VU VRIJE UNIVERSITEIT AMSTERDAM
CENTRE FOR TEACHING & LEARNING
FACULTY OF SOCIAL SCIENCES

IVM Institute for Environmental Studies

The Evolving Canvas

Art, Nature, and Visual Thinking in Higher Education for Transformative Learning, Empowering Sustainability Leaders of Tomorrow

Mid-term Report

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Chapter 1: Project Background

1.1 Project Objectives

The project, *"The Evolving Canvas: Art, Nature, and Visual Thinking in Higher Education for Transformative Learning, Empowering Sustainability Leaders of Tomorrow,"* aims to address key challenges in modern education by promoting a holistic and transformative learning experience. Its primary goal is to redesign courses within the Anthropology Bachelor's program and the Institute for Environmental Studies (IVM) to incorporate Art/Nature-Based Learning (A/NBL) and Visual Thinking Strategies (VTS). By embedding these innovative teaching methods into the curriculum, the project seeks to nurture critical soft skills like creativity, empathy, and critical thinking. These skills are crucial for students to navigate complex sustainability challenges and to emerge as sustainability leaders capable of tackling intricate issues related to environmental stewardship and urban living.

1.2 The Problem Addressed

Sustainability education presents a unique challenge due to its reliance on complex, context-dependent, and uncontrollable variables. Conventional education models often fail to address the inner dimensions of sustainability—such as our collective mindsets, values, and cognitive, emotional, and relational capacities. This limitation can lead to a shallow understanding of sustainability and broader societal issues, leaving students ill-equipped to engage critically with diverse perspectives and the pressing challenges of the modern world. Furthermore, polarisation in societal discourse exacerbates this problem, making it harder for students to navigate and reconcile conflicting views constructively.

By focusing on these inner dimensions, this project seeks to fill the critical gaps in traditional sustainability education. It strives to foster deeper self-awareness, empathy, and a profound connection to the environment, preparing students to engage meaningfully with complex societal issues. In doing so, it aims to counter neoliberal trends in education, which often prioritise technical skills and market-driven goals over personal growth and relational capacities.

A key aspect of this initiative is the co-creation process between students and faculty. Through collaborative workshops, students and teachers work together to redesign courses that integrate A/NBL and VTS into the curriculum. This participatory approach allows students to actively shape their learning environment, fostering a greater sense of ownership and agency.

1.3 Theoretical Framework

Education is a central sector, which is considered a deep leverage point for supporting sustainability transformations. The project is grounded in *transformative learning theory*, which emphasises a

profound shift in both consciousness and behaviour, which leads to changes in the way the student experiences, conceptualises and interacts with the world (Hogan, 2020). Transformative learning is an approach that actively challenges pre-existing beliefs, fostering critical reflection on cognitive, emotional, and socio-relational processes. This method is particularly relevant in sustainability education, where students must grapple with the complexity and uncertainty of environmental challenges. By embracing diverse perspectives and engaging in critical dialogue, transformative learning enables students to move beyond surface-level understanding, counter polarisation, and develop new ways of thinking.

To facilitate this transformation, the project employs A/NBL and VTS as its core pedagogical tools. *Art/Nature-Based Learning (A/NBL)* encourages students to engage deeply with nature and art, fostering both personal and professional development. By promoting creativity, empathy, and critical thinking, A/NBL connects students more intimately with their surroundings and encourages them to reflect on their role in addressing environmental challenges.

Meanwhile, *Visual Thinking Strategies (VTS)* leverages the power of visual stimuli to enhance observation skills, cultivate reflective thinking, and encourage students to consider multiple perspectives. VTS fosters a learning environment that emphasises introspection, dialogue, and openness to new interpretations, thereby nurturing the inner dimensions of learning.

Together, these methods align with the principles of transformative learning, offering a framework for cultivating empathy, creativity, and critical thinking. The integration of these methods into sustainability education not only prepares students for the complexities of environmental challenges but also helps them develop the relational capacities and reflective skills necessary for becoming leaders in their field.

In redesigning these courses, the project draws on educational taxonomies like those of Krathwohl & Anderson's *Bloom's Taxonomy Revised* (Wilson, 2016) and Fink's *Taxonomy of Significant Learning* (Fink, 2013), depicted in Figure 1, which organise learning objectives, working methods, and assessments. This "backward design" approach begins with an evaluation of the current curriculum, identifying what needs to change and what should remain.

