



Education for sustainable development

Anja Røyne, KURT

anja.royne@fys.uio.no

UNIVERSITETET I OSLO

Strategy 2030

Knowledge – responsibility – commitment: For a sustainable world

The University of Oslo will:

- Promote independent, ground-breaking, long-term research
- Educate students with the knowledge, ability and willingness to create a better world
- Strengthen the dialogue with the outside world and work to ensure that knowledge is put to use
- Be an innovative organization and an attractive place of work and study



Education for

Sustainable Development Goals

Learning Objectives



Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

- Recognize dependencies and feedback loops
- Analyze complex systems
- Understand the significance of different time- and length scales
- Deal with uncertainty

Examples:

Ecosystems

The climate system

Energy systems

Organ systems

Control systems

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

- Understand and evaluate different future scenarios – possible, probable and desirable
- Create their own vision for the future
- Employ the precautionary principle
- Evaluate possible consequences of choices
- Deal with risk and uncertainty

Examples:

Discuss the effect of external drivers (changes)

Reflect on possible outcomes of ideas

Discuss possible technological development

Discuss examples from science fiction

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

- Understand and reflect upon norms and values
- Discuss sustainability values, principles and goals
- Take into account opposing interests, and uncertain

Examples:

Trade-offs concerning preservation vs use of nature
Ethical aspects of biotechnology
Reflect upon ethical problems in specific professions
Values and dilemmas in energy production and climate action

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving
competency

- «How to get things done»
- Be able to develop and implement innovations and actions to promote sustainability, together with stake holders and decision makers

Examples:

Science communication to different audiences

Knowledge of decision processes

Interaction with user groups

Knowledge of market mechanisms and actors

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

- Ability to learn from others
- Understand other people's needs and perspectives
- Deal with conflict in groups
- Contribute to constructive group dynamics

Examples:

Project work in groups

Reflection notes on group activities

«Collaboration contracts» for project groups

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

- Ability to question norms, practices and opinions
- Reflect on own values and opinions
- Take a stand in sustainability discussions

Examples:

Critical use of information sources (news media, research articles etc.)

Knowledge of the research method

Reflect on the limitation of models

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

Integrated problem-solving competency

- Ability to reflect on own role in society (local and global)
- Continuous evaluation of own choices and actions
- Being conscious and reflected on own feelings and needs

Examples:

Reflection notes

Writing exercises

Group discussions – needs a safe and supportive learning environment

Key competences for sustainability

Systems thinking competency

Anticipatory competency

Normative competency

Strategic competency

Collaboration competency

Critical thinking competency

Self-awareness competency

**Integrated problem-solving
competency**

- Ability to use different problem solving strategies on complex sustainability problems
- Develop viable, inclusive and just solutions that promote sustainable development by using the other key competences

Examples:

Interdisciplinary, project oriented courses and activities

Developing a safe learning environment

The first lecture is valuable – use it wisely!

- Get to know the students, get them to know each other
- Create enthusiasm by focusing on inspiring academic content – less on administrative details that can be found elsewhere
- Clarify expectations – what do you expect from the students, what do they expect from you, do you agree?

Critical thinking and strategic competency – how and why to write reports

Use of the «report» as a communication genre to focus on

- the GOAL of the communication
- the recipient – what are their needs, how to address them
- the sender (student) – in what context are they communicating?

How we teach sustainability today

Finish the sentence:

«In my course, we work towards sustainability through....»

Science fiction as a tool for reflections



Science fiction til science fakta

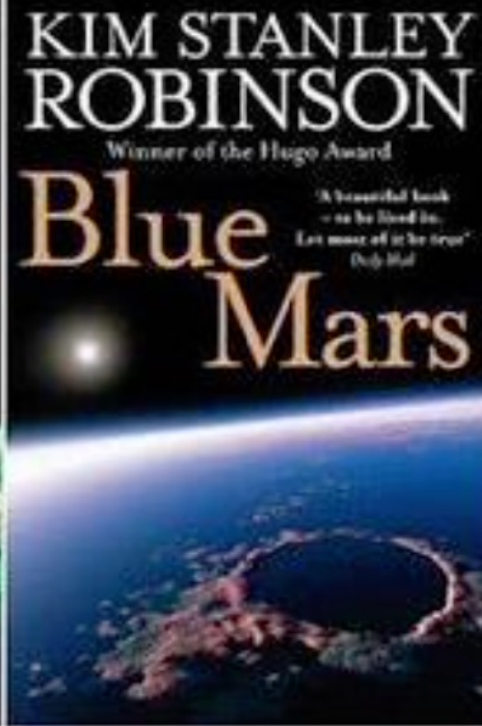
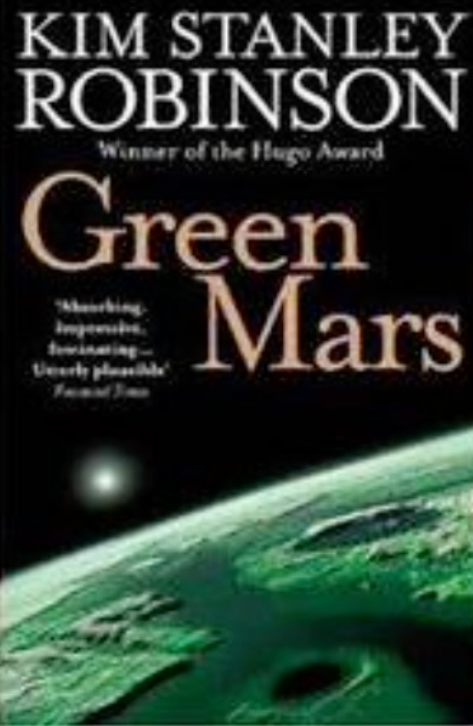
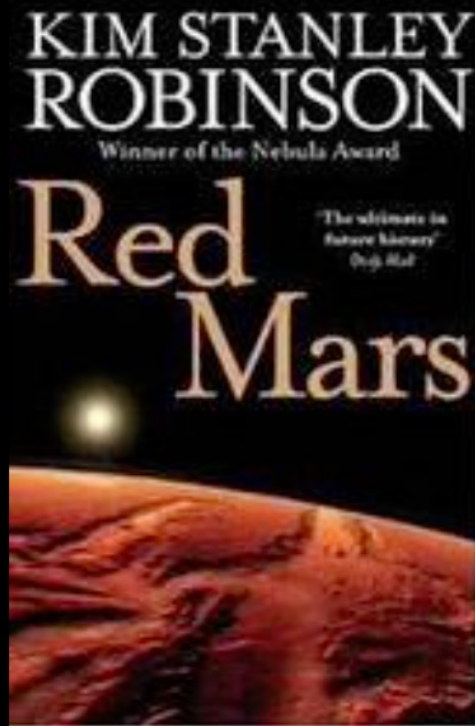
Real undervisning UiO, høst 2022

Tone Gadmar & Heidi Konestabo, Realfagsbiblioteket

Science fiction as a tool for reflections

'The Mars trilogy'

Kim Stanley Robinson, 1992 - 1996



Science fiction as a tool for reflections

'The Martian'

Andy Weir, 2014, (film 2015 regi Ridley Scott)



*"If the **oxygenator** breaks down,
I'll suffocate.*

*If the **water** reclaimer breaks down, I'll
die of thirst.*

*If the **Hab** breaches,
I'll just kind of implode.*

*If none of those things happen,
I'll eventually run out of **food** and starve
to death."*

(Mark Watney, fictional astronaut)