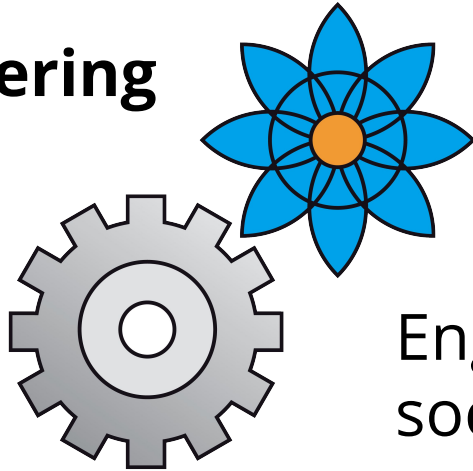
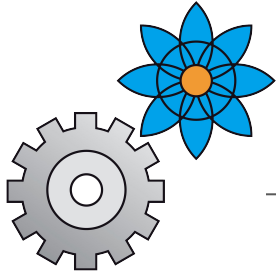


**Blue Engineering**



Engineers with  
social and ecological responsibility



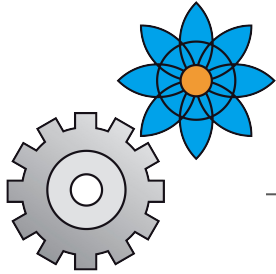
# **Building Blocks and Tesserae**

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A No-Frills Integration of an Education for Sustainable Development in Existing (Engineering) Courses and Lectures

André Baier

Hamburg Sustainable Development Summit 2017



# Overview

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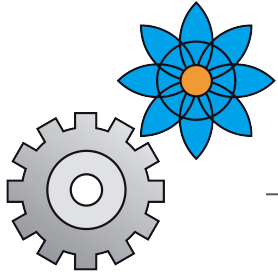
What is your image of nature? - Tesserae

Blue Engineering Course at TU Berlin

The Glocal Curriculum - Leuphana University

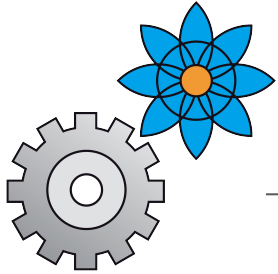
A to Z of Sustainability - National Union of Students in the UK

...another tesserae or a short building block



**What is your image of nature?**

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## **Painting your Image of Nature**

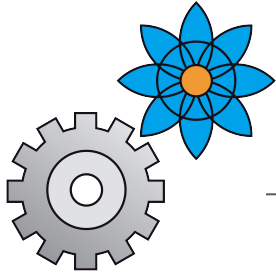
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partner up with one other person

place a A5 sheet in the middle of you

both of you take a pen into his/her hand

paint nature together without speaking with each other



# Society-Nature Relations

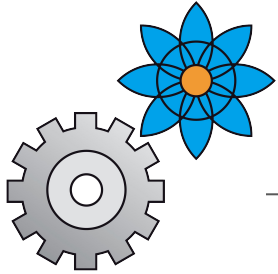
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no individual access to nature

nature is constructed as culture by society

romantisised images of nature are obscuring our view

democratize society-nature relations



## **Tesserae - Building Blocks**

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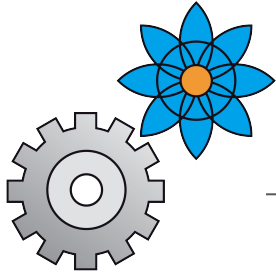
building blocks of five to ten minutes length

integration of responsibility into existing lectures

valuable break within a lecture - use of many didactical methods

positive evaluation

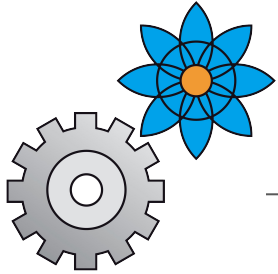




## **example tessarae**

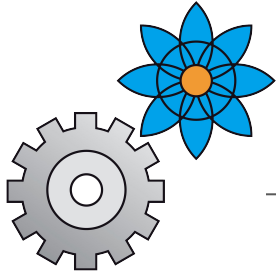
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25 Question by Max Frisch – Iron Ore as Ressource – Cat Video  
Technology Assessment – Engineering Profession –  
Greenwashing – What have Labour Unions ever done for us? –  
Our Daily Consumption – Genderfacts – RepairCafé –  
What is our Image of Nature? – Shipbeaching – Landfill Sites  
Cooperatives – Fear from Technology – Mobbing



# **Blue Engineering Course at TU Berlin**

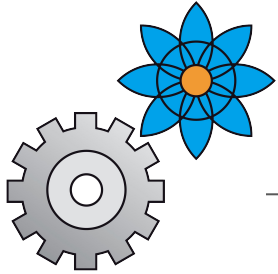
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# Blue Engineering

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started of as student-driven project in 2009/2010  
collectively and critically reflecting on technology and society  
democratic decision-making & collective action  
projected as network of universities, companies, practitioners



## **Development of the Course**

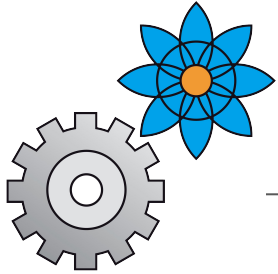
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2009/10 founding as two year project workshop

which grants credit points and pay for two tutors

2011/12 first implementation only by tutors - 25 participants

since 2012/2013 two lecturers and three tutors - 100 participants



# Course Design

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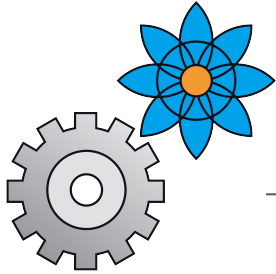
interactive and transferable course design

variety of alternative teaching methods / content

group and discussion oriented – minimum level of hierarchy

not teacher-centred but peer-to-peer learning

students conduct about half of the courses on their own



## **Course Design in Detail**

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14 lessons on tuesdays - 14h - 17h - with a 15m break and snacks  
compulsory elective course in four master programmes  
capacity for 100 students each semester  
sometimes together, sometimes divided in three courses

TERMIN DATUM H3006

1 18.10

Einführung  
→ alle in H3006

2 25.10

Kombini Plastik  
→ gemeinsamer Start H3006  
→ BARCAMP

3 1.11

① Themen-/Gruppenfind.  
② TING-D

4 8.11

Verantwortung  
Kodizes

5 15.11

1. Feedback  
Ungewohnt  
2. Produktivistisches Weltb.

6 22.11

1. Feedback  
2. Technik als Problemlöser

H3007

MB Plastikzeitalter

MB Plastikzeitalter

alle für Clubbauweise  
vollkommen (anhand 1000  
und positionen, Vorderkanten)

Produktivistisches  
Weltbil. Max

Technik  
als  
Problemlöser?!  
Theresa

1. Feedback  
Ungewohnt  
2. Technik als Problemlöser

1. Feedback  
Ungewohnt  
2. Verantwortung + Kodizes

1. Feedback  
2. Verantwortung + Kodizes

1. Feedback  
2. Produktivistisches Weltb.



TERMIN DATUM H3006

7 29.11

Energie  
1. Anno Domini Atomkraft  
2. Geschichte d. desenh.  
Energieerzeugung

8 6.12

1. 25 Fragen  
2. Diversity, Technik & Gender

9 13.12

Ernährung  
1. Essen ist zu essen da  
2. Industrielle Fischerei

10 30.1

Arbeit, Gesellschaft  
Jörg IG M

H3007

1. Peak Everything  
2. Seltene Erden  
Ressourcen

1. Blue Stories  
2. Diversity, Gender & Technik

Zeitwutlstand  
1. Arbeit & Zeit  
2. Eine kurze Geschichte  
der Zeit

u. Gewerkschaft

H3008

1. Technik als Drama  
Verantwortung  
2. To Fly or Not to Fly

1. Geschlechtsp. Spielzeug  
2. Diversity, Gender & Technik

zusammen leben  
2. Stadt der Zukunft  
2. Global Village

- IG Metall

Semester-

arbeiten

Präsentation

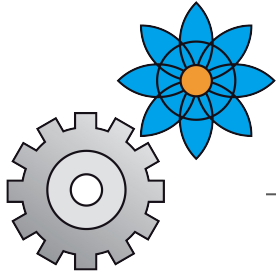
Schluss pro Tag und Woche

11 10.01

12 17.01

13 24.01

ABSCHLUSS



# **Building Blocks are Key Component**

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15 - 90 minute sessions on a complex issue

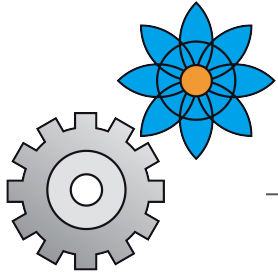
well documented, easy to use manuals – little preparation

combination of different methods and didactical concepts

“perspectives chest” with various materials

to appeal to all senses and to provide different perspectives





## Students...

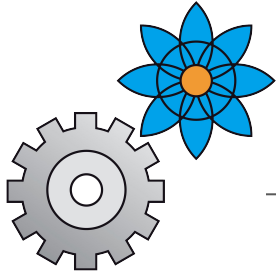
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...write a personal, structured learning journal

...conduct a building block in a group of 3 – 5

...feedback, test, present, evaluate and document

a term project in a group of 3 - 5



## **Student's Term Project**

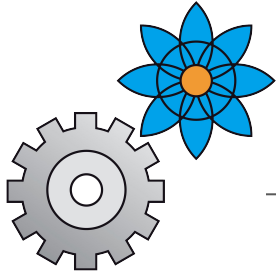
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any topic with a clear link to social and ecological responsibility  
i.e. ship beaching; (de-)centralized power plants;  
work-life-balance; gender, diversity and technology,  
reusable and transferable to various teaching/learning settings  
by now over 150 building blocks, perspective chests, games...









## **Students Co-Design the Course**

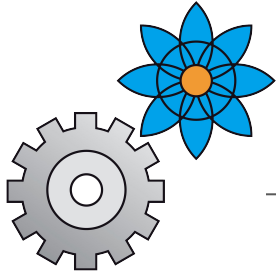
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the course is conducted over 50% by students

the topics are set by the students through term projects

the term projects are meaningful work, as they are reused

by now the course is organized only by three tutors



## Besides All That

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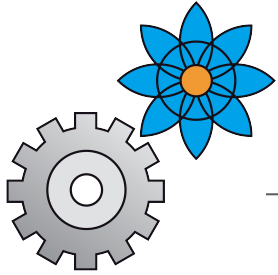
complete documentation of the course

tutors are by now solely responsible for the course

constructive alignment and design down of learning outcomes

evaluation of the course

[www.blue-engineering.org](http://www.blue-engineering.org)

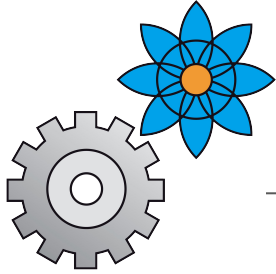


# **The Glocal Curriculum**

Internationalization, Digitalization and Reform  
in Higher Education for Sustainable Development

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Daniel Lang, Guido Caniglia, Beatrice John - Leuphana University  
Manfred Laubichler - Arizona State University

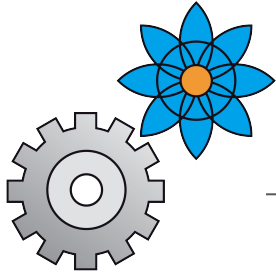


# **A to Z of Sustainability: integrating ESD into formal and informal curriculum in the UK**

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Katie Jepson; Kim Croasdale; Quinn Runkle  
National Union of Students (UK)





# **Student's Sustainability Certificate**

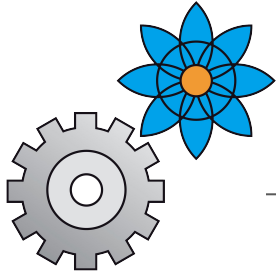
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introduced at TU Berlin in the wintersemester 2018/2019

6 CP - Critical Sustainability - Interdisciplinary Course

6 CP - Technology/Nature from the existing curriculum

6 CP - Individual/Nature from the existing curriculum



# **another tesserae or building block**

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100 Points

watching Cat Video

grouping Groups

25 Questions by Max Frisch

technology as panacea!?