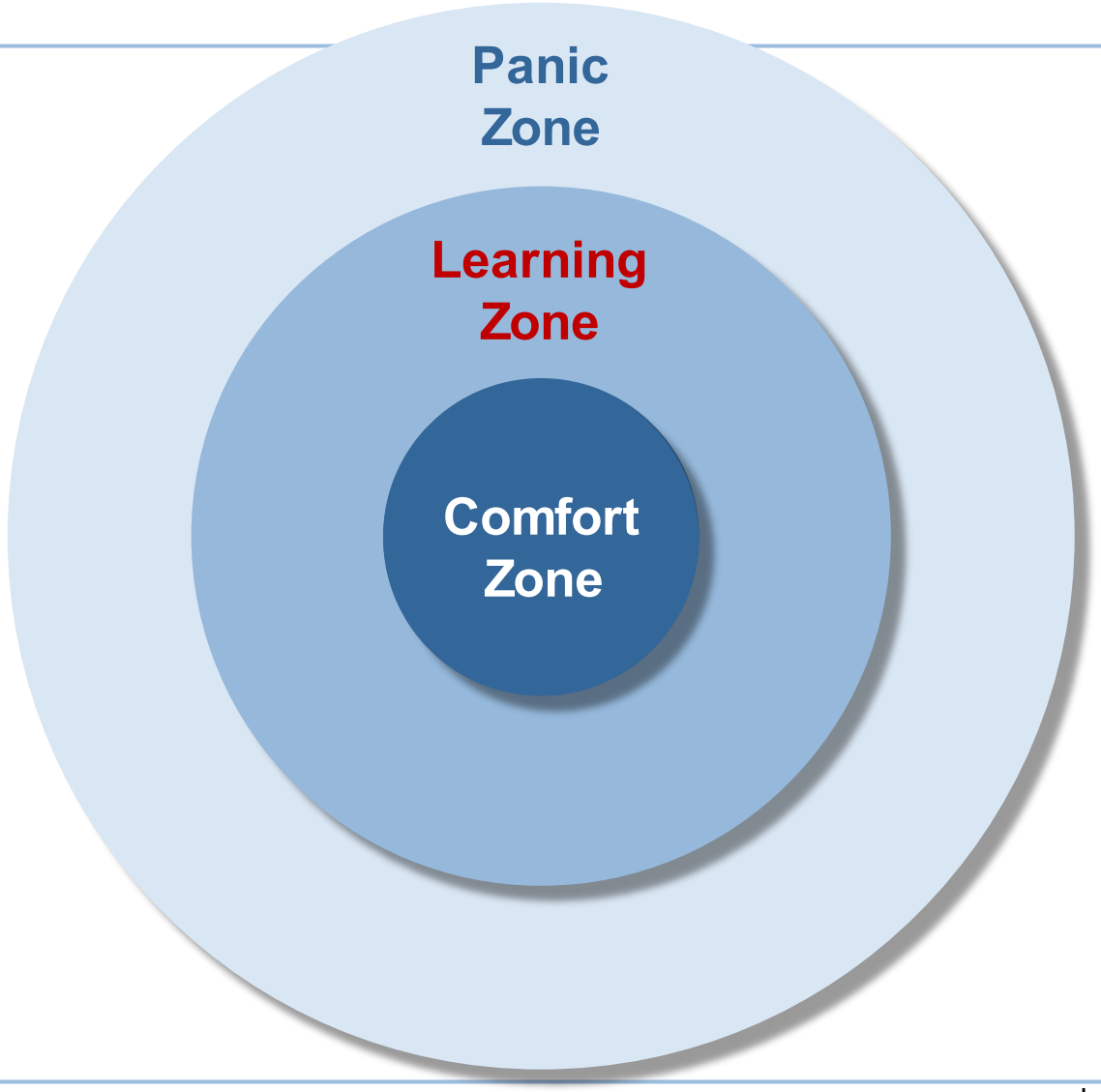

adapted from Lev Vygotsky

Transformative Learning

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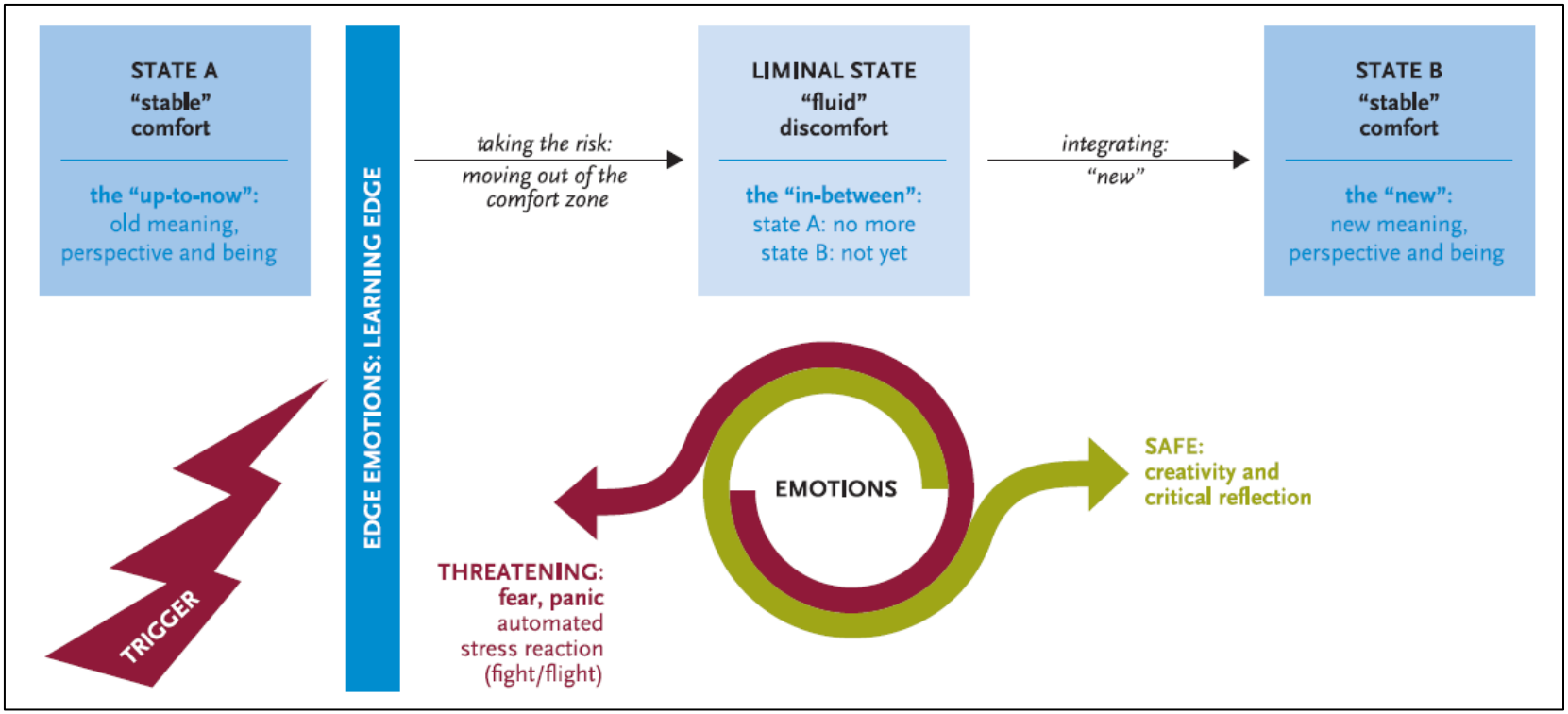

Source: Förster, Zimmermann & Mader (2019)

Orders of Learning

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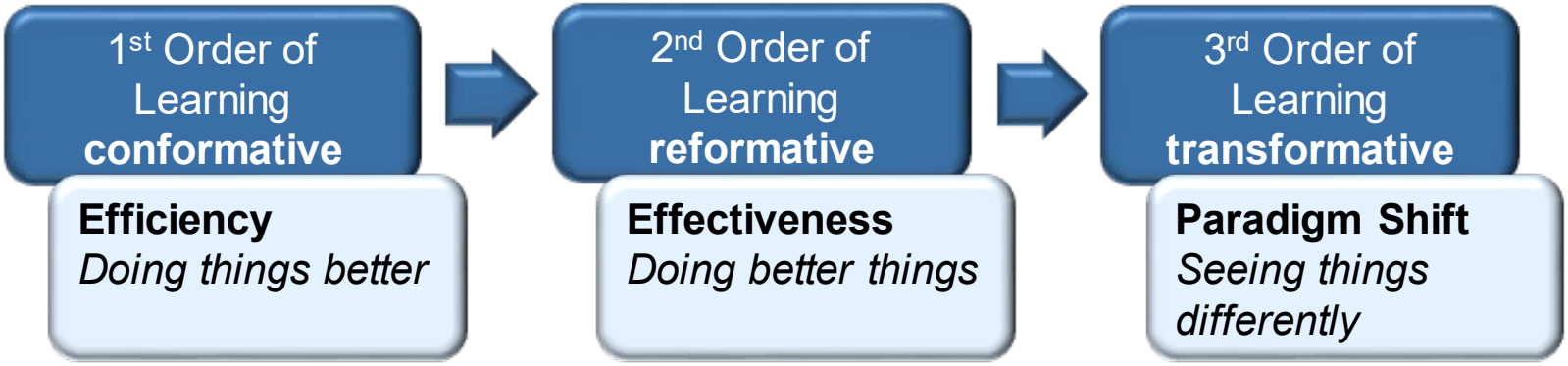
- The first order of learning is **conformative,** addressing the cognitive dimension (intellect): at this level, something new is learned without challenging the established (disciplinary) self-conception.
- The second order of learning is **reformative,** concerns the affective dimension (emotions), and is characterized by critically questioning and then adapting beliefs, values, and assumptions that make up self-conception.
- The third order of learning is **transformative**: it goes deeper and, through reflecting on and reconstructing self-understanding, addresses the existential dimension, the empowerment dimension, and the action dimension.



adapted from Sterling 2011, building on Bateson 1973

Group work

Task

Discuss in the group

- What for **"pedagogical approaches" / "teaching / learning arrangements"** are you using at your universities / schools?
  - Share these teaching / learning arrangement with your colleagues
  - Do you use similar approaches?

- Which **sustainability competences** are you fostering through these teaching learning arrangements?

Time: 20 min

Report back to the plenary (about 5 min)

Through which teaching-arrangement did you learn most?

Menti.com Code: 42 63 05 74

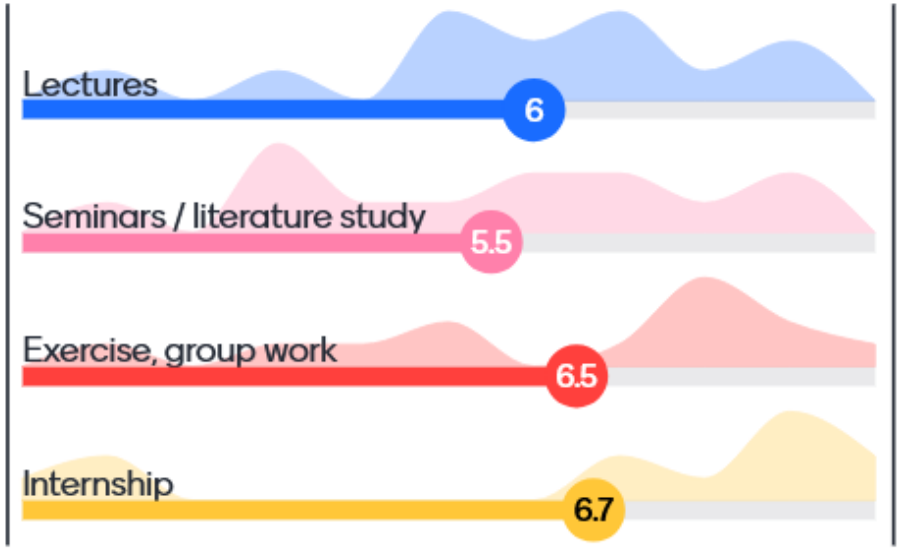
Through which teaching-arrangement did you learn most?

- Lectures
- Seminars / literature study
- Exercises, group work
- Fieldwork
- Internship

Scale from 0 to 10 (10 is the maximum)

Through which teaching-arrangement did you learn most as a student?

Mentimeter



Example from the Royal University of Agriculture (RUA), Cambodia

As a student, in what kind of courses did you learn best or most?

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100% Practise — 50/50 — 100% Theory

Fieldwork Internship	Exercises Group work	Seminars Literature work	Lectures

Example from the Royal University of Agriculture (RUA), Cambodia

As a lecturer, what type of courses are offered mostly in your programme?

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100% Practise

50/50

100% Theory

Fieldwork
Internship

Exercises
Group work

Seminars
Literature work

Lectures

Examples from University of Bern

Example:
Field Course “Development and Environment” (BSc Geography)

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How can physical and human Geography **field methods** be combined in an integrative approach?

- 24 Bachelor students, 2nd and 3rd year.
- 6 groups of 4 students have to do field work.

Example:
Field Course “Development and Environment” (BSc Geography)

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Competences

Academic knowledge

- Sustainable land management and regional development
- Learn physical and human Geography survey methods
- Etc.

Professional skills

- Plan semi-structured Interviews and conduct respectful and productive conversation with farmers
- Plan, conduct, and analyse data collection
- Organise team work
- Write a scientific report including results and their interpretations

Critical awareness

- Personal learning process
- Improvise and develop alternative procedures

Creating mutual learning opportunities
MSc Course Applied Integrative Geography

Example:
U Change - Student initiatives for sustainable development

U Change project funding 2021-24

U-Change is now funding student projects in a 3rd call.
Apply now with your idea!

U-Change link

Community garden

Who is behind *Psst!*

BENE
VEREIN FÜR NACHHALTIGE ENTWICKLUNG AN DEN BERNER HOCHSCHULEN

Sustainability Association BENE

BENE is the Association for Students for Sustainable Development at the Higher Education Institutions in Bern. Coming from various backgrounds, this interdisciplinary group of students contributes to Sustainable Development at the Higher Education Institutions in Bern as well as in society.

More information

Closing – ESD road map

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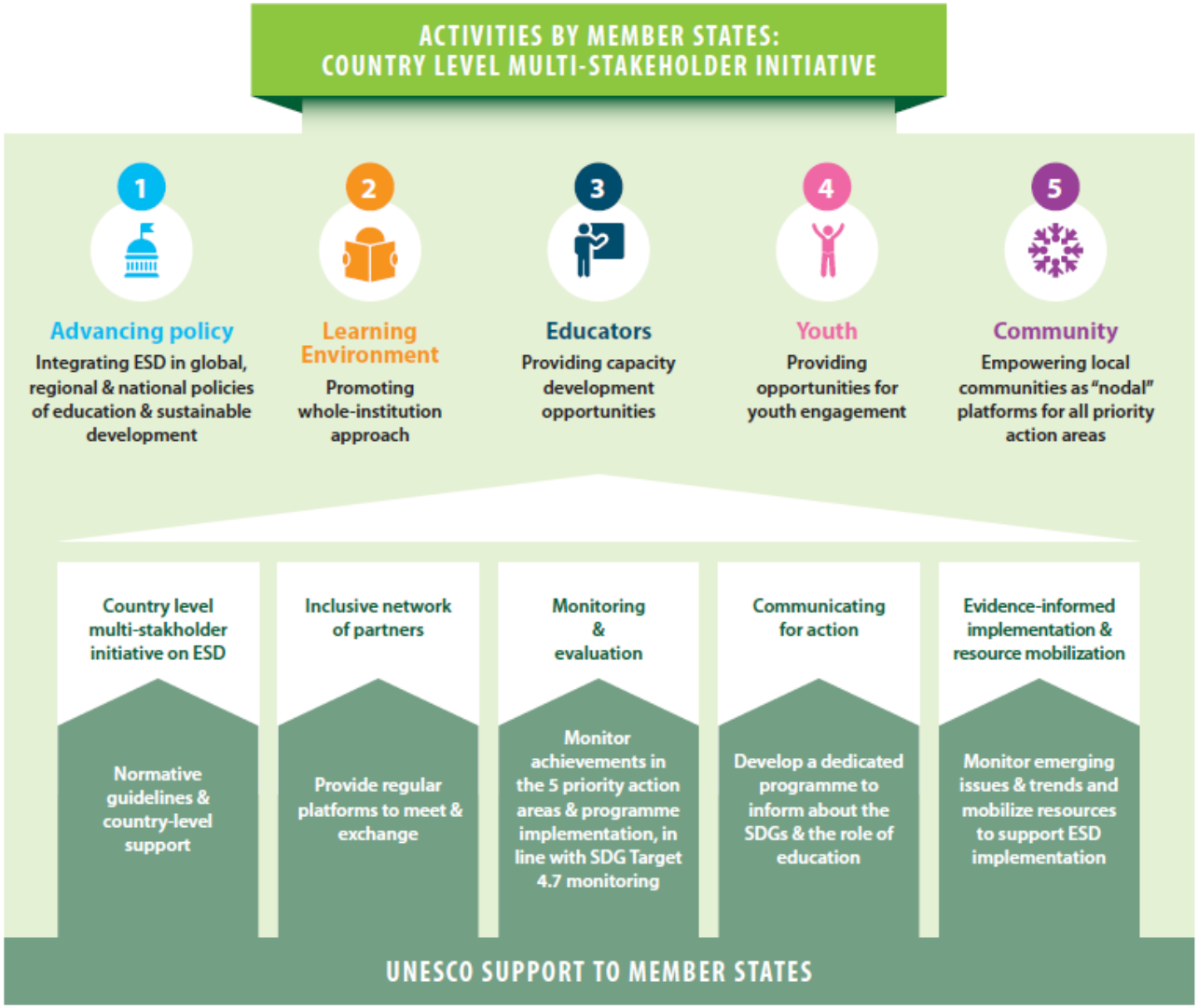

Check-out

Menti.com Code: 85 91 89 55

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What are your main learnings of today?

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What are your main learnings today?

Further reading

Balsiger, J., Förster, R., Mader, C., Nagel, U., Sironi, H., Wilhelm, S., & Zimmermann, A. B. (2017). Transformative learning and education for sustainable development. GAIA-ecological Perspectives for Science and Society, 26(4), 357-359. https://doi.org/10.14512/gaia.26.4.15

Herweg L., Tribelhorn, T., Lewis A.L., Providoli, P., Trechsel, L.J., Steinboeck, C. (2021). Transdisciplinary Learning for Sustainable Development – Sharing Experience in Course and Curriculum Design. Bern, Switzerland: Centre for Development and Environment (CDE), University of Bern, with Bern Open Publishing (BOP). https://www.bne.unibe.ch/material/publications_further_reading/index_eng.html

Rieckmann, M. (2018). Learning to transform the world: Key competencies in Education for Sustainable Development. Issues and trends in education for sustainable development, 39-59. In (eds). UNESCO (2020). Issues and trends in Education for Sustainable Development, Learning to transform the world: key competencies in education for sustainable development - UNESCO Digital Library

SDSN (2020): Accelerating Education for the SDGs in Universities: A guide for universities, colleges, and tertiary and higher education institutions. New York: Sustainable Development Solutions Network (SDSN).

SDSN (2017): Getting started with the SDGs in universities: A guide for universities, higher education institutions, and the academic sector. Australia, New Zealand and Pacific Edition, Sustainable Development Solutions Network.

UNESCO (2019). Framework for the implementation of Education for Sustainable Development (ESD) beyond 2019. UNESCO. General Conference, 40th, 2019. 40 C/23, Paris.

UNESCO (2020). Education for Sustainable Development – a roadmap. Paris: UNESCO

UNESCO. 2022. Berlin Declaration on Education for Sustainable Development. Paris: UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000381229

Wilhelm, S., Förster, R., & Zimmermann, A. B. (2019). Implementing competence orientation: Towards constructively aligned education for sustainable development in university-level teaching-and-learning. Sustainability, 11(7), 1891. https://doi.org/10.14512/gaia.28.3.18