From Competencies to Pedagogy

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Objectives

Participants will be able to:

Propose and design an **evidence-based pedagogical approach** to fill a gap in **sustainable education student competencies** for an existing course that they teach.

Outline

- Theory Introduction: Sutainability education & competencies
- **Activity 1** – Think/Reflect
- **Activity 2** – Share so we can pair
- **Activity 3-** Mapping in pairs

8 Ways to change a course

- **Activity 4** – Gap Analysis (Paired Discussion)
- **Activity 5** – Design

Sustainability Education requires:
(AASHE 2010)

Understanding that human systems and natural systems are linked.

Long-term, holistic, and integrative thinking.

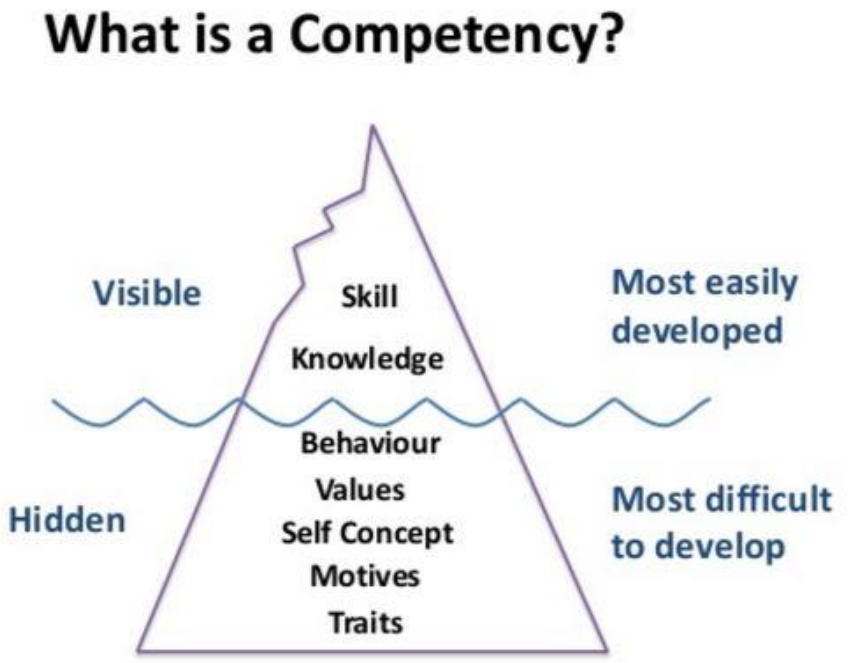
Understand that addressing almost all problems related to sustainability requires trade-offs.

Recognize that problems exist in multiple scales, and solutions may be different at different scales.

Recognize that real-world issues are complex and require trans-disciplinary thinking and solutions.

Turning skills and knowledge into a competency

- A competency is more than just knowledge and skills. It involves the ability to address complex issues by drawing on skills, plus knowledge AND values, behaviours, and motives in a particular context.



Can education lead to behaviour change?

Activity 1 – Think/Reflect

- Independently:
  - Choose one of your courses and look at the competencies in table 1 (p. 4-5)
  - Identify and prioritize your top 3 competencies.
  - Record the letters associated with your top 3 competencies on a cue card

Education for Sustainable Development (ESD) Competencies
(Lozanoe et al., 2017 Table 1 p. 4-5)

A. Systems Thinking
B. Interdisciplinary work
C. Anticipatory Thinking
D. Justice Responsibility and Ethics
E. Critical thinking and Analysis
F. Interpersonal relations and collaborations
G. Empathy and change of perspective
H. Communication and use of media
I. Strategic action
J. Personal involvement
K. Assessment and Evaluation
L. Tolerance for Ambiguity and uncertainty