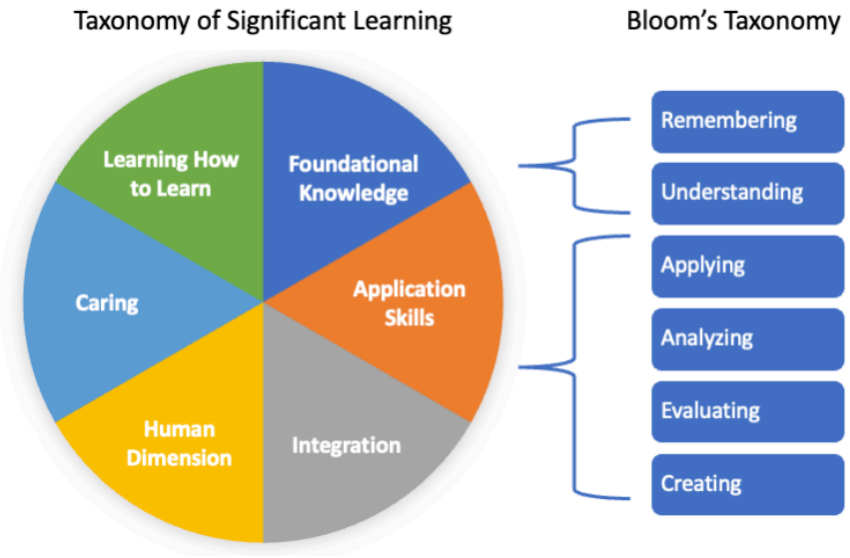

Figure 1. Comparison between Fink's *Taxonomy of Significant Learning* and Bloom's *Taxonomy*

The six logical levels of *Bateson & Dilts* also serve as a guiding tool, helping to explore the intersections between environment, behaviour, skills, transitions, identity, and involvement. These *logical levels* are depicted in Figure 2. Ultimately, this project aims to influence the future of sustainability education by integrating transformative learning approaches that cultivate not just knowledge and technical skills, but also the emotional, cognitive, and relational capacities essential for addressing the sustainability challenges of tomorrow.

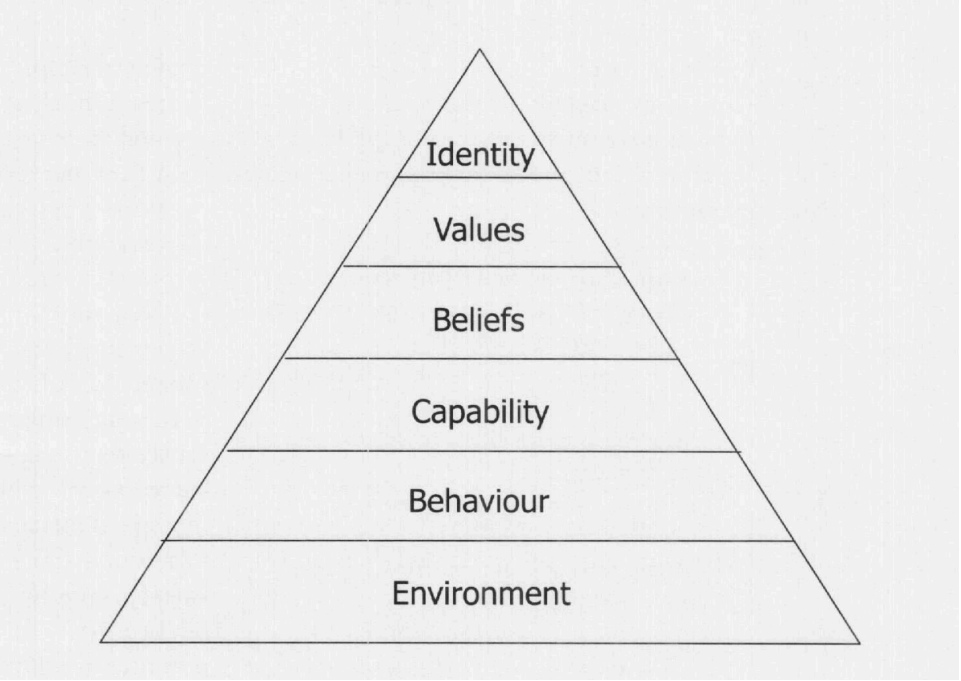

Figure 2. Logical levels, adapted from Robert Dilts' *Model of Neuro-logical Levels* (Sullivan et al., 2001)

1.4 Project Structure & Deliverables

The project is carefully structured to ensure a coherent approach to integrating Art/Nature-Based Learning (A/NBL) and Visual Thinking Strategies (VTS) into the curriculum while achieving the objectives of transformative learning. A range of activities, workshops, and research components have been planned to foster collaboration between students and faculty, facilitate course redesign, and evaluate the impact of these innovative methods. This structured approach ensures that each stage of the project builds upon the last, enabling ongoing reflection and improvement. The deliverables reflect both practical outcomes—such as redesigned courses and student feedback—and research outputs, which will contribute to the academic field of sustainability education. By following this project structure, the team aims to create a robust foundation for integrating innovative pedagogical methods into the curriculum, while also providing empirical evidence of their effectiveness in fostering transformative learning.

