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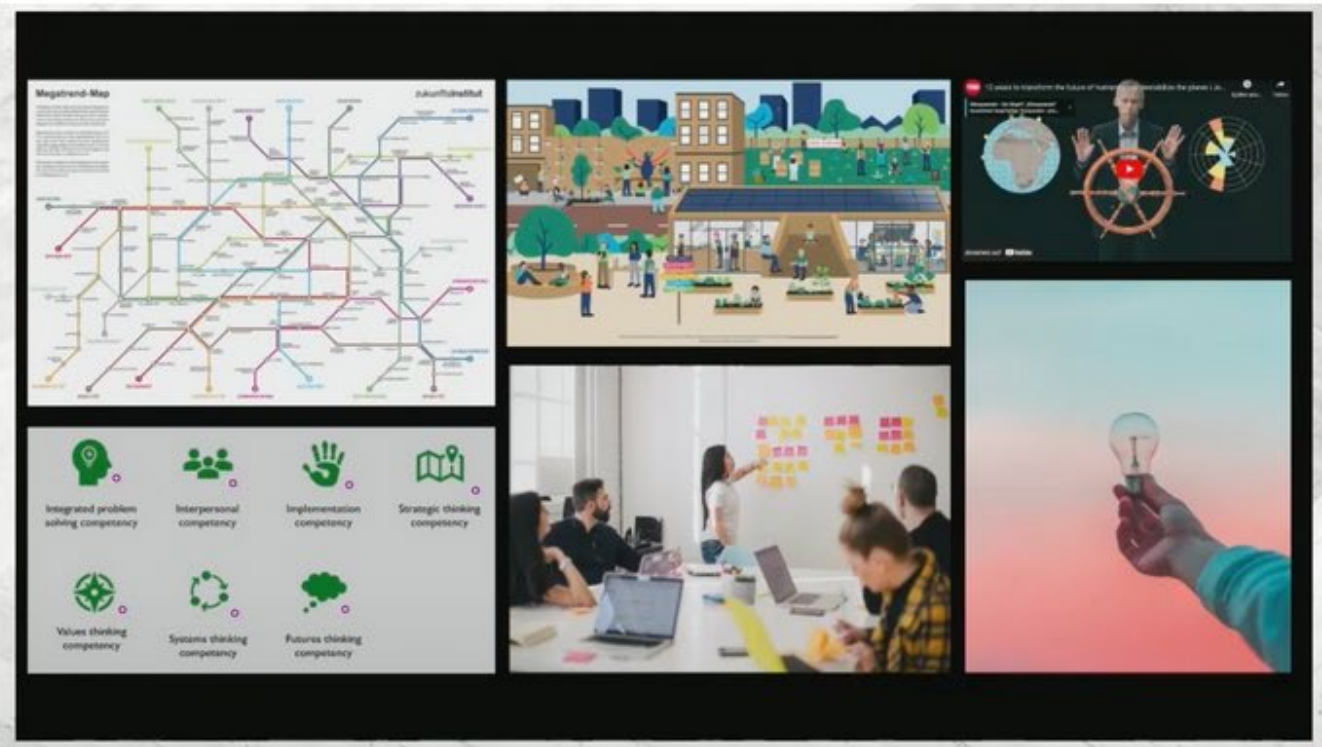

Sustainability Education 101: Designing, Implementing, and Evaluating an Online Development Course

Dr. Stefan T. Siegel, University of St.Gallen (HSG), Switzerland

EARLI SIG 4 & 11 Conference 2026, Helsinki, Finland

Agenda – What You Can Expect

1. Background and Rationale: Sustainability Education 101 – Relevance, Goals, Design Principles, and Structure

2. Design / Methods: Sample, Data Collection and Analysis

3. Results: Overview of the Main Findings

4. Discussion: Strengths, Limitations & Future Research

SE101 is a Part of the MYTHSE Research and Practice Project

University of St.Gallen
Institute of Business Education and Educational Management

Project MYTHSE

Identifying, Understanding, and Challenging Myths in and about Sustainability Education

Dr. Stefan T. Siegel, IWP-HSG

Background & Relevance

- **Relevance**: Growing importance of the hot topics: *sustainability education* (e.g., Jones et al., 2010) and *educational myths* (e.g., Christodoulou, 2014; de Bruyckere et al., 2020)
- **Research Gaps**: The field and phenomenon of myths in and about sustainability education (MYTHSE) remain largely unexplored with multiple research gaps (Miles, 2017) unaddressed (Siegel, i.p.)
- **Object of Research**: MYTHSE, i.e., a) misconceptions b) about teaching and learning phenomena concerning sustainability that are c) widespread, d) often persistent, however e) not backed by research and (scientific) evidence (Lilienfeld et al., 2010; Sinatra & Jacobson, 2019; Siegel, i.P.)
- **Examples**:
  - Sustainability (education) has nothing to do with me and my subject area (e.g., refutation by Sterling, 2012)
  - The higher educated people are, the more they act sustainably (e.g., refutations by Berry, 1987; Orr, 1994)