Competences	Principles and Summary	Based on
Systems thinking	• Analysis of complex systems across different scales and domains of inquiry • Comprehension, empirical verification, and articulation of a system's key components, structure, and dynamics • Attention to systemic features such as feedback, inertia, stocks and flows, and cascading effects • Understanding of complex systems phenomena, including unintended consequences, path dependency, systemic inertia, and intentionality • Understanding of connectivity and cause-effect relationships • Application of modelling (qualitative or quantitative)	[21,27,48,53,56–59]
Interdisciplinary work	• Appreciation, evaluation, contextualisation, and use of knowledge and methods of different disciplines • Ability to work on complex problems in interdisciplinary contexts	[21,53,60]
Anticipatory thinking	• Envisioning, analysis, and evaluation of possible futures, including scenarios with multi-generational timescales • Application of precautionary principle • Prediction of reactions • Dealing with risks and changes	[21,27,48,53,59]
Justice, responsibility, and ethics	• Application of concepts of ethics, justice, social and ecological integrity, and equity • Description, negotiation, and reconciliation of principles, values, aims, and goals for sustainability • Responsibility for one's actions • Ethics and sustainability of personal and professional behaviour	[21,48,53,59,60]

Communication and use of media	• Ability to communicate effectively in intercultural contexts • Ability to use appropriate information and communication technologies • Critical consideration and evaluation of media	[53]
Strategic action	• Ability to design and implement interventions, transitions, and transformations for sustainability • Active and responsible engagement in sustainability activities • Development and application of ideas and strategies • Planning and executing projects • Ability to reflect on, and deal with, possible risks • Organisation, leading, and controlling processes, projects, interventions, and transitions • Identification of scopes of creativity and participation • Taking responsibility for motivating others	[21,27,48,53,59]
Personal involvement	• Participation in creating sustainability initiatives • Willingness and ability to take action • Willingness to learn and innovate • Self-motivation • Initiation of own learning	[21]
Assessment and evaluation	• Develop assessment and evaluation standards and guidelines • Independent evaluations with respect to conflicts of interest and goals, uncertain knowledge, and contradictions	[53]
Tolerance for ambiguity and uncertainty	• Coping with conflicts, competing goals and interests, contradictions, and setbacks	[53]

Table 1. *Cont.*

Competences	Principles and Summary	Based on
Critical thinking and analysis	• Ability to challenge norms, practices, and opinions • Reflection on one's own values, perceptions, and actions • Understanding of external perspectives	[53]
Interpersonal relations and collaboration	• Participatory and collaborative approaches to solving problems or conducting research • Skills and understandings in communication, deliberation, negotiation, empathizing, leadership, and collaboration • Ability to deal with conflicts • Learning from other perspectives • Participation in community processes	[27,48,59,60]
Empathy and change of perspective	• Ability to identify own and external perspectives • Understanding and sympathy for the needs, perspectives, and actions of others • Ability to deal with internal and external value orientation • Compassion, empathy, and solidarity with others across differences • Accepting and embracing of a diversity of opinions, experiences, or perspectives • Transcultural understanding	[21,53,59]

Activity 2 – Share so we can pair

- Look at other participants and find someone that has similar priorities and discuss

Activity 3- Mapping in pairs

- Map the pedagogical activities that would correspond to your top 3 competencies according to Figure 1 (p.10)

Framework connecting SD pedagogical approaches to competencies

Lozano et al., 2017 Figure 1 (p.10)

Break with Carolyn's 8 ways……

Activity 4 – Gap Analysis (Paired Discussion)

Step 1

- Discuss which type of activities that you mapped from figure 1 that you already do.

Step 2

- Identify the competencies that need the most attention

Framework connecting SD pedagogical approaches to competencies

Lozano et al., 2017 Figure 1 (p.10)

Activity 5 – Design

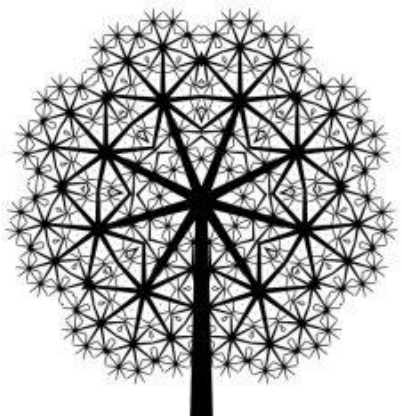
Step 1 - (Think/Reflect)

- Design how you could incorporate one of these pedagogical components into your course.

