Teaching Sustainability in Higher Education – The Snowflake Method and Experiences From KTH

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Why should we teach sustainability in every education programme?
How must we go about making that happen?
What teaching activities are the most effective for teaching sustainability?
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The human civilization has become the dominating geophysical force on Earth

More and more countries and accreditation boards force schools to make sustainable development an integrate part of curricula

As of 2021...
...the Earth has lost 68% of animal life since 1970 *
...climate change is now unavoidable – but consequences can be eased
...young people across the world have realized this and gone on strike

Why should we teach sustainability in every education programme?

(*) Globally, monitored population sizes of mammals, fish, birds, reptiles, and amphibians have declined an average of 68% between 1970 and 2016, according to World Wildlife Fund’s (WWF) Living Planet Report 2020.
Green university

To attract students

To attract faculty/staff

To attract strategic partners

To attract funding

“Why should we teach sustainability in every education programme?”
One goal of sustainability education may be to train students to lead change in the profession in which they are trained – to become change agents.
Integrating Sustainability in Higher Education

- *Three phases of change within higher education with respect to the introduction of Education for Sustainable Development (ESD)*

0: no plan for ESD
1: integrating ESD in courses
2: integrating ESD in programmes
3: sustainability becomes the driver for teaching/learning
Timeline – Education for Sustainable Development

2009  2010  2011  2016  2017  2021
Integrating Sustainability in Higher Education

**Why = The Purpose**
What is your cause? What do you believe?

Apple: We believe in challenging the status quo and doing this differently.

**How = The Process**
Specific actions taken to realize the Why.

Apple: Our products are beautifully designed and easy to use.

**What = The Result**

Apple: We make computers.
Create a strategy...

...for your university to integrate sustainability in all education programmes

- Top-down: every programme must have X credits sustainability
- Bottom-up: create instruments that support champions
- Radical: make decisive policy statements
- Diverse: support faculty to follow their own path
- A little of all: include aspects of all the above in various portions...

“How must we go about making that happen?”
...for how to train your teaching staff

- Create a pedagogical course on Education for Sustainable Development (ESD) for faculty members
- Integrate ESD in existing pedagogical course(s)
- Partner up with an organisation that provide pedagogical training

“How must we go about making that happen?”
Create a strategy…

…to make sure there are available teaching tools and resources for staff to use in courses

- **Active learning teaching tools** (eg. games and role plays)
- **Online resources** (video lectures, student assignments etc.)
- **Virtual course plan for sustainability**: makes sure sustainability becomes a rigid progression track within the education programme
“What teaching activities are the most effective for teaching sustainability?”

What within sustainability shall we teach?
Key competences for sustainable development

- Systems Thinking Competence
- Futures Thinking Competence
- Values Thinking Competence
- Strategic Thinking Competence
- Interpersonal Competence

Framework for teaching sustainability

- **Awareness:** basic knowledge of facts, concepts and orders of magnitude
- **Embrace different views:** values, opinions and stakeholder perspectives
- **Systems thinking:** complexity, resilience, feedback-loops

**Active learning**

**Flipped classroom**
Games in Sustainability Education
Sustainable Development (5 credits)

Pedagogics in this course

Students will receive a strong and comprehensive overview of sustainable development and will be having the opportunity to reflect and discuss of how sustainability connects with the main subject of their studies.

Some key concepts in this course, in addition to general discussions on sustainability issues and their implications, are systems thinking, values and perspectives. Those will be taught in an innovative teaching form to enhance critical thinking and deep learning.

The course is based on the pedagogical concepts of flipped classroom and active learning.
Sustainable Development (5 credits)

General course outline

The course consists of eight module blocks, called learning packages, each corresponding to 15 learning hours (including 3-4 classroom/online seminar hours), and running through one calendar week each. After the final learning package, students may be expected to spend an additional 10-20 ours preparing for the exam.

- **Module 1:** Introduction to sustainable development
- **Module 2:** Values Thinking
- **Module 3:** Constructive Debate
- **Module 4:** Systems Thinking
- **Module 5:** Earth’s Climate and Climate Change
- **Module 6:** Critical Materials and Circular Economy
- **Module 7:** Sustainability reporting
- **Module 8:** Deeper reflection on sustainable development
Call To Action:

Create a strategy for your university to integrate sustainability in all education programmes

Create a strategy for how to train your teaching staff

Create a strategy to make sure there are available teaching tools and resources for staff to use in courses

And remember… none of this is too hard – and all of this is necessary
Thank you!

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