Overall Aims:

- Devloping a research agenda (Zawacki-Richter & Anderson, 2014) with multiple studies for generating evidence on the field and phenomenon of MYTHSE
- Effectively address MYTHSE by identifying, understanding, and challenging questionable beliefs using evidence-informed protocols and tools
- Create an SE-Mythology, i.e., a collection of MYTHSE and their refutations (e.g., Lilienfeld et al., 2010)

"Science must begin with myths and with the criticism of myths" (Popper, 1963, 63)

Identifying, Understanding, and Challenging (Potential) MYTHSE is Crucial for an Evidence-informed, Effective, and Ethically-responsible Sustainability Education

Studies of the Project MYTHSE

Study 1 (75%)
- Preregistered scoping review to map, describe, and understand the field, identifying key publications, authors, and misconceptions.

Study 2 (33%)
- Preregistered qualitative interviews with experts to explore the concept of MYTHSE and establish the research strand, including a podcast for data collection and analysis.

Study 3 (10%)
- Development of a MYTHSE inventory through surveys with university instructors to assess psychometric properties and explore relationships with critical thinking and other relevant factors.

From Insight to Impact

- Establishing a new strand of research, providing insights into the landscape of educational myths in sustainability, and informing evidence-based practices for educators, researchers, and policymakers.
- Push the boundaries of theorizing (sustainability) education and expand educational myth research.

More Information

SCAN ME

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https://www.youtube.com/watch?v=RKp7h0c5mT8

Three Guiding Design Principles of SE101

Competence Orientation & Constructive Alignment

e.g., Biggs et al. (2022)

Outcomes, activities, and assessment form a coherent chain; sustainability competencies serve as the organizing logic.

Generative Learning & Transfer Orientation

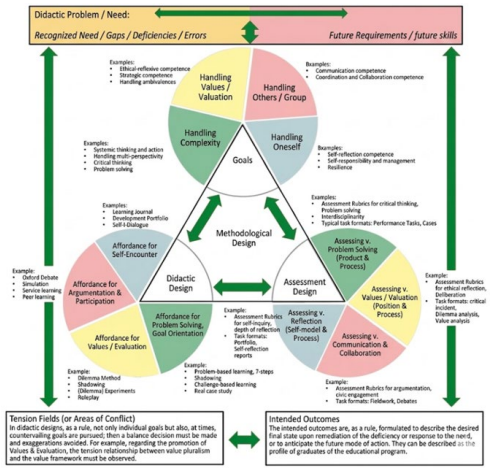
e.g., Fiorella (2023)

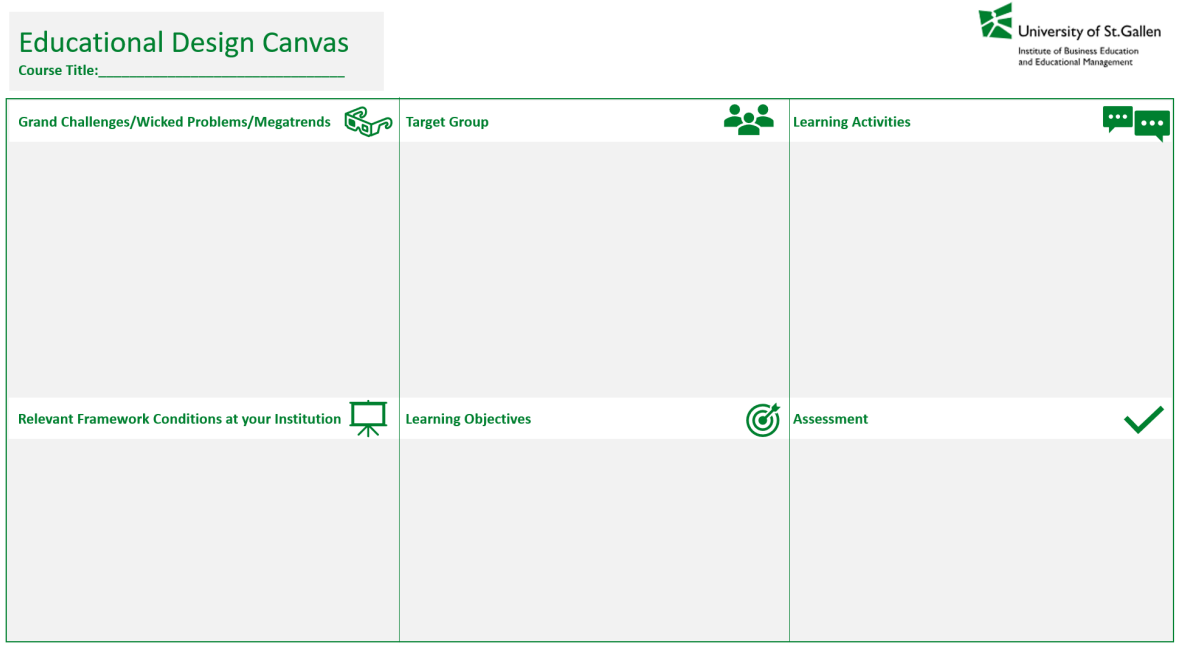
Cognitive activation through demanding design tasks, applied to participants' own teaching contexts. Application — not exposure — as the proximate mechanism.

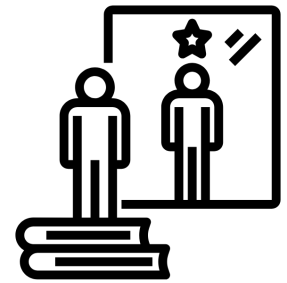
Critically Reflective Practice

Brookfield (2017)

Examination of assumptions, normative tensions, and professional responsibility







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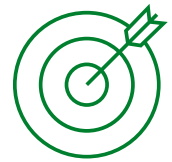
Design / Methods

From insight to impact.

Study Design

Approach: Qualitative case study: SE101 as an educational intervention



Aim: analytic description and improvement (~ DBR / SoTL)

Research Questions

- **RQ1:** Which aspects do participants perceive as supportive or impeding their professional learning?
- **RQ2:** How do participants apply SE101's tools when redesigning a course?

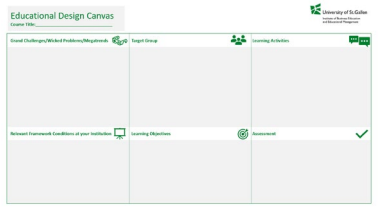
Sample, Data Collection, and Analysis

Sample composition (N = 21): Design Canvas + Reflection Paper

- 2 institutions; UR n = 17, HSG n = 4 | Oct 2024 – Mar 2026 data collection period
- Predominantly early-career: research associates (14), doctoral students (3), postdocs (3), lecturer (1)
- Disciplines: (teacher) education (5), management & economics (6), medicine (4); also information systems, psychology, physiotherapy, linguistics
- 14 female, 7 male | voluntary participation, self-selected

Data Collection & Analysis

- Qualitative content analysis (Kuckartz & Rädiker, 2023), MAXQDA 2026
  - RQ1: deductive frame from Hawelka (2019, TAP), complemented by an inductive strand
  - RQ2: competence orientation (Brundiers et al., 2021), constructive alignment (Biggs et al., 2022); rated substantively / partially / not reflected



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Results

From insight to impact.

Relevant as **Supportive**, **Impeding** and **Ambivalent** Perceived **Aspects** (N = 21; RQ1)

Aspects	Val.	n	Representative quote
Actionable content and method repertoire	**S**	**18**	"These methods provided concrete, actionable insights." (UR_09)
Conceptual broadening of sustainability	**S**	**15**	"significantly broadened my understanding … well beyond environmental topics alone." (UR_02)
Hands-on design challenge	**S**	**13**	"applied what we had learned directly … this made the learning experience particularly lasting." (HSG_01)
Sustainability feasible across disciplines	**S**	**12**	"how naturally sustainability themes can be integrated into any discipline, including finance." (UR_03)
Openly available tools and materials	**S**	**9**	"one of the few [online courses] that offers concrete takeaways…" (HSG_03)
Fixed curriculum and assessment constraints	**I**	**6**	"most suited to teachers who have a completely free hand in what they teach." (UR_01)
Input volume / cognitive-motivational overload	**I/A**	**2**	"the volume of input … made the course feel like an obligation." (UR_04)
Disciplinary integration without SE tradition	**I**	**2**	"sustainability has been almost entirely absent from medical education…" (UR_06)

Reflection of the Design Principles in Course Prototypes (RQ2)

Instructional design principle	Substantively reflected	Partially reflected	Not reflected
Competence orientation — addressed key sustainability competencies	**7**	6	8
Constructive alignment — outcomes, activities, and assessment coherently connected around a sustainability challenge	**6**	11	4

Partial reflection is the modal outcome

- Reliable conceptual reframing, common partial alignment, substantively coherent prototypes in roughly a third of cases — read honestly: partial success.

The two principles co-occur

- Prototypes naming competencies as organizing logic also built coherent alignment chains; knowledge-only objectives predicted the absence of both

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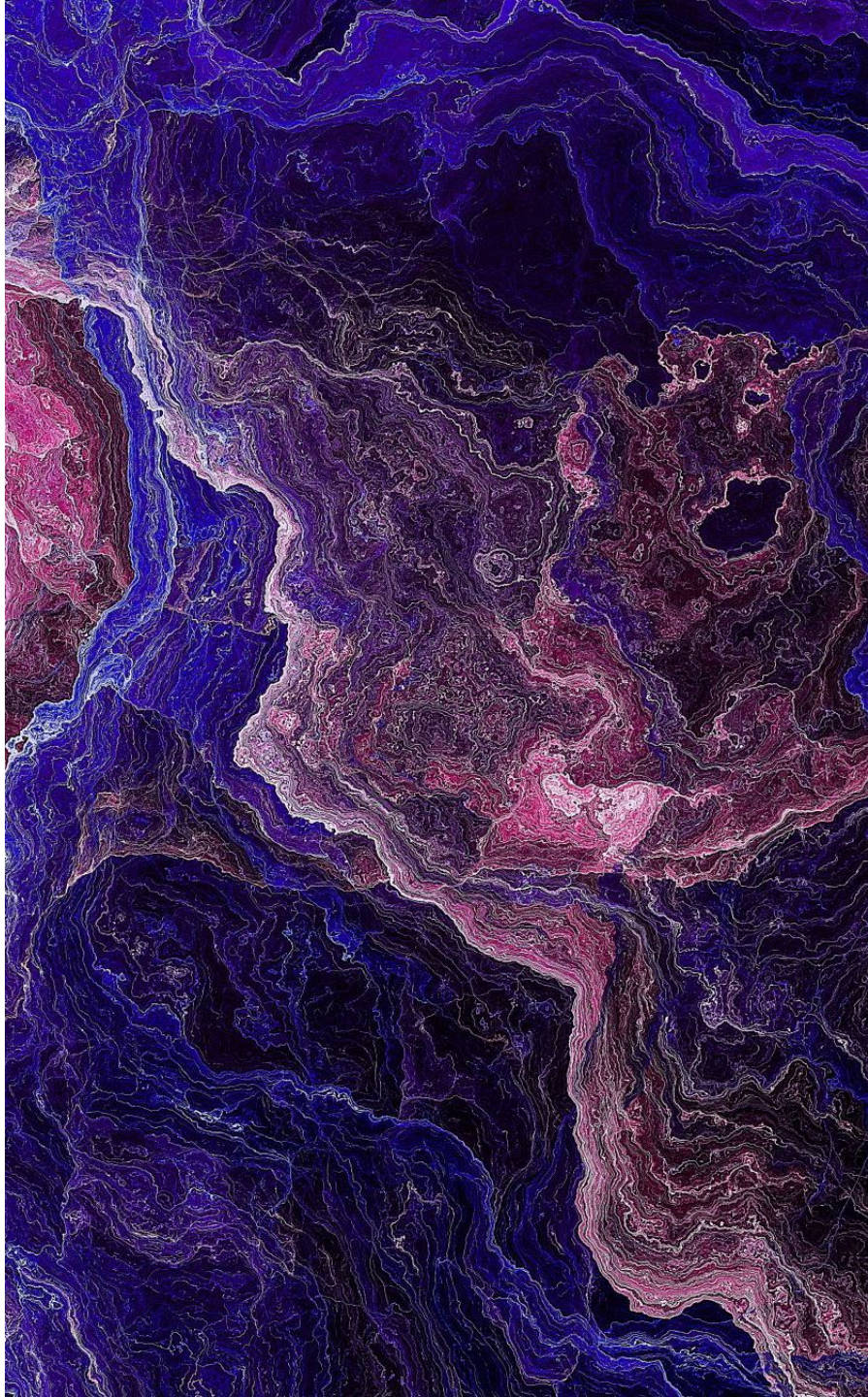
Discussion

From insight to impact.



Discussion: Strengths, Limitations

Strengths

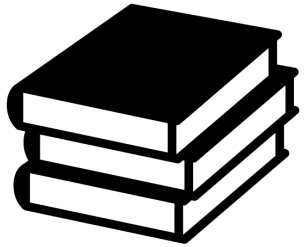
- Self-paced, openly accessible format: low barrier to adoption across institutional contexts
- Design-based research framing: findings feed directly back into iterative course development
- Dual data sources: triangulation between design products and self-reports strengthens interpretive validity.

Limitations

- N = 21, self-selected, voluntary participation. Almost certainly overrepresents motivated instructors.
  - → replication across broader and more diverse cohorts is required
- No pre/post comparison.:The study describes what participants produced and reported
  - → A pre/post extension is an obvious next step
- Course developer conducted the data analysis and interpretation

If the meso and macro layers of the institution often set the binding constraints, what is the appropriate ambition of formats like SE101?

For More Information Visit: Evidence-informed Sustainability Education (EvSusEd)



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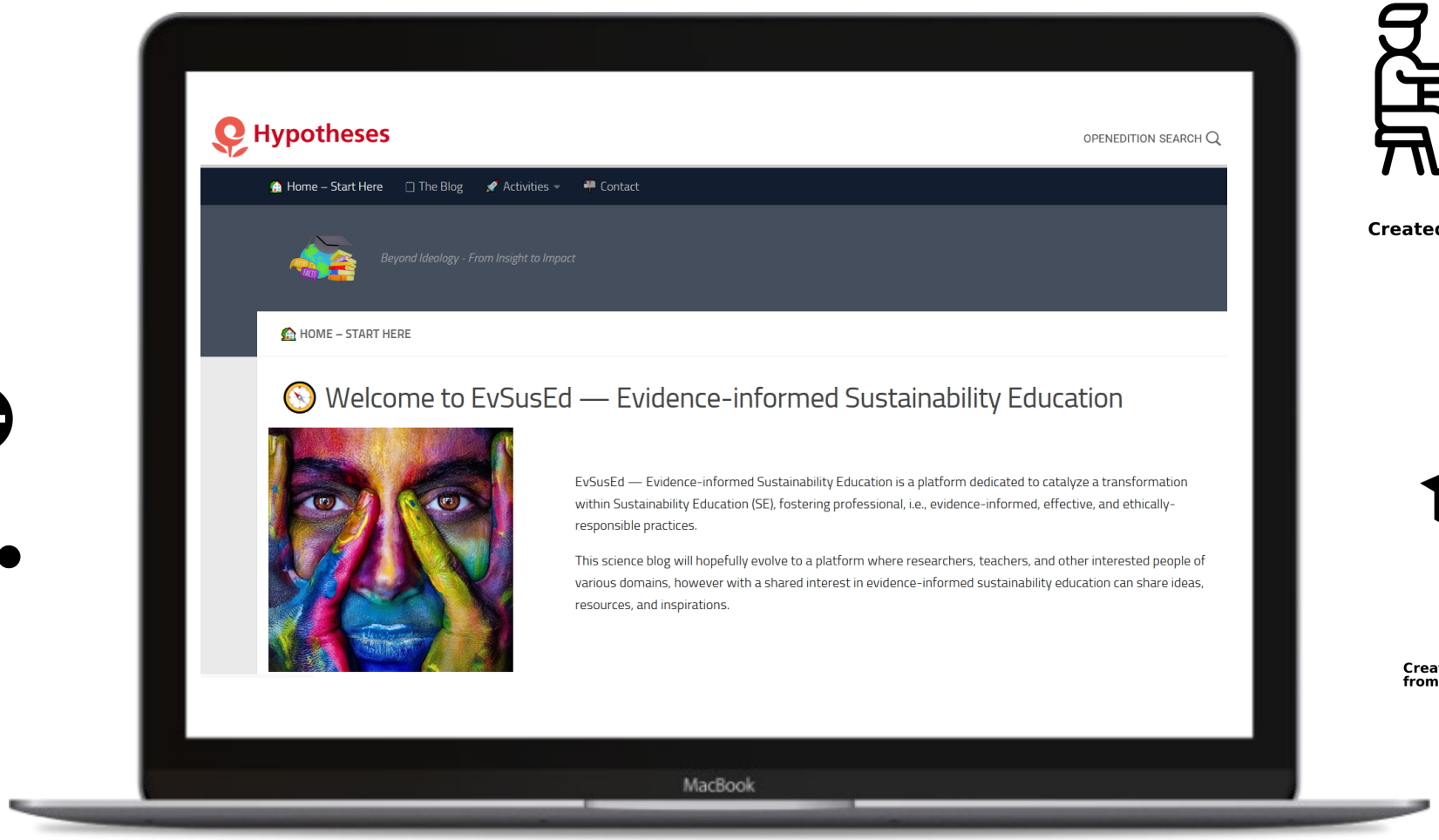

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