Step 2 - (Share)

- Share your plan

Sustainability Competencies
(Frisk and Larsen 2011)

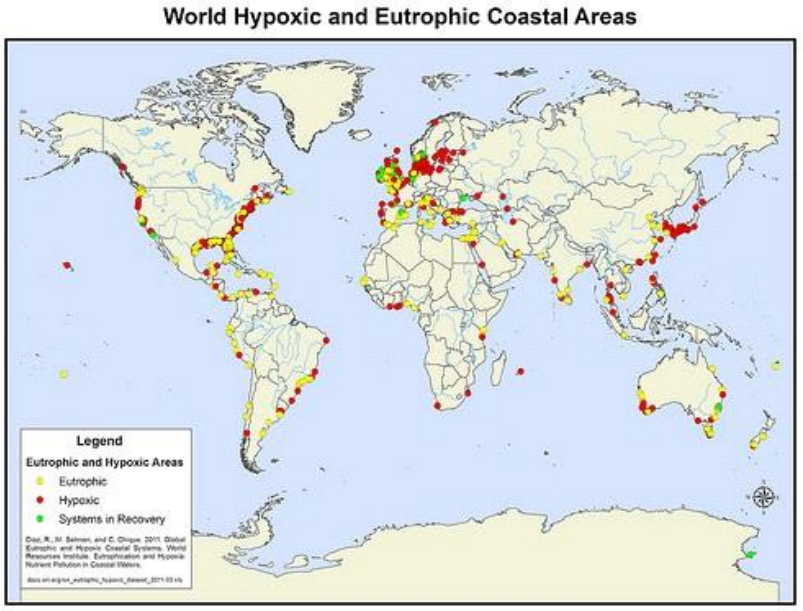


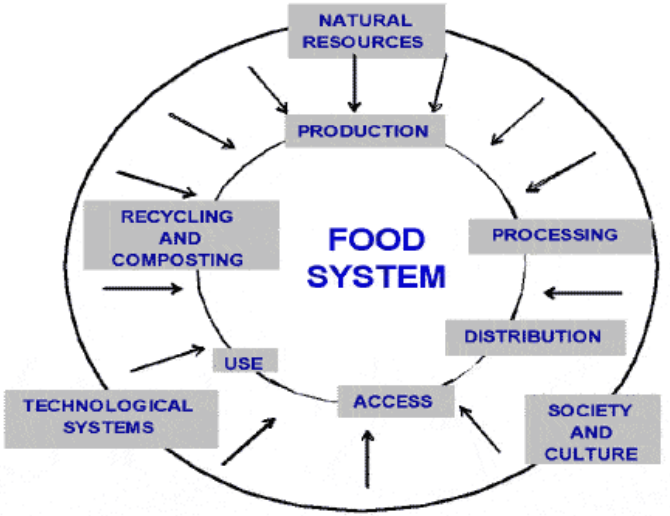
1. Systems thinking and an understanding of interconnectedness:

- The ability to understand complexity and see holistically
- Identifying and prioritizing challenges across the three sustainability domains
- An understanding of the dynamics of complex socio-ecological systems, with tipping points, feedback loops and emergent properties
- Recognition of the diverse viewpoints of multiple stakeholders

Systems thinking competencies can be gained through:

- **Place-based learning** allows students to explore their own communities with diverse stakeholders and trade-offs
- **Problem based learning** using real-world complex issues, avoiding over-simplification, using an interdisciplinary approach.
- **Concept mapping**
- **Computer modeling**