Table 1 provides an overview of the project structure, outlining the main activities, deliverables, and timelines for the project, offering a clear roadmap of the work ahead. The deliverables include not only the course redesigns themselves but also empirical assessments of transformative learning, and the potential for broader implementation of these methods within the university and beyond.

Table 1. Overview of project deliverables and progress status

Deliverable	What?	Goal	Output	Progress
D1.1	Co-creation Workshops	Equip educators with the skills to seamlessly integrate A/NBL and VTS methodologies into higher education coursework.	Capacity	Finished
D1.2		Evaluate and advance A/NBL and VTS methodologies by co-creation with students, ensuring continued development and refinement.	Modules within existing courses	Finished
D2	Pilot Classes	Foster transformative learning in students through art-nature methods by nurturing open-mindedness, empathy, critical thinking and cross-cultural exchange.	Module within existing courses	Q3 & Q4 2024
D3	Transformative Agentic Capacity Assessment	Assess if A/NBL and VTS methodologies can foster development of transformative agentic capacities in the students. Enhance the scientific rigour of these educational approaches through systematic evaluation and monitoring.	(Scientific) Report	Q4 2024 and beyond
D4	Open-source Material	Facilitate a wider adoption of A/NBL and VTS, by open-sourcing all the project outcomes, contributing to a broader cultural shift towards new learning methods, open-mindedness, dialogue, and appreciation of diversity.	Guidelines for Inspiration (Integrated into CTL Website)	Q4 2024 and beyond

Chapter 2: Course Selection

2.1 Justification

The courses *From Plate to Planet: Crafting Sustainable Food Systems* and *Global Development and Prosperity* were selected because they directly address the project's overarching goals of fostering sustainable transformation through interdisciplinary education and innovative approaches. The first course, *From Plate to Planet*, focuses on sustainable food systems, an essential area within environmental sustainability, offering students critical insights into the social, ecological, and economic dimensions of food production and consumption. This aligns with our project's objective to engage students in understanding the interconnectedness of food systems and their impact on global sustainability. The second course, *Global Development and Prosperity*, complements this by broadening the students' perspective to include global socio-economic systems, exploring the link between prosperity, inequality, and environmental challenges. Both courses emphasise transformative thinking and practical interventions, reflecting the project's goal of preparing students to become change agents who can navigate and address complex sustainability issues at local and global scales.

The inclusion of the *Bachelorwerkgroep Antropologie* and *Academic Skills Lab* courses in the redesign initiative reflects a deliberate effort to overcome polarisation among students and, by extension, within society, while fostering the inner dimensions of learning. This approach aims to facilitate a profound transformation in students' consciousness, ultimately equipping them to become impactful sustainability leaders. Bachelorwerkgroep Antropologie engages students in critical analysis of anthropological texts, fostering skills in text deconstruction, argumentation, and collaborative learning. By immersing students in diverse perspectives, this course cultivates a nuanced understanding of socio-cultural dynamics, which is essential for addressing the complexities of sustainability challenges. The Bachelorwerkgroep Antropologie and Academic Skills Lab are essentially equivalent courses, with Bachelorwerkgroep Antropologie designed for Dutch-track students and Academic Skills Lab for international-track students. While there are minor variations in their curricula due to different course coordinators, the core learning objectives are the same. Both courses emphasise key areas such as critical analysis of anthropological texts and the development of essential academic skills. These align with the project’s aim to cultivate the inner dimensions such as critical thinking, empathy, and a comprehensive approach to sustainability. Both courses, through their emphasis on critical engagement and collaborative learning, contribute to reducing polarisation by encouraging students to navigate and integrate diverse viewpoints. This holistic approach enhances their capacity to address sustainability issues by stimulating deeper self-awareness and a more empathetic understanding of global and local challenges.

2.2 Course #1: From Plate to Planet: Crafting Sustainable Food Systems

Course Coordinator: Mario Torralba
Hosting Faculty: Faculty of Sciences (IVM)

2.2.1 Coordination and Cohesion of the Lectures

The course is structured as a collaborative journey where each lecture builds on the previous one. It follows a thematic sequence, focusing initially on key concepts related to food system transformations and then delving into different aspects of food systems for intervention towards sustainability. Cohesion is maintained through group dynamics, immersive activities, nature- and art-based learning, and a field excursion. Discussions and preparatory tasks ensure practical application of the concepts.

2.2.2 Course Content

The course covers a wide range of interdisciplinary concepts, including:

- **Food system frameworks:** Telecouplings, global trade, and supply chains.
- **Agriculture:** Production, expansion, intensification, and industrialization.
- **Social-ecological impacts:** Trade-offs, synergies, and planetary boundaries.
- **Agroecology and regenerative agriculture:** Urban agriculture, agroforestry, food security, and sovereignty.
- **Sustainability transformations:** Leverage points, adaptive capacity, and resilience.

