Education for taking action on sustainability issues

Questions asked and lessons learned

Jelle Boeve-de Pauw

Utrecht University, Freudenthal Institute

Utrecht University

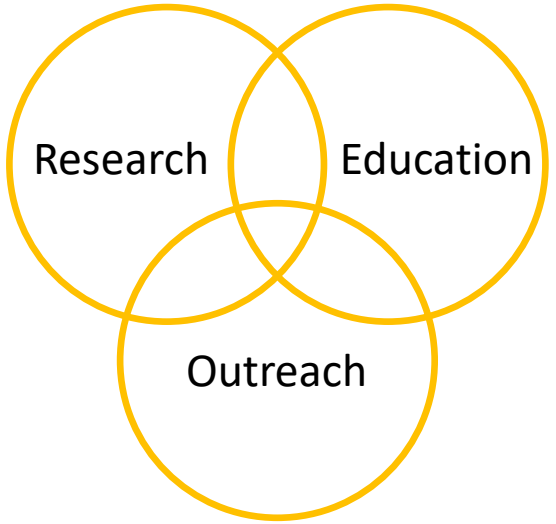
The Big Question

- Who am I and why do I do what I do?
- What is Education for Sustainable Development?
- What is that kids should learn in ESD?
- How can teachers contibute to that?
- Professional development of teachers?
- Lessons learned?

Utrecht University

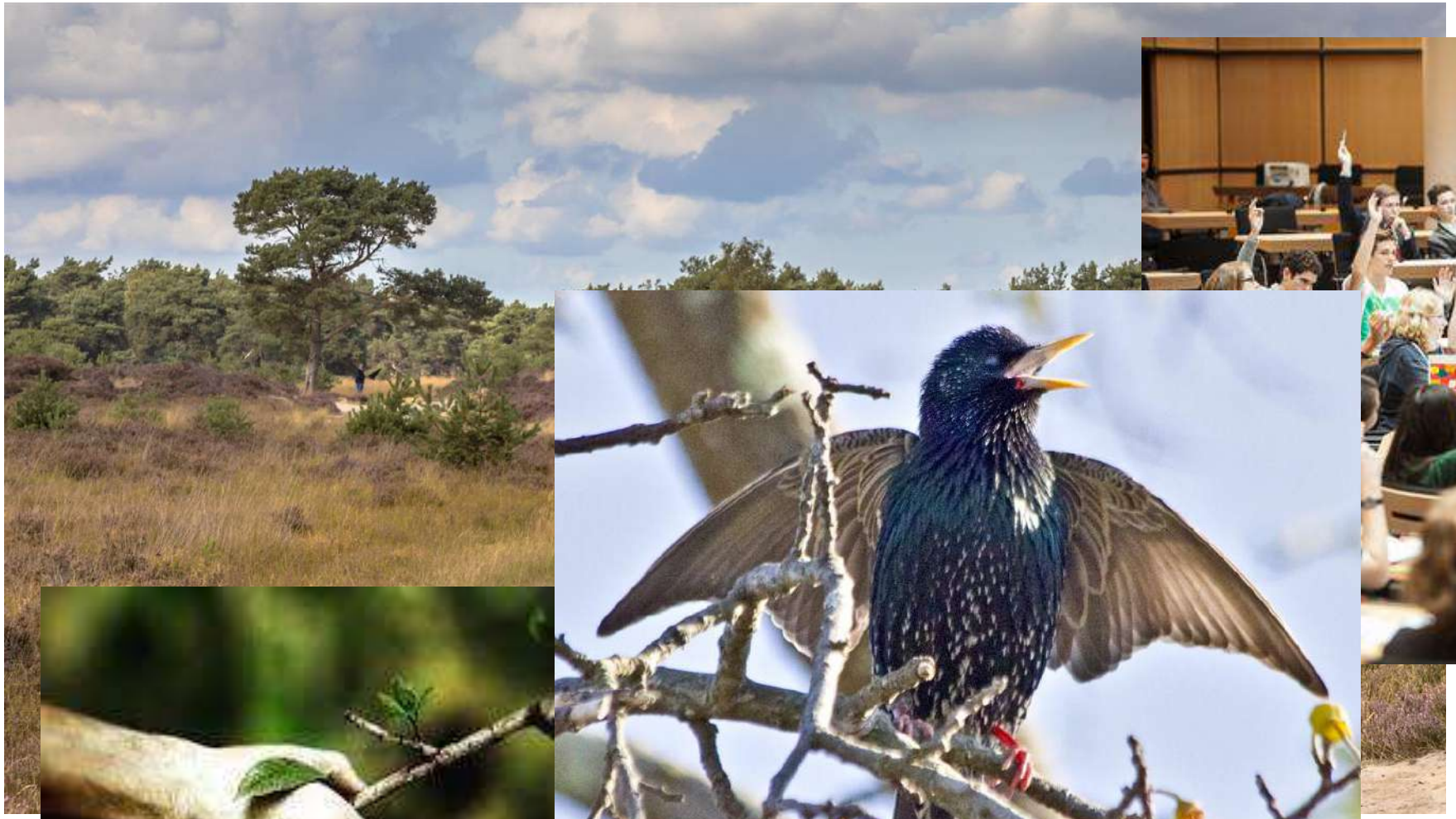
Freudenthal Institute

- Hans Freudenthal °Realistic Mathematics Education (‘50s-’70s)
- Nested within the Faculty of Science at Utrecht University
- “Scientific literacy for life”
- Multidisciplinary institute
  - Mathematics education
  - Science education
  - Science communication
  - Public engagement with science
  - History of science
  - Philosophy of science



- Masters in Science Education and Communication

Education for taking action on sustainability issues.
Questions asked and lessons learned.



"Conservation is not about biology but about people and the choices they make"

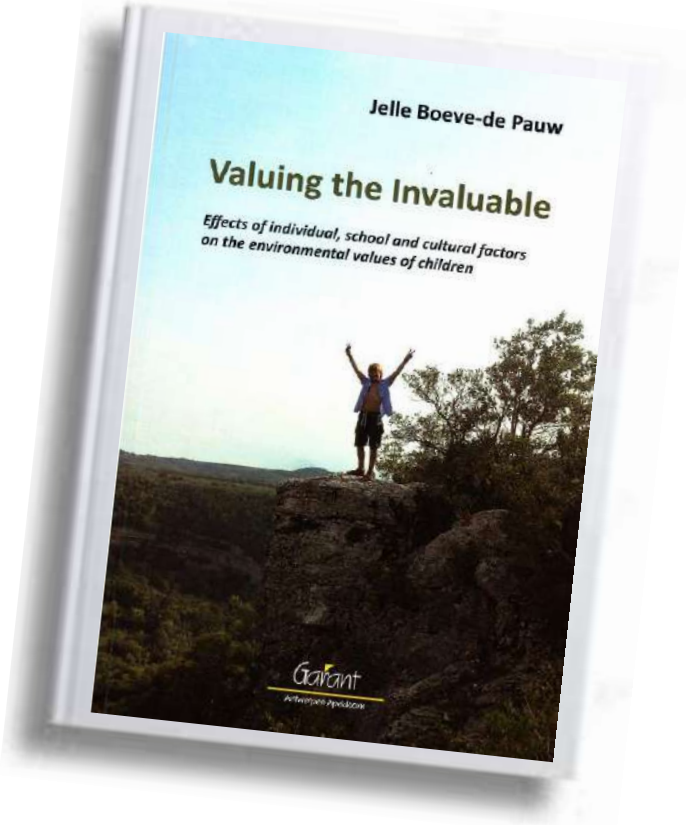
(Balmford & Cowling, 2006)

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University

museum

Universiteit Antwerpen



Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University

From : focus on environmental education
… to : focus on education for sustainability

From : studying learning outcomes of EE
… to : studying teaching and learning in ESD

From : cross sectional studies
… to : longitudinal studies

From : working solo, ‘hidden’ in the university
… to : joining forces with others out there

From : research about the work of societal partners
… over : research for societal partners
… to : research with societal partners

Utrecht University

4.7

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development

According to UNESCO (2018), ESD…

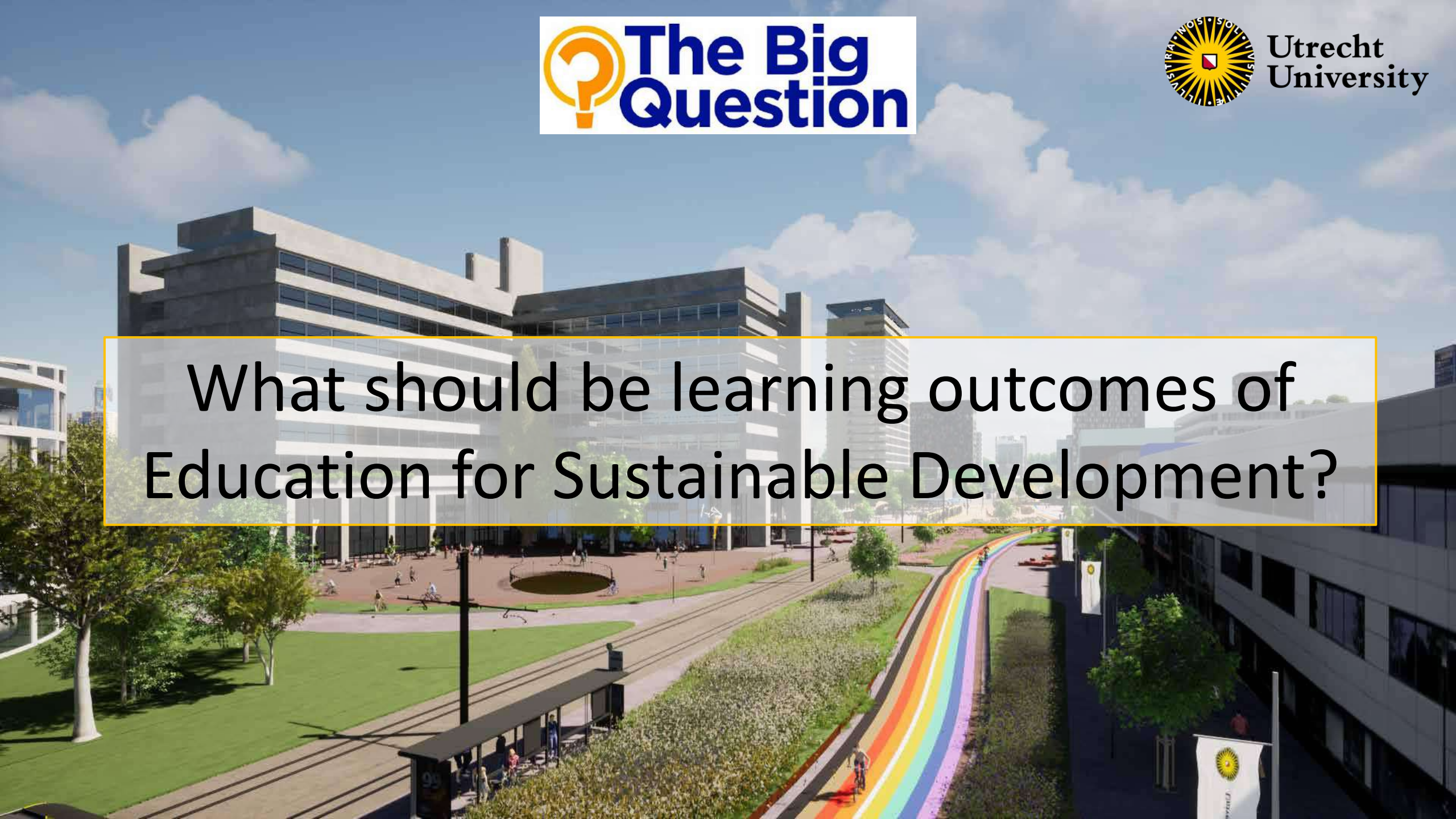
- … aims to provide knowledge about everchanging planetary conditions and environmental issues, and their risks and causes;
- … empowers learners to make informed decisions and take responsible actions for environmental integrity, economic viability, and a just society for present and future generations, while ensuring respect for cultural diversity;
- … prepares people to cope with and find solutions to problems that threaten the sustainability of the planet and social systems;
- … promotes competences such as critical thinking, imagining better futures, and participatory decision-making;

>> … requires far-reaching changes in the way education is organized and delivered.

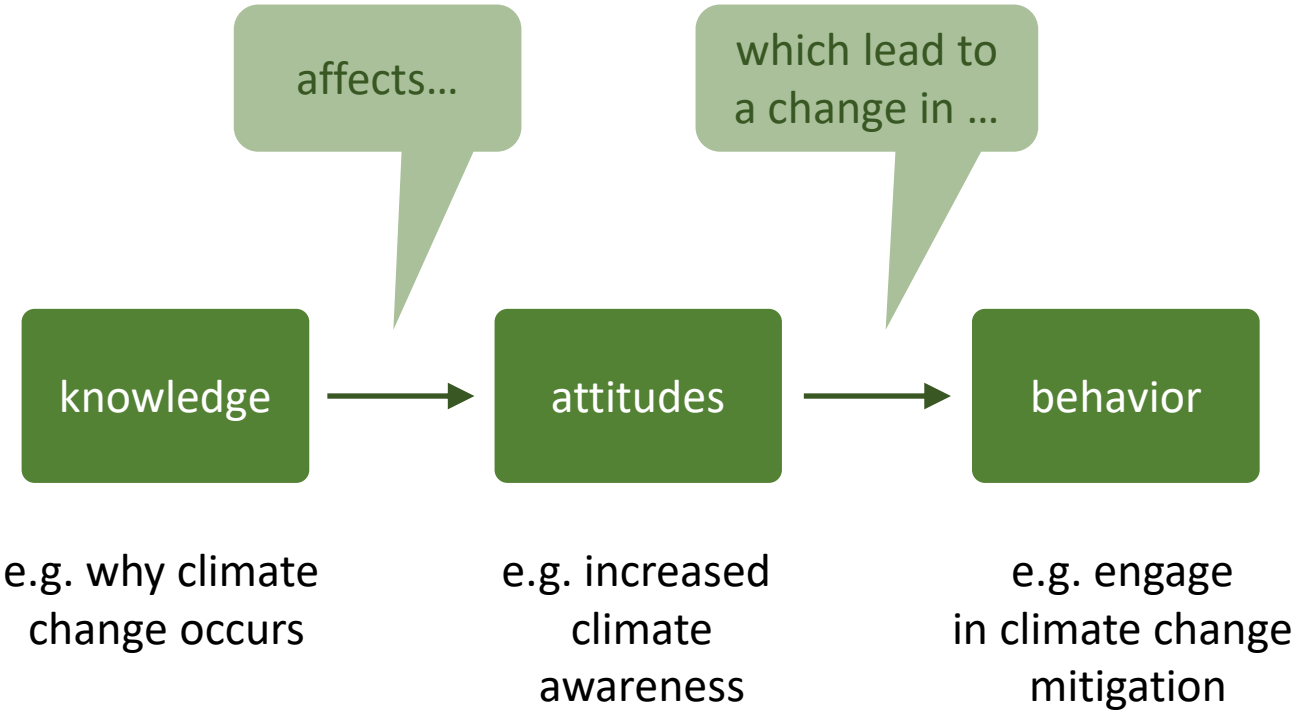
- For teachers, ESD presents **a major professional challenge**, connected to (among others) the complex educational principles that have emerged in recent ESD-related literature, such as holism, pluralism and action-orientation (Sinakou, Boeve-de Pauw, and Van Petegem 2019)

- ESD has not yet been widely anchored in **pre-** nor **in-service teacher training** (see e.g. Wilson 2012; Kang 2019).

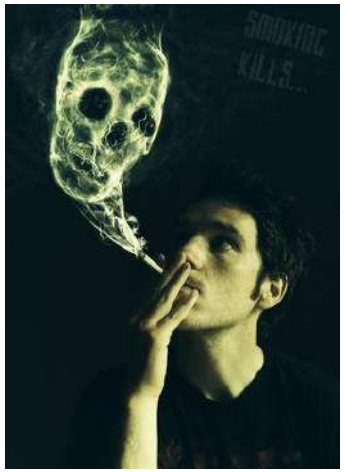
- Teachers report overall **low self-efficacy** for implementing ESD and scholars highlight the need to provide engaging learning opportunities for (pre- and in-service) teachers to (continue to) build their confidence and experience in ESD (e.g. Evans, Tomas, and Woods 2016).


The Big Question
Utrecht University
What should be learning outcomes of Education for Sustainable Development?

Education for taking action on sustainability issues.
Questions asked and lessons learned.

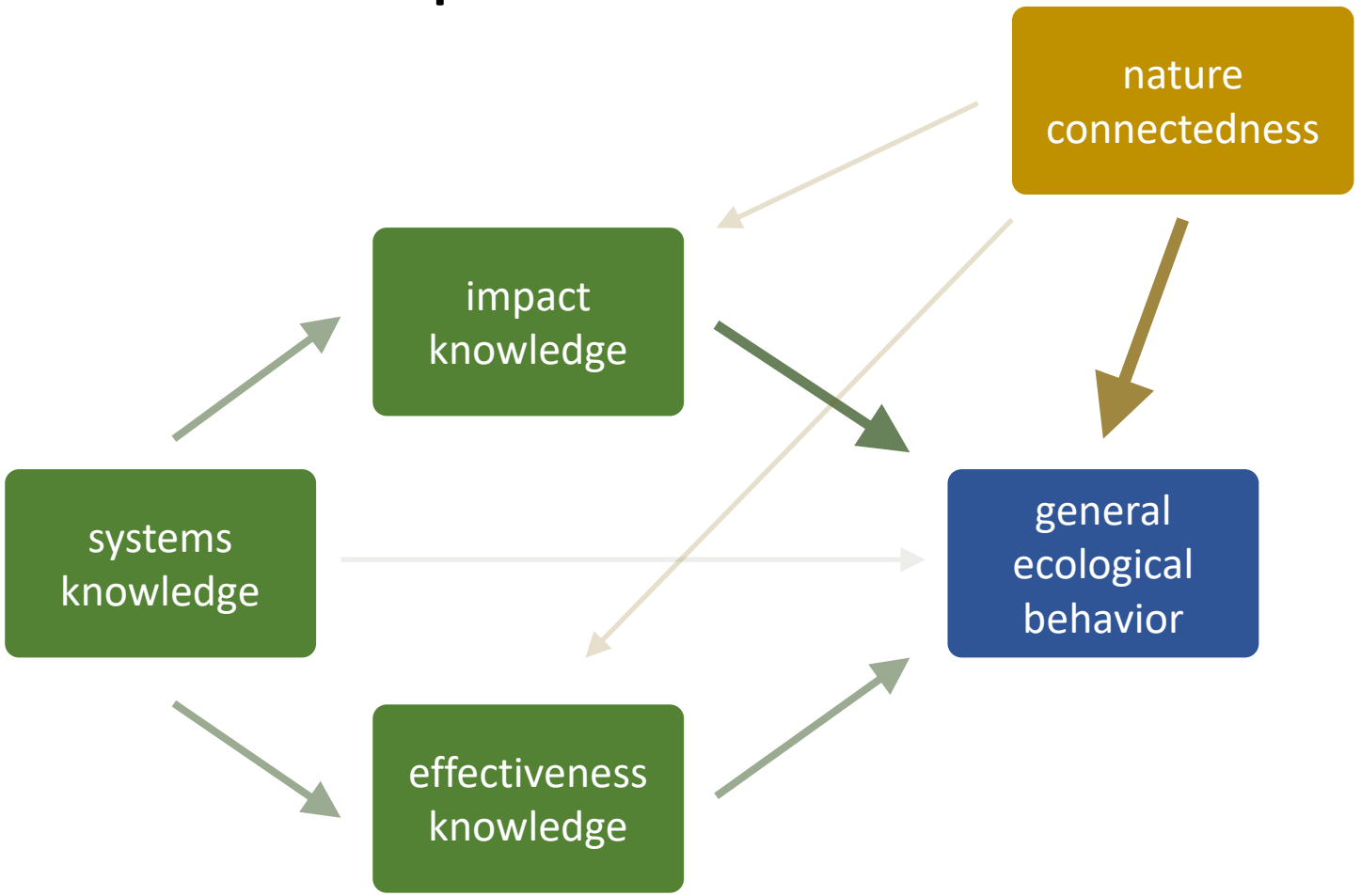


If KAB is true, then why do these things happen?

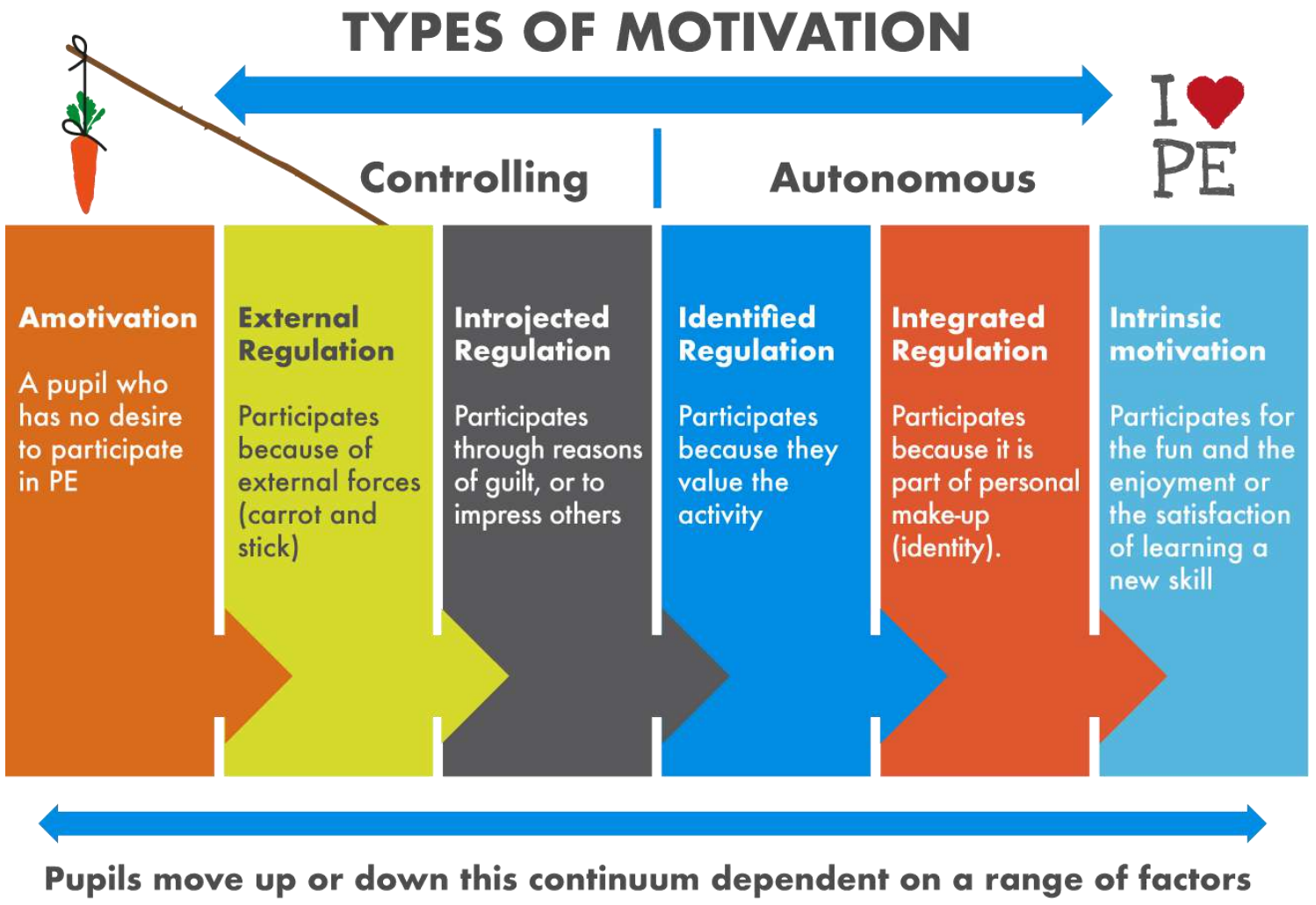


Utrecht University

Environmental competence model

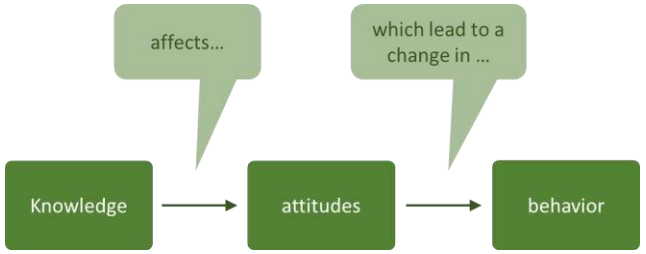


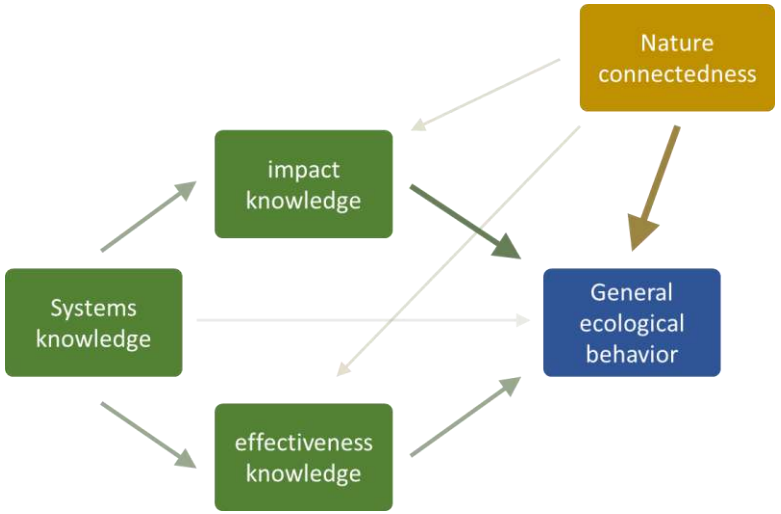
Roczen et al., 2014

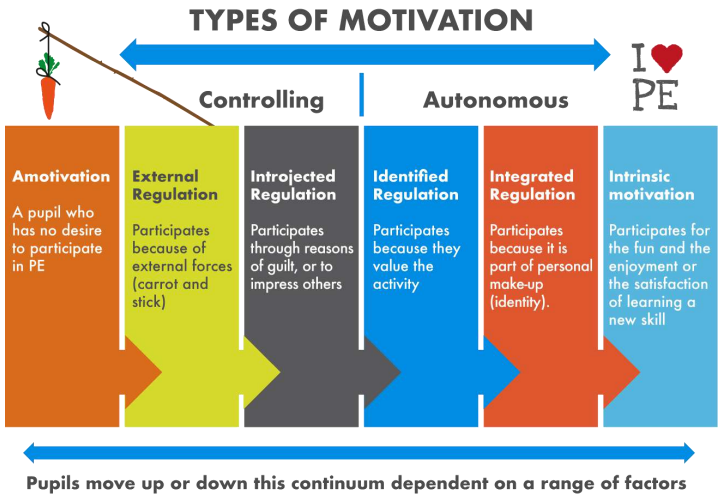


Deci & Ryan, 2000

Education for taking action on sustainability issues.
Questions asked and lessons learned.







Utrecht University

Ecoschool effectiveness study

- Cross sectional study with ± 100 schools at different stages in the project
- Diverse learning outcomes associated with environmental literacy, of…
  - … students
  - … alumni
  - … teachers
- Focus : does schools' participation in the eco-schools project impact environental literacy?
- Initial exploration of teaching approaches

Schools	Grade 6	Grade 12	Total
Control	11	9	20
Logo 1	12	10	22
Logo 2	11	9	20
Logo 3	13	9	22
Green Flag	9	8	17
Total	56	44	**101**

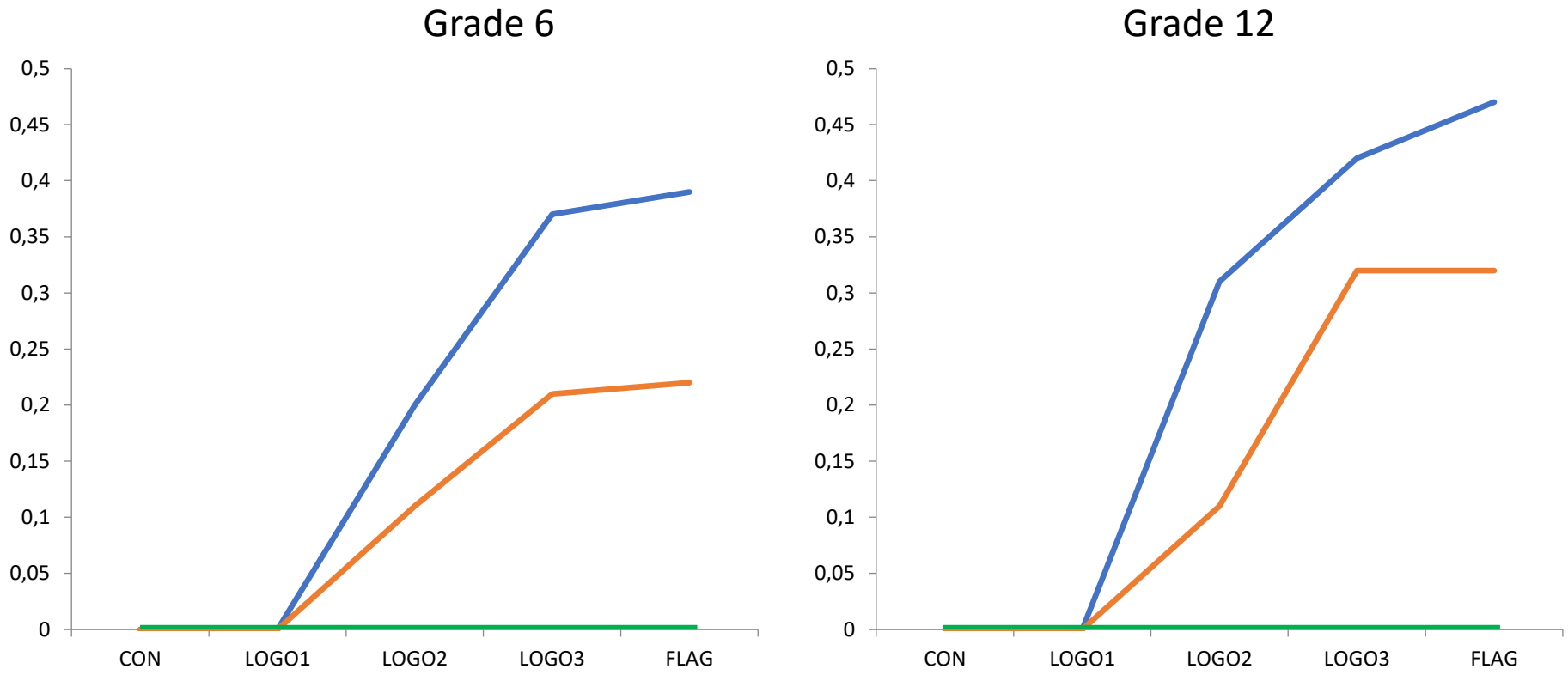
Respondents	Grade 6	Grade 12	Total
Students	1201	951	2152
Alumni (5 years)	/	232	232
Teachers	511	863	1374
Total	1712	2046	**3758**

MOS duurzame scholen straffe scholen

Boeve-de Pauw et al., 2018

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University



Shown in the figures :

Effect sizes of Logo123/Flag VS Con (β in the HLM)

Theoretical knowledge

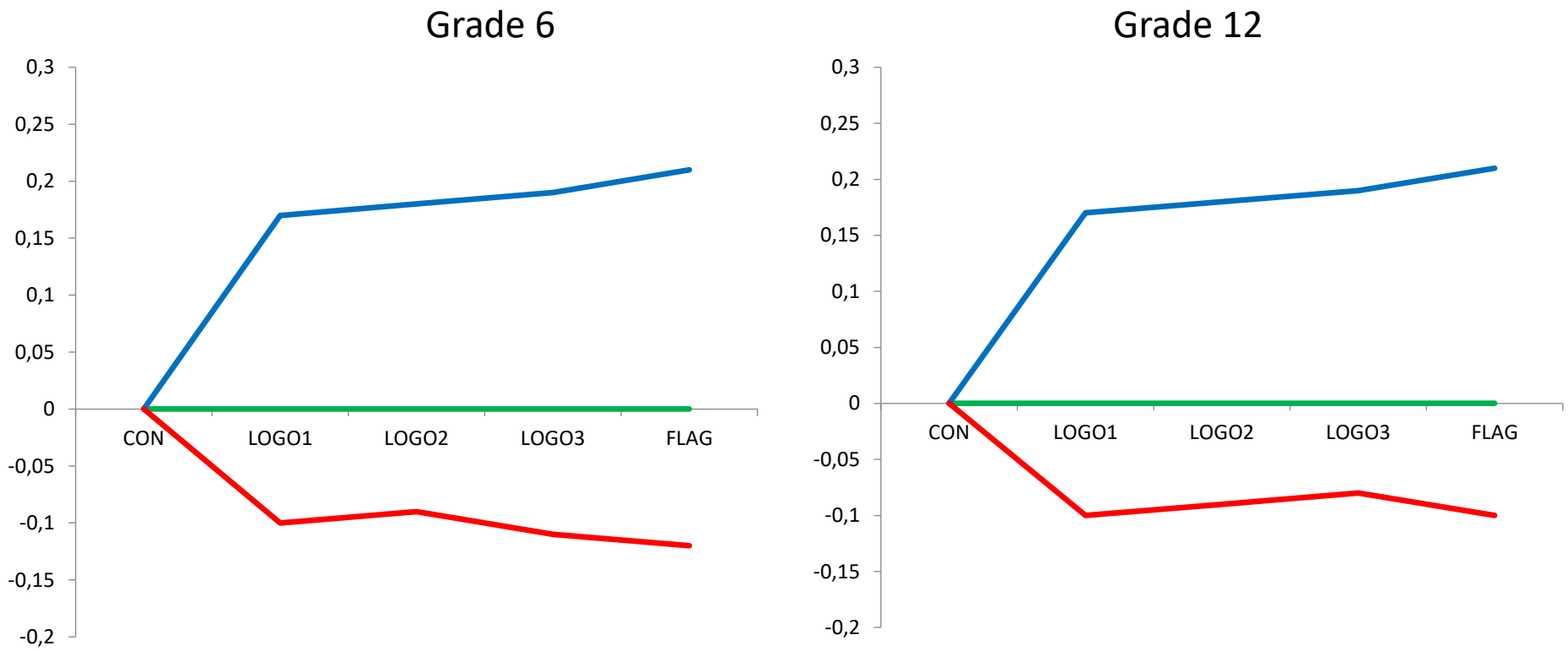
Applied knowledge

Nature connectedness

Boeve-de Pauw et al., 2018

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University



Shown in the figures :

Effect sizes of Logo123/Flag VS Con (β in the HLM)

Autonomous motivation

Controlled motivation

Amotivation

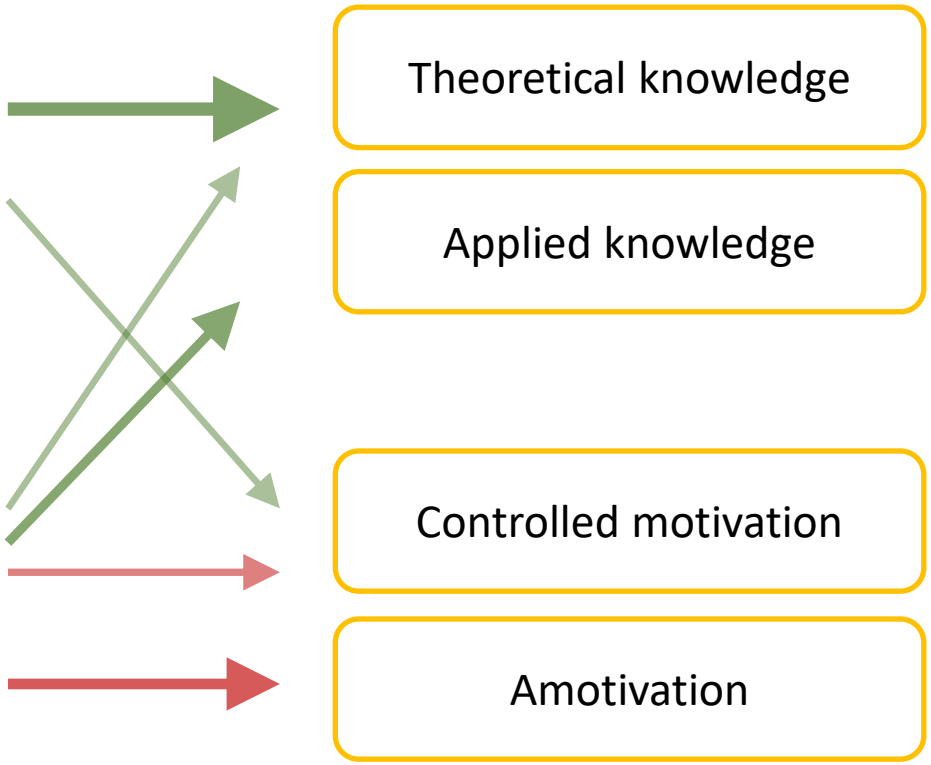
Boeve-de Pauw et al., 2018

Utrecht University

Didactics : drawn from a pool of common teaching methods in Flanders (student data, EFA)

(Kavadias & Dehertogh, 2010)

	Items	α	sample items
'Normative'	5	.68	visual presence (posters with rules), clear rules and regulations in the agenda, mostly short projects (#hours, day)…
'Integrated'	7	.81	Debates & guest speakers, crosscurricular attention, active group assignments yearlong projects…



Boeve-de Pauw et al., 2018

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University

"I've learned to deal with resistance. Like, how to deal with the adolescents [rolls eyes] *in 9th grade. That helps me with the work I do for the playgrounds* [as a student monitor for the municipality]*"*

(Sofie, 17 years)

Focus groups with students in good practice schools

"Are there really schools where teachers make these decisions? That just can't work!"

(Marliese, 18 years)

"We're allowed to try out anything. That freedom really makes me want to do it."

(Kevin, 17 years)

"I feel that what I do for the eco-school project at my school makes me feel like I can have meaningfull impact"

(Zenobi, 18 years)

Action competence approach (1980's, Denmark):

"*commitment, willingness and ability to take action*".

"all actions are behaviors, but not all behaviors are actions".

Action :

- Decided upon by those who act
- Comes from a commitment to /connection with a controversial issue
- Deliberated and intended as a contribution to solving that issue

Mogensen & Schnack, 2010

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Hadjichambis et al., 2020

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Embodying sustainability values

Embracing complexity in sustainability

Envisioning sustainable futures

Acting for sustainability

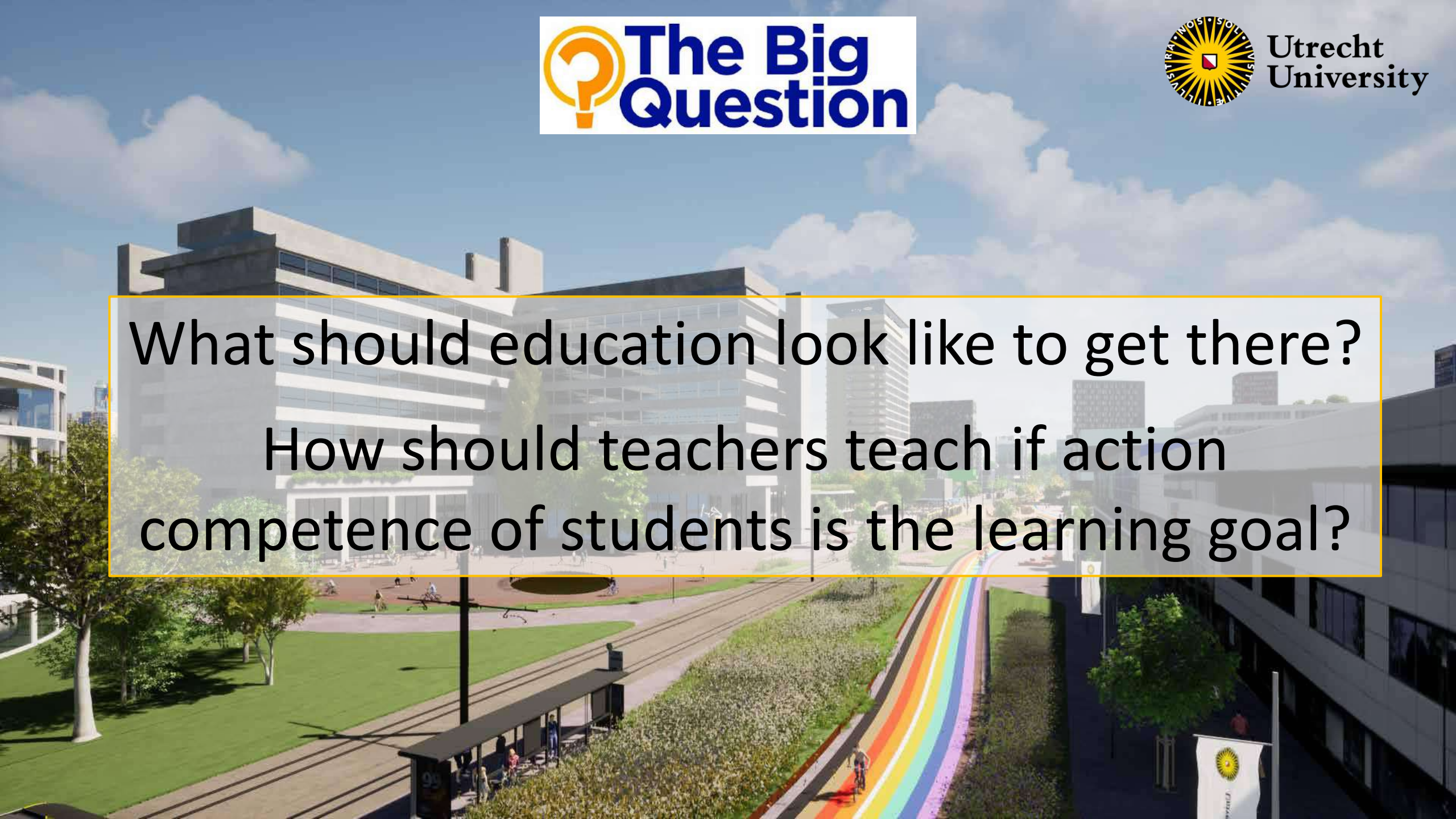
4. *Acting for sustainability*	4.1 **Political agency**	To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.
	4.2 **Collective action**	To act for change in collaboration with others.
	4.3 **Individual initiative**	To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

Bianchi et al., 2022

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University

Sass et al., 2020, 2021


The Big Question
Utrecht University
What should education look like to get there?
How should teachers teach if action competence of students is the learning goal?

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University

VALIES

How can schools be supported to build their students' action competence in sustainable development?

Universiteit Antwerpen

artevelde hogeschool
LID VAN DE ASSOCIATIE UNIVERSITEIT GENT

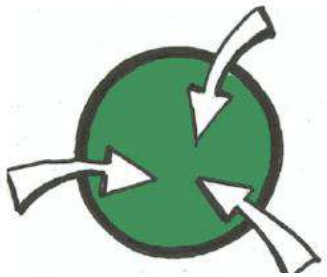
KU LEUVEN

KATHOLIEK ONDERWIJS .VLAANDEREN

PROVINCIAAL ONDERWIJS VLAANDEREN

fwo

Key Pedagogical Principles



Holism
- Critical reflection and inquiry
- System thinking
- SD dimensions (People, Planet, Profit)

Pluralism
- Expliciting own opinions and viewpoints
- Activily seeking to understand and empatize with other opinions, viewpoints, emotions

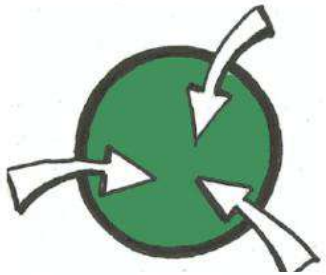
Action-orientation
- Meaningful for children/students
- Contributes to solving (local) controversial issue
- Chosen by the one who acts

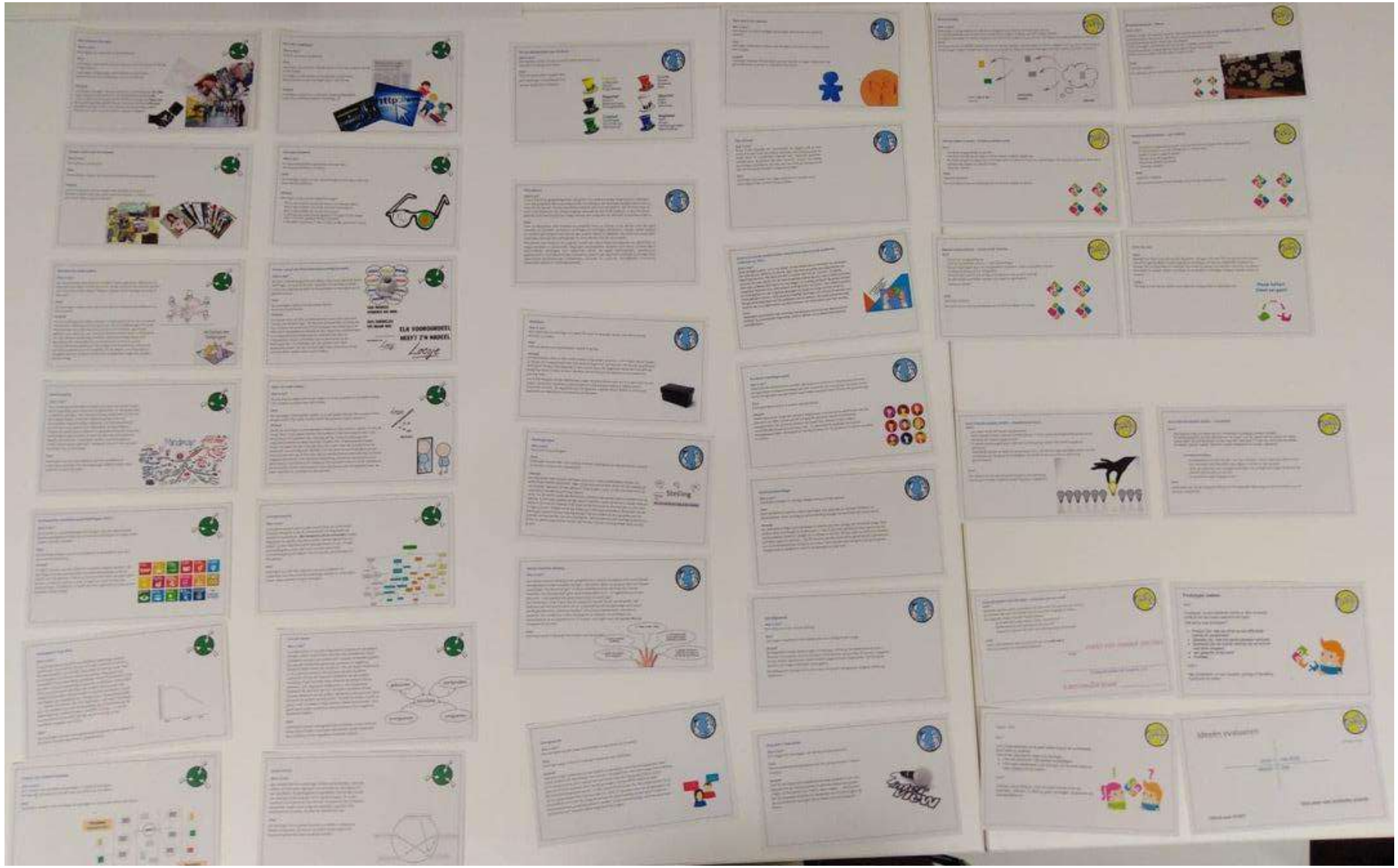
Sinakou et al., 2019

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University

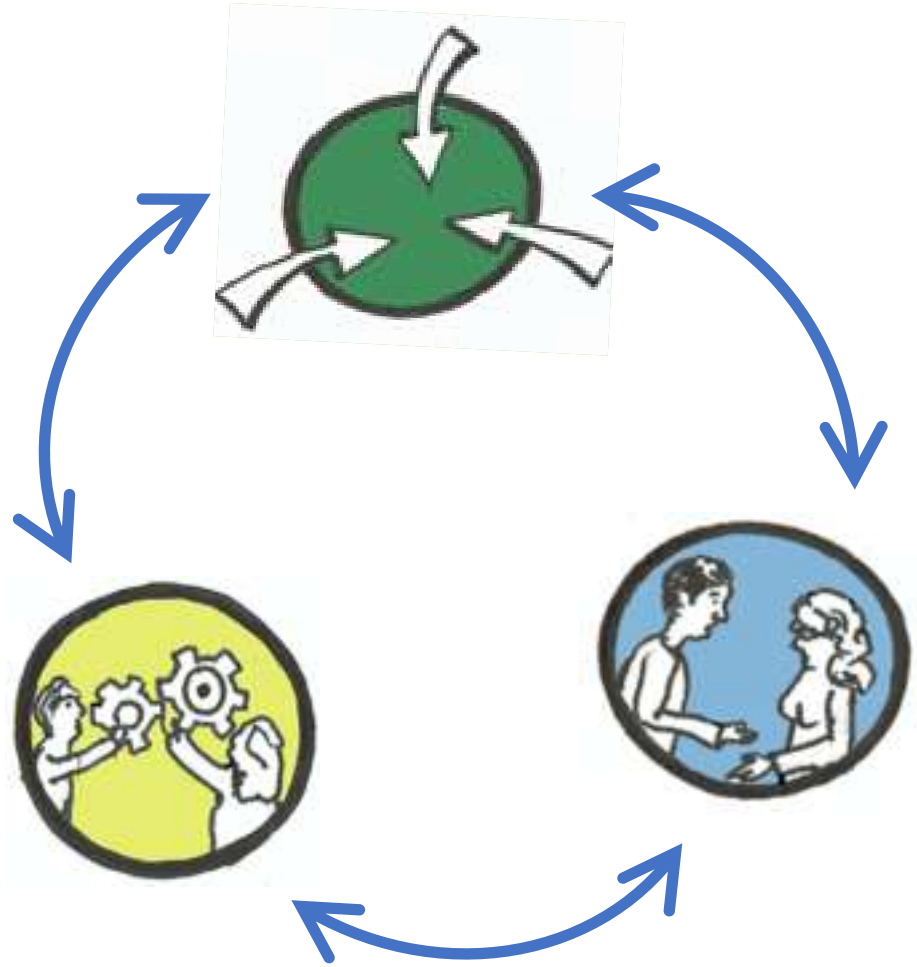
ESD appetizers





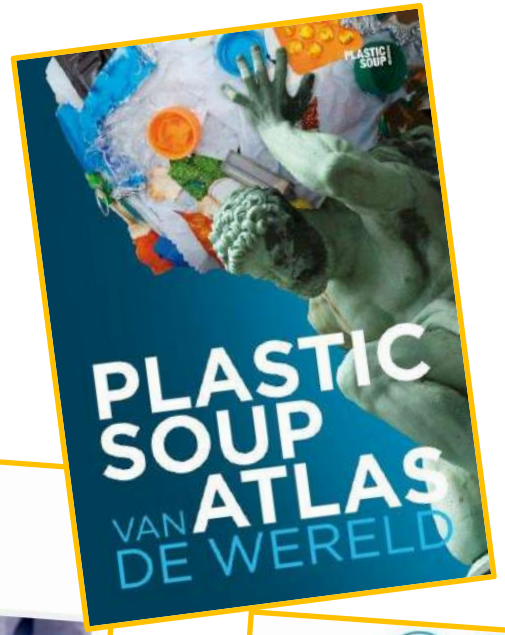
Utrecht University

ESD carrousel



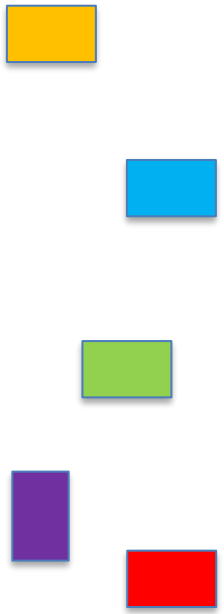
Utrecht University

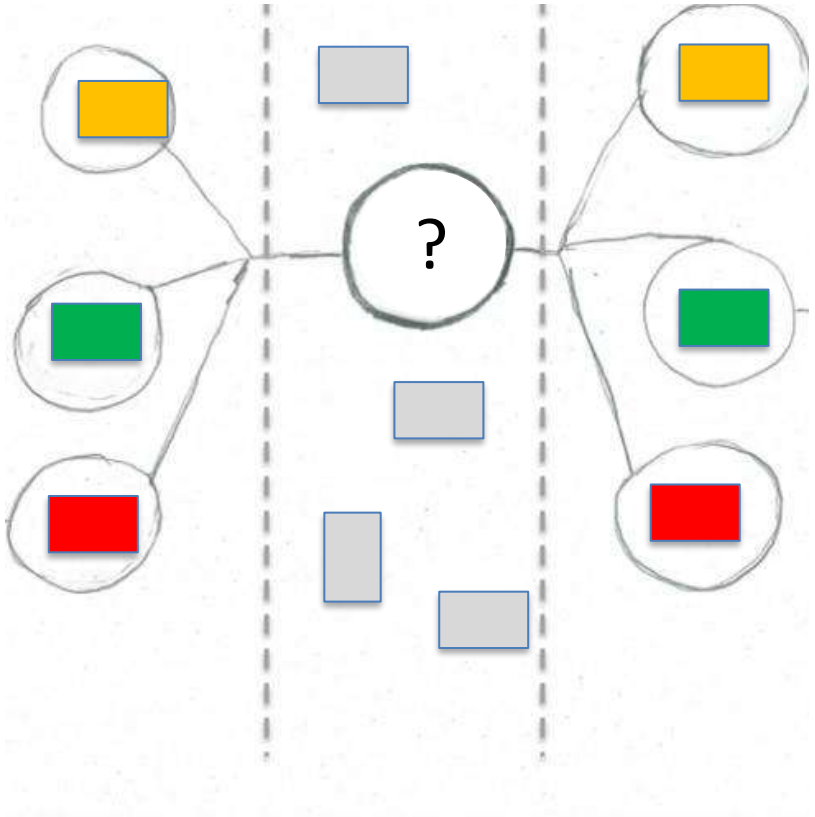
What do you see?



Utrecht University

What do you see?



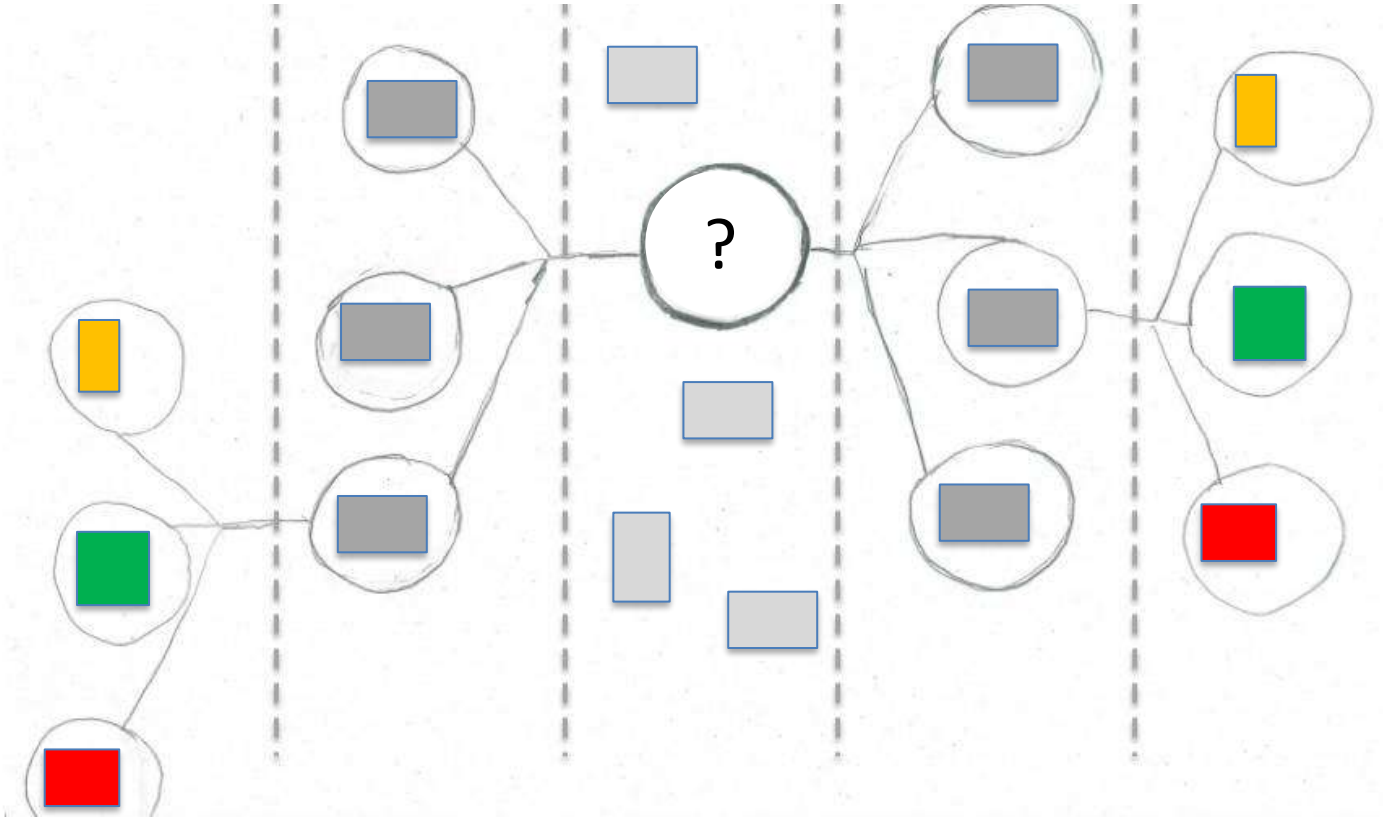


Causes

Choose a central issue

Consequences

Aim : connecting causes and consequences, revealing complexity



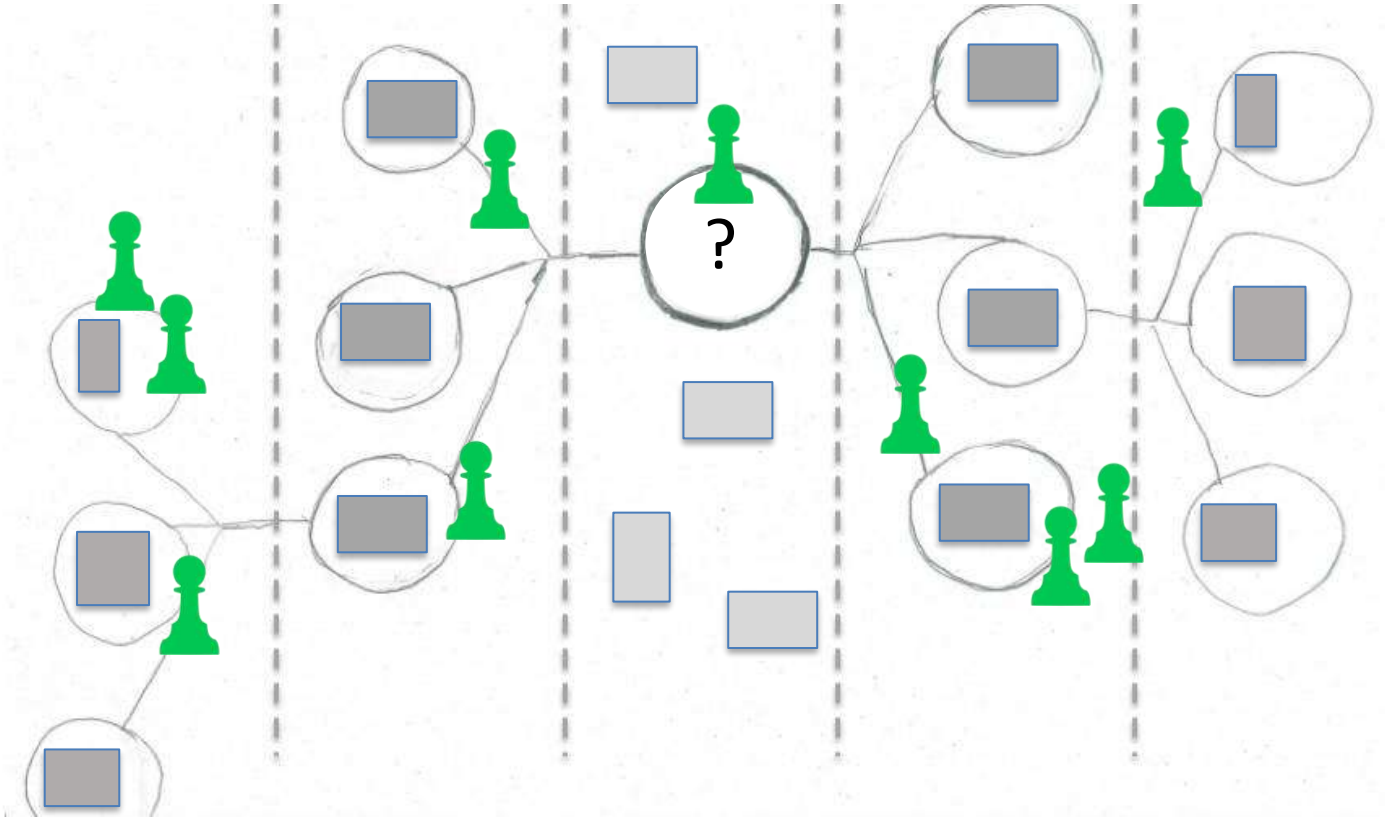
Causes of causes

Consequences of consequences

Utrecht University

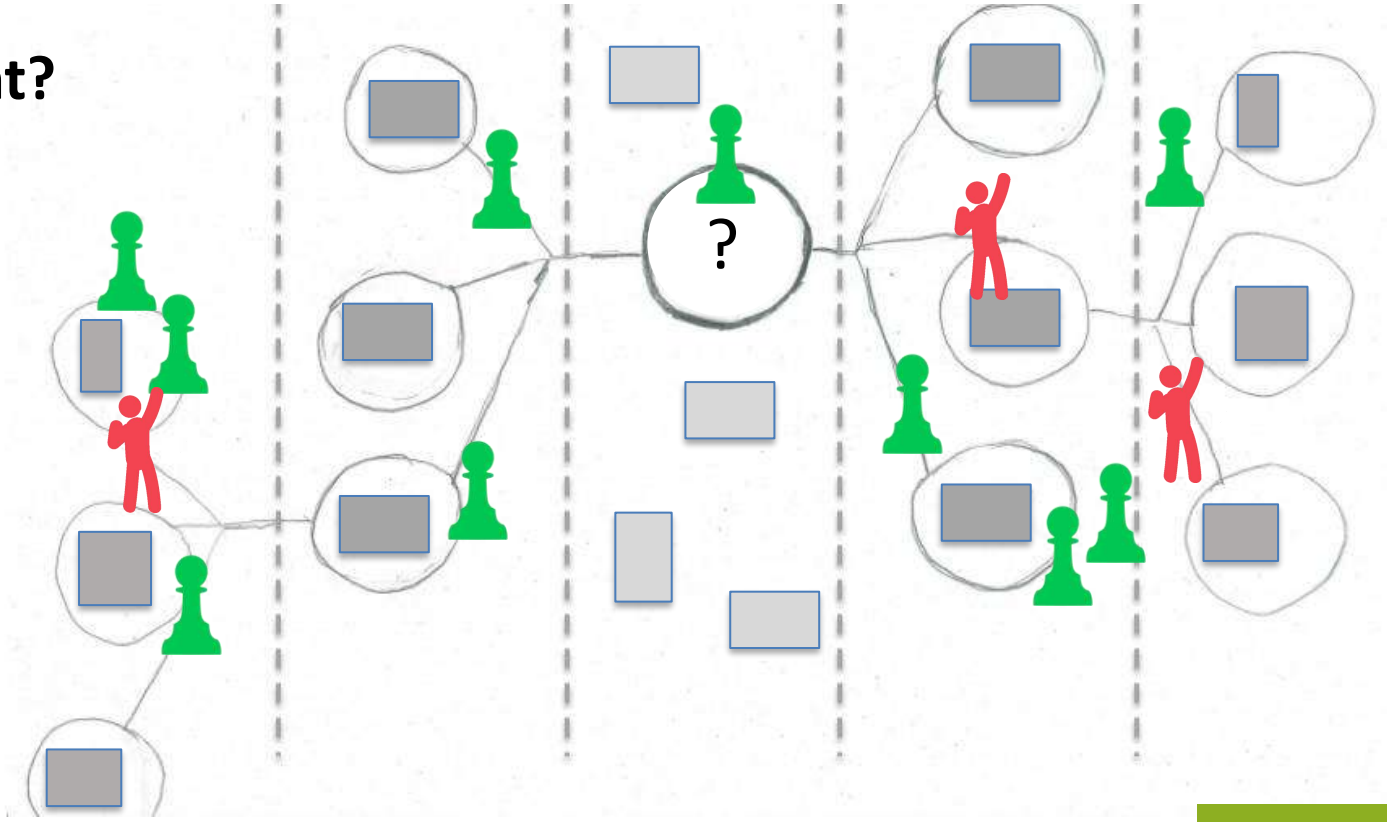
Who is involved?

Aim : Highlighting stakes of different stakeholders.



Utrecht University

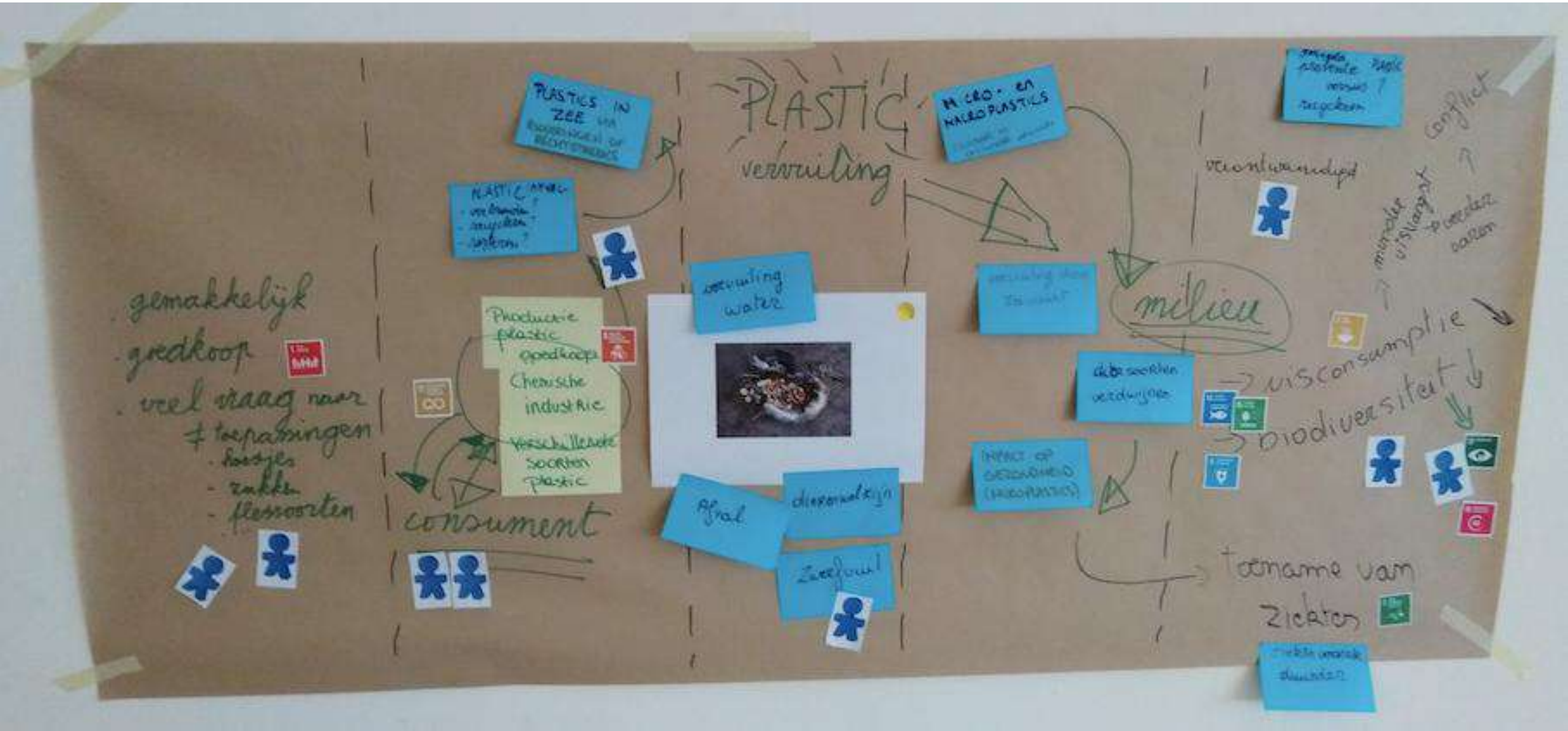
Where are you?
Where are others?
How is that different?
Why?

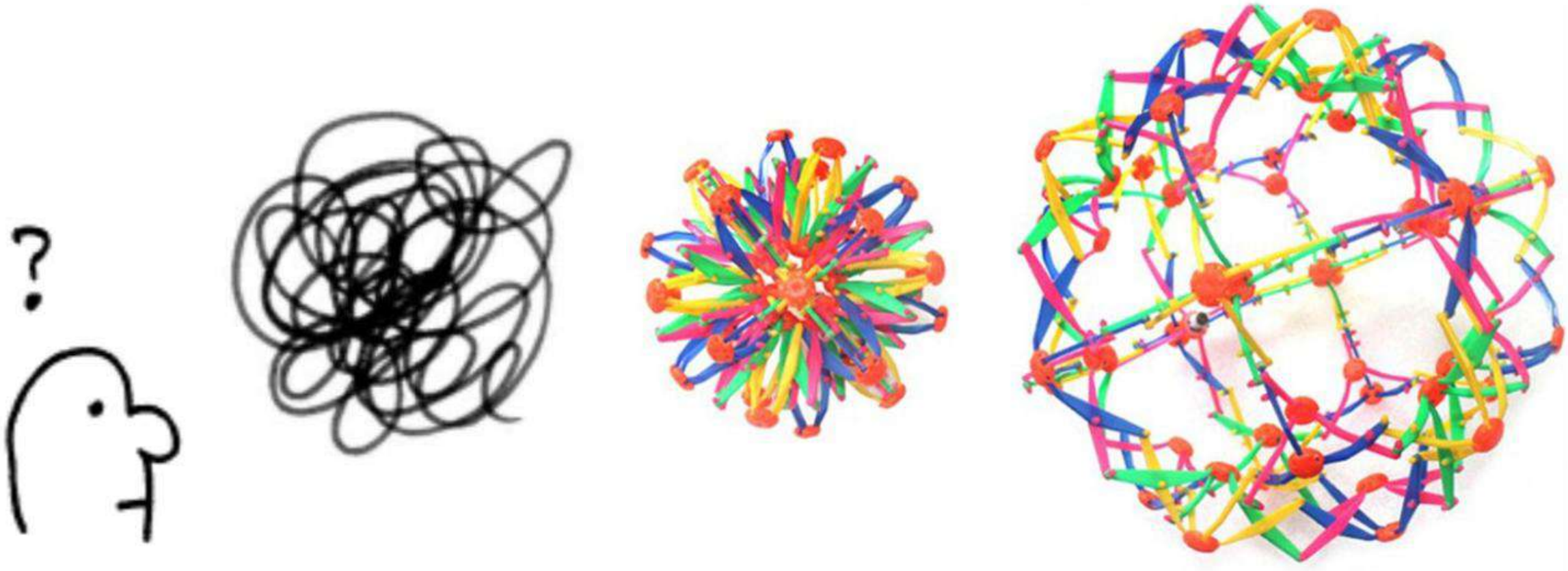


Aim: Critical reflection on your own role in the system

Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University



Education for taking action on sustainability issues.
Questions asked and lessons learned.

Utrecht University