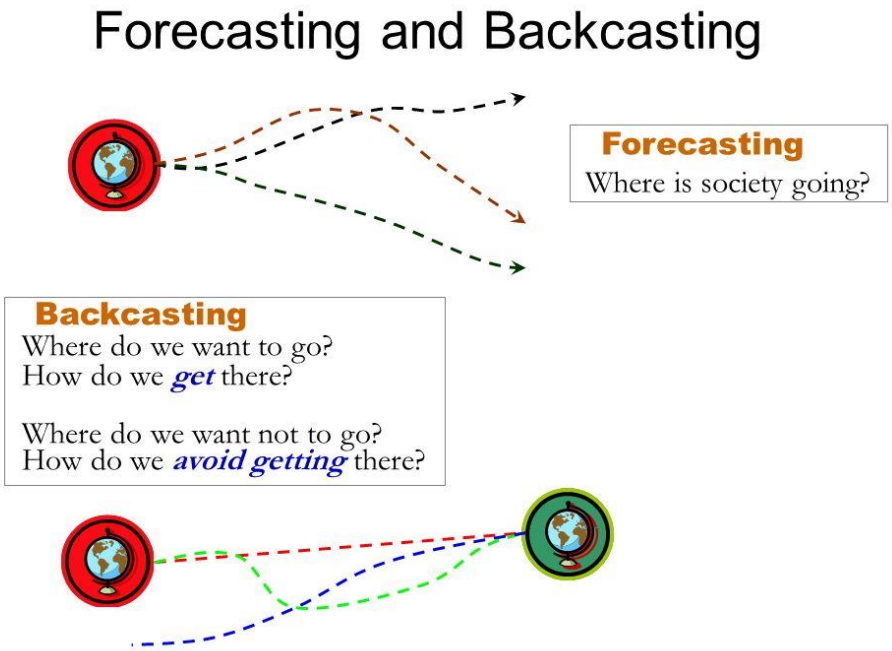




2. Long term, foresighted thinking:

- **Visionary exercises** – where we are now (current state), where we are going (based on trends), where do we want to be (vision statement), and how we plan to get there (action plan)
- **Backcasting and forecasting**

Together these techniques stress the importance of individual and collective change for a sustainable future



3. Stakeholder engagement and group collaboration

- Because sustainability problems are complex, there is no single 'right' solution. Need to address multiple stakeholders viewpoints, and interdisciplinary nature requires inclusiveness and cooperation.
- ***Skills needed:***

➢ Effective communication, negotiation and collaboration skills

➢ Fostering respect and tolerance for multiple ways of knowing

➢ Problem solving

- ***These can be obtained through:***

➢ Community orientated team projects

➢ Role playing using real world situations and group work

➢ Community service learning that involves group collaborations

Team work (Remington-Doucette & Musgrove 2016)

- Collaborative team work fosters many of the sustainability competencies:

- Communication skills
- Leadership skills
- Organization and planning
- Conflict resolution, negotiation
- Empathy, openness to diversity, tolerance for differences

4. Becoming a Change Agent

- Requires ‘action’ learning which is a form of **experiential learning** Experiential activities lead to transformative learning (Sipos et al. 2007).
- Students retain an estimated 80% of knowledge, skills and values from active participation, in contrast to only 10 to 20% of what they hear or read (Cortese 2003).
- Builds students confidence that their behaviours do in fact bring about change.

Gained through:

- Project-based learning
- Community-based service learning
- Place-based projects

What is the legacy our students will leave?

1. Which type of activities/learning styles do you already do that addresses some of these competencies?

2. If you could, which competency would you be able to easily incorporate into your classes?

Discussion

References

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Behavioural change research and education

- Declarative knowledge – factual knowledge
- Procedural knowledge – ‘how to’
- Effectiveness or ‘impact’ knowledge – addresses outcomes
- Social knowledge – norms and customs

Sustainability Education should include as many as these knowledge domains as possible to motivate sustainable action (Frisk and Larson, 2011)