2.2.3 Course Content and Structure

The course begins with an introduction to food systems, discussing their social-ecological impacts and the need for transformation. The sessions then focus on strategies for sustainable food production, value chains, and consumption. The key sessions include:

- Session 1: Introduction to food systems: What is a food system and how our food systems work
- Session 2: Social and Ecological impacts of food system
- Session 3: Introduction to transformations in food systems
- Session 4: (Dis)Connections to food system (Includes VTS)
- Session 5: Transformations towards sustainable food production
- Session 6: Transformations towards sustainable value chains
- Session 7: Transformations towards sustainable food consumption.
- Session 8: Field excursion (Includes Nature-based learning)
- Session 9: Transformations in blue food
- Session 10: Synthesis and forward looking

- Session 11: Students Presentations and Potluck

2.2.4 Learning Goals

By completing this course, students will:

- Understand what food systems are, including their components and interactions.
- Be able to explain the role and impacts of food systems.
- Be acquainted with the primary discourses, concepts, and frameworks related to transformational changes toward sustainable food systems.
- Develop the ability to comprehend and navigate the main alternatives currently proposed for transforming food systems.

2.2.5 Teaching Methods

The course uses lectures, group discussions, multimedia resources, experiential learning (VR), field excursions, art- and nature-based learning. Each session consists of a lecture followed by group activities or guest presentations.

2.2.6 Assessment Methods

- **Assignments:** Develop and present a sustainable dish for the final potluck (50%).
- **Book Review:** (1250 words) (35%).
- **Participation and Engagement:** (15%).

2.3 Course #2: Global Development and Prosperity

Course Coordinator: Marije Schaafsma
Hosting Faculty: Faculty of Sciences (IVM)

2.3.1 Course Objective

The aim of the course is to provide students with a profound understanding of how contemporary global challenges are linked to socio-economic systems and how transformations, moving away from the dominant economic growth paradigm, can deliver just and sustainable prosperity.

2.3.2 Main Course Elements and Concepts

The course covers key interdisciplinary topics, including:

- Economic growth paradigms and their socio-environmental impacts.
- Alternative metrics of prosperity, including happiness, quality of life, and capabilities.
- Visions for sustainable and just futures, including degrowth, circular economy, doughnut economics and feminist economics;
- Case studies illustrating socio-economic transformations towards sustainability.

2.3.3 Course Content and Structure

The course begins by briefly examining the history and consequences of growth-oriented development, questioning how metrics like GDP have shaped global inequality and environmental degradation. Students then explore alternative visions or paradigms and measures of prosperity and discuss how these can address contemporary global challenges. The course is structured over 7 weeks, with each week focusing on a distinct theme through lectures, guest presentations, and seminars. Case studies are used to examine real-world transformations towards sustainability, and students develop an argument map of different perspectives on a complex sustainability issue of their own interest.

2.3.4 Learning Goals

By the end of the course, students will be able to:

- Explain existing, dominant measures and visions of development and economics and their positive and negative social and environmental effects, including inequality and climate change (LO1);

- Describe alternative measures of prosperity, and discuss their potential for transformations towards sustainable futures (LO2);
- Examine alternative visions of prosperity (LO3);
- Illustrate transformations towards sustainable and equitable futures through case study examples (LO4)

2.3.5 Teaching Methods

The course utilises a blend of teaching methods, including:

- Weekly lectures (2 hours) on key topics related to development and sustainability.
- Guest lectures (1 hour) by VU researchers and external experts.
- Seminars (2 hours) for group discussions, argument map development, and peer feedback.
- Interactive argument map development sessions, allowing students to present and refine their ideas.

2.3.6 Assessment Methods

The overall course grade is based on two components:

- **Argument Map (50%)**: Students develop an argument map on a chosen sustainability issue, accompanied by an annotated bibliography and two peer reviews.
- **Closed-book written exam (50%)**: The exam tests students' understanding of the course content, focusing on their ability to explain and critique the concepts discussed.

2.4 Course #3: Bachelorwerkgroep Antropologie

Course Coordinator: Aalt Smienk
Hosting Faculty: Faculty of Social Sciences

2.4.1 General Objective of the Course

The Bachelorwerkgroep Antropologie is a core academic course within the Bachelor's program in Cultural Anthropology and Development Sociology. This course, conducted in Dutch, complements the Academic Skills Lab, which is taught in English. The Bachelorwerkgroep Antropologie course aims to deepen students' knowledge of topics from the Core Themes in Anthropology course, develop skills in studying, analysing, discussing, and presenting anthropological literature, and foster collaboration among students from diverse backgrounds. The intensive nature of the course involves regular assignments, feedback sessions, and the development of an investigative mindset.

2.4.2 Course Description

The Bachelorwerkgroep Antropologie course is largely conducted through interactive workshops. Each week focuses on a different theme, with selected texts serving as the basis for discussions and assignments. In the initial phase, students learn to analyse the structure of anthropological texts, identifying research questions, conclusions, arguments, and methods. The second phase emphasises paraphrasing, enabling students to deeply understand texts by rephrasing them in their own words. The final phase involves writing an academic essay that presents and defends an argument based on the course literature. Additionally, students collaborate on group presentations about weekly readings. The course includes three lectures: an introductory lecture and two guest lectures.

2.4.3 Learning Goals

By the end of this course, students will be able to:

- Recognize the structure of anthropological texts.
- Identify problem statements, conclusions, arguments, and methods in anthropological articles.
- Critically evaluate the assumptions and theories used in scientific articles.
- Summarise scientific articles through paraphrasing.
- Write an ethnographic description.
- Develop a concise paper defending an argument based on course literature.
- Collaborate with peers to prepare and present group presentations.
- Provide and receive feedback and compare findings with peers.
- Search for scientific literature and differentiate between various sources.
- Understand and practise proper referencing, utilising the anthropology writing guide.

2.4.4 Course Activities

Attendance at all The Bachelorwerkgroep Antropologie sessions is mandatory, with a maximum of two allowed absences if students inform their instructor in advance and provide valid reasons. Missing more than two sessions may result in failing the course. Classroom activities include:

- Evaluating and discussing weekly literature and themes.
- Participating in International Classroom activities.

2.4.5 Teaching Methods

The course employs interactive workshops, lectures, and guest presentations to engage students in active learning.

2.4.6 Assessment Methods

Students are assessed through a combination of assignments, including a final essay and group presentations.

2.5 Course #4: Academic Skills Lab

Course Coordinator: Peter Versteeg
Tutorial teacher and assessor: Eva Koemar
Hosting Faculty: Faculty of Social Sciences

2.5.1 Course Objective

The Academic Skills Lab introduces students to the reading and writing of academic texts within anthropology. This course, conducted in English, complements the Bachelorwerkgroep Antropologie, which is taught in Dutch.

By the end of the course, students will be able to:

- Recognize and understand common structures in anthropological texts.
- Actively read and critically assess anthropological literature.
- Paraphrase main arguments and identify key components like problem definitions, conclusions, and methods.
- Write ethnographic descriptions.
- Construct anthropological arguments based on both course and self-collected literature.
- Present and structure arguments effectively in essays.
- Analyse case studies using anthropological theories and concepts.
- Find relevant academic literature and apply correct referencing methods.
- Collaborate with peers and provide constructive feedback.

2.5.2 Course Content

This course involves reading, analysing, and discussing anthropological texts. Emphasis is placed on developing key academic skills, particularly reading, writing, and collaboration. Students will complete assignments designed to hone these skills.

2.5.3 Teaching Methods

The course includes a mix of workshops and plenary lectures, with mandatory attendance in working group meetings.

2.5.4 Assessment Methods

Students will be assessed on weekly assignments, including a final essay.

Chapter 3: Redesign Process

3.1 Workshop Set-up

The redesign of the courses was rooted in a co-creation approach, emphasising a bottom-up, inclusive process that actively engaged students in shaping their own education. Listening to student voices was a key component, allowing them to contribute ideas that reflect their experiences and needs. Five workshops, each lasting two hours, were held in June and July, prepared and guided by Saskia van der Vies and Jessy la Faille.

A diverse group of 11 students participated, including 7 from the Environment and Resource Management (ERM) and Global Environmental Change and Policy (GEC&P) master's programs, and 4 students from the anthropology bachelor program. The course coordinators from all four courses involved also attended. For courses #2, #3, and #4, this process involved a redesign, as these courses had been taught for several years. However, for course #1, which was newly introduced, it was more of a co-design effort.

The workshops resulted in a partial redesign of key elements in all four courses. These redesigned elements will be implemented in Quarters 3 and 4 of this year, during which their effectiveness will be assessed. The methods for measuring effectiveness will be described later in this report.

3.2 First Step of Redesign: Looking Back and Forward

For the redesign, we applied the principle of constructive alignment (Biggs, 1996), which emphasises the intentional alignment of learning objectives, activities, and assessments. The aim of this triangular framework is to ensure that all components of education work cohesively toward the same overarching goals (Figure 3).

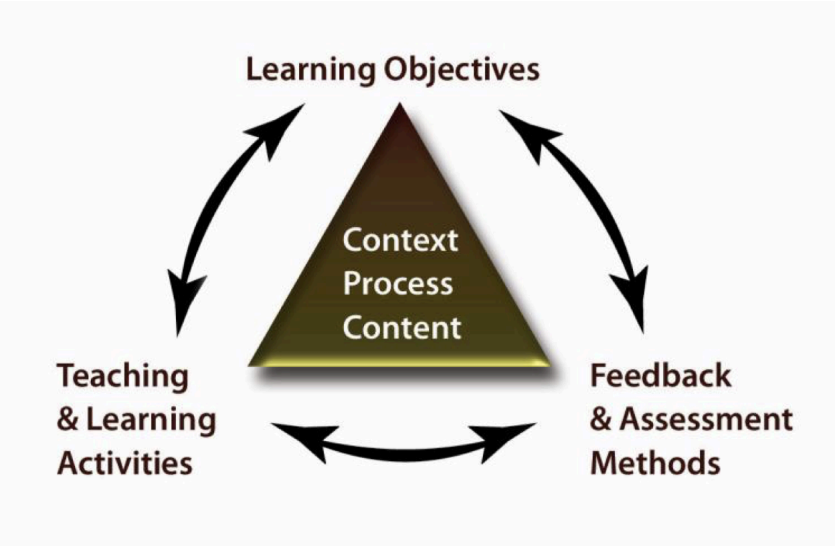

Figure 3. Redesign process through *constructive alignment*

The first step of the redesign process, conducted during the workshops, followed a structured approach:

1. **Mapping the Current Course**: Participants wrote down the existing assessment methods, learning objectives, and teaching activities on individual cards. These were then positioned on a diagram illustrating constructive alignment to visualise how well the elements were currently integrated.

2. **Applying Dee Fink's Taxonomy**: The group reviewed Dee Fink's taxonomy of significant learning (Fink, 2013), as depicted in Figure 1, discussing which dimensions of the taxonomy were already present in the current curriculum. The exercise also involved identifying gaps — areas of the taxonomy not yet covered by the existing program.

3. **Identifying Opportunities for Improvement**: The next stage was to explore potential changes. Participants discussed what they would like to add or replace in the curriculum, focusing on **why** those changes were necessary. Motivations included enhancing student engagement, fostering more collaboration, or increasing opportunities for peer feedback. The redesign aimed to create more space for student independence and creativity, as these are critical skills that, when linked to course content, significantly enhance learning outcomes. All suggestions were recorded to guide further development.

This reflective and forward-looking approach ensured that the redesign was both purposeful and inclusive, ensuring that the courses evolved in a way that better meets student needs while maintaining academic rigour.

3.3 Second Step of Redesign: Formulating Learning Objectives

To facilitate meaningful change in a program, a key shift is to re-evaluate how we assess students. Assessment methods shape the learning objectives and create opportunities for implementing active learning techniques and differentiated instruction. The redesign process required reconsidering the testing methods to align more closely with diverse learning outcomes.

The second step of the redesign process, focused on formulating learning objectives, unfolded in the following manner:

1. **Exploring Alternative Assessment Methods**: Participants discussed alternative forms of assessment that could be implemented at the end of the course. Using Dee Fink's taxonomy of significant learning as a framework (Fink, 2013), they considered how to evaluate often-overlooked dimensions, such as 'Caring' or 'the Human Dimension.' The aim was to start with simple, feasible ideas to expand the scope of assessments beyond traditional cognitive measures.

2. **Formulating Learning Objectives**: The group then formulated learning objectives that aligned with the newly envisioned assessments. These learning objectives could be classified into three levels: cognitive, affective, and regulatory. Cognitive objectives are the most common, focusing on what students should know or understand. However, the workshops encouraged a broader perspective, including effective and regulatory goals to foster more comprehensive learning experiences.

    - **Cognitive Learning Objectives**: These focus on knowledge and understanding. Examples include:
        - The student knows the criteria associated with...
        - The student can distinguish between...
        - The student demonstrates insight into the relationship between…

    - **Affective Learning Objectives**: These target emotional engagement, empathy, and interpersonal skills. Examples include:
        - The student shows involvement in the design processes of fellow students.
        - The student actively listens to and considers the arguments of others during collaboration.
        - The student demonstrates empathy for the challenges faced by others and reflects this in discussions.

    - **Regulative Learning Objectives**: These address self-management and reflective skills, which are critical for long-term development. Examples include:
        - The student can set personal learning goals and articulate their learning process in presentations or discussions.
        - The student is able to organise and plan their work within a given timeframe.

By broadening the scope of learning objectives to include affective and regulative goals, the redesign sought to create a more holistic educational experience. This approach allows students to develop not only knowledge but also emotional and reflective capacities, making the courses more engaging and impactful.

3.4 Third Step of Redesign: Designing Working Methods

In the third step of the redesign process, we focused on embedding innovative pedagogical approaches—Art-Based Learning (ABL), Nature-Based Learning (NBL), and Visual Thinking Strategies (VTS)—into the new program as core working methods. These methodologies aim to enrich students' learning experiences by fostering creativity, reflection, and deep engagement with content through artistic and nature-oriented practices, as well as visual interpretation.

To structure this integration effectively, the course was divided into four key phases:

Phase 1: Orientation and Desire
In the first phase, students are introduced to the course and begin exploring their motivations and desires for learning. Here, ABL, NBL, and VTS serve as entry points, helping students visualise their learning journey. For example, students might keep a logbook where they not only document course content but also visually represent their personal learning process. These methods encourage them to think critically and creatively, individually and in collaboration with their peers.

Phase 2: Transformation and Creation
The second phase focuses on students internalising and engaging with the material in a deeper way. This is where the transformation begins. ABL, NBL, and VTS support this process by providing students with creative and reflective tools to engage with the content. Through reading, experiential learning, and collaborative discussions, students are encouraged to reinterpret and reshape their understanding of the course material. This phase aims to move beyond traditional learning, enabling students to actively create knowledge rather than passively absorb it.

Phase 3: Assessment as Learning
In this phase, assessment is not just about evaluating outcomes but is integrated into the learning process itself. Peer feedback becomes a central feature, allowing students to learn from each other's perspectives. ABL, NBL, and VTS continue to play a role here, as students use these methods to articulate and reflect on their progress. Assessment in this phase is dynamic and interactive, encouraging a continuous learning dialogue among students and instructors.

Phase 4: Presentation
The final phase is where students present their learning outcomes. Instead of traditional exams or written reports, students could engage in a round-table discussion where they narrate their learning journey, sharing insights and achievements. ABL, NBL, and VTS provide frameworks for presenting these outcomes creatively, allowing students to demonstrate their newfound knowledge through stories, visual representations, or nature-inspired reflections. The presence of fellow students,

teachers, and external guests fosters an environment of shared learning and celebration of individual growth.

By weaving ABL, NBL, and VTS into the core structure of the course, these methods are not treated as standalone activities but as integral to each phase of the program. This holistic approach encourages deeper engagement, creativity, and collaboration, aligning with the goals of fostering transformative learning experiences.

The challenge moving forward is to continue refining how these methodologies function within the program. Through collaborative working sessions, we will iteratively build and co-create a new and inspiring curriculum that reflects our collective insights and ambitions for the future of education.

Chapter 4: Redesign Outcome

The workshops held in June and July have led to significant redesigns across the four courses, with a strong emphasis on integrating Art-Based Learning (ABL), Nature-Based Learning (NBL), and Visual Thinking Strategies (VTS). These methodologies aim to foster transformative learning and address the inner dimensions of sustainability education, ensuring students not only gain knowledge but also develop critical thinking, empathy, and creativity. Below is an overview of the partial redesign and key changes introduced to elements of the respective courses.

4.1 Co-design of Course #1

Next winter semester we will launch a new course in the Honours programme called *"From Plate to Planet: Crafting Sustainable Food Systems"*. The course aims for the students to develop the skills to comprehend the functioning of food systems and to discuss transformation pathways towards more sustainable food systems. To do this, the course aims to foster systems thinking and critical reflection, rooted in the principles of social learning. As part of the Honours course, the number of students will be around 20, and will come from a rather heterogeneous disciplinary background. The course has never taken place before.

The co-designed materials for this course includes two key sessions—one focused on VTS (*Connections and Disconnections to the Food System*) and another on NBL (*Bright Spots of Sustainable Food Systems*). Both are structured to encourage students to reflect on their personal connection to food systems and to engage more deeply with sustainability challenges. The sessions will be shared with students for feedback before finalising the design. Given that this is the first time the course is offered, a specific evaluation process will be conducted for the VTS and NBL sessions, focusing on whether students experience transformative learning and how they express it. A narrative-based assessment will be introduced, asking students to reflect on moments of transformation throughout the course, which will be linked to ASI's research dimension.

4.1.1 Connections and Disconnections to the Food System

In the first half of the course, the students will be introduced to some core concepts in food system science. In the second half of the course, the students will focus on exploring pathways for food system transformation. The session presented here is situated between these 2 parts and has some sort of bridging role.

Objectives:

- To explore how our environment connects or disconnects us from food systems
- To make students reflect on their personal situation and specifically about what elements connect or disconnect them from the food system

Methodology

The session will combine core elements from different methodologies: photo-voice, city learning, and VTS. The session consists of multiple phases, integrating social learning, critical reflection, and systems thinking:

- **First Phase:** Students will visit two retail environments in Amsterdam (Noordermarkt and Jumbo/Albert Heijn supermarkets) to take pictures that represent connections or disconnections to the food system. In their walks, the students will be tasked to individually observe their surroundings and make 1 picture per setting. The pictures should capture things that connect or disconnect them to the food system.
- **Second Phase:** Afterwards, back at the VU, the students in groups of 5 will share and explore the pictures, applying the VTS methodology. The groups would be divided into 2 groups (of approximately 10 participants each). Then, in each of the groups there will be a VTS conversation over 1 picture taken in Noordemarkt, and one taken in Jumbo. Notes will be taken about what happens during the VTS conversations.
- **Third Phase:** In a third part, the whole group will discuss in a plenary background what they found out in their groups. Then, together the class will discuss how we can foster a tighter connection between consumers and the food systems, and how that could possibly lever more sustainable food systems.
- **Fourth Phase:** The students' photos and reflections will be shared via Canvas, providing a visual narrative of their learning process.

Assessment of the method

Throughout the exercise, different types of data will be collected to assess effectiveness of the VTS application in the course: will be evaluated in different ways:

- The pictures uploaded to Canvas, accompanied by texts and notes from the VTS conversation. The two pictures uploaded to Canvas will be accompanied by a brief text in which the students explain what was on their mind when taking the picture, what they observed that captured their interest, and what motivated them to take it. This information will be complemented by the notes taken during the VTS exercise.
- Pre- and post-activity questionnaire. Prior to the activity, the students will be asked to share their expectations for the session and self-assess their personal connectedness to their individual food system (additional questions may be added to harmonize methodology with other ASI co-designed courses). After the activity, the students will be asked questions to assess the potential transformative effect of the session.
- Interviews with the facilitators, lecturers, and assistants in the session, focused on the docent’s perspective on the effectiveness of the method.

4.1.2 Bright Spots of Sustainable Food Systems

In the first half of the course, the students will be introduced to some core concepts in food system science. In the second half of the course, the students will focus on exploring pathways for food system transformation. The session presented here is situated in the second half of the course, in

which the students will explore different initiatives in the Amsterdam area that represent examples of advance towards sustainable food systems.

Objectives:

- To explore different initiatives related to sustainable food systems, from food production to food consumption.
- To enable students to connect what has been learnt during the course with practical, real-world initiatives.
- To promote experiential learning by allowing students to actively engage with practitioners and ask questions about how sustainable food systems operate in practice.
- To foster reflective discussions where students share their insights and debate the strengths and limitations of the initiatives, encouraging collaborative learning.

Methodology:

The session will be kickstarted with a Nature-based learning session, which will be followed-up with a self-managed visit to different initiatives related to sustainable food systems in and around the city of Amsterdam.

- **First phase:** The students will have a facilitated NBL session. The objective of this activity would be to stimulate 'out of the box' thinking that will be maintained during the rest of the field trip. The participants will depart from a personal question related to the topic of the course. The students would then wander exploring the natural surroundings and at the end of their walks, they will exchange their experiences in small groups.
- **Second phase:** Assisted by an autoguide app (https://cms.izi.travel/), the students will individually or in groups visit various initiatives in the Amsterdam area over the course of the day and at their own pace. Some places will be related to sustainable food production, some locations with the food supply chain, and some locations will be related to sustainable food consumption. From all the locations available the students will choose to visit at least one of each type. At each of these locations, the students will have freedom to explore the initiatives. They will be provided with some background information of the place and have guiding questions to encourage critical reflection on the site visited.
- **Third phase:** At the end of the day, the students will record their observations, thoughts, and emotions in personal journals, which will be shared in canvas
- **Fourth phase:** In the next session of the course, we will start with a joint reflection and evaluation of the activity.

Assessment of the method

Throughout the exercise, different types of data will be collected to assess effectiveness of the NBL application in the course: will be evaluated in different ways:

- The students' journals, uploaded into canvas, will be analysed to assess the role of NBL in the rest of the field trip. This information will be complemented by the notes taken during the NBL exercise.

- Pre- and post-activity questionnaire. Prior to the activity, the students will be asked to share their expectations for the session in relation to the NBL activity (additional questions may be added to harmonise methodology with other ASI co-designed courses). After the activity, the students will be asked questions to assess the potential transformative effect of the session.
- Interviews with the facilitators, lecturers, and assistants in the session, focused on the docent's perspective on the effectiveness of the method.

4.2 Redesign of Course #2

The main focus of the redesign of the course on *Global Development and Prosperity* is the revision of learning objectives and the incorporation of NBL to enhance argument mapping and critical thinking. A clear structure for NBL sessions has been developed, aimed at helping students connect their projects with inner motivations and personal reflection.

NBL will be implemented across two session:

- **Session 1 (Early in the course):** Students engage in NBL to connect their project solutions to their personal motivations and identity. They will reflect on why they believe in their solutions, with reflections recorded in a logbook.

- **Session 2 (End of the course):** The second NBL session encourages students to reflect on biases, dilemmas, and emotional responses encountered during the project. They assess whether their solutions still resonate with their values and motivations.

To measure the effectiveness of NBL, one-third of the students will participate in NBL sessions, with their performance compared to non-NBL students. Their ability to handle open-ended questions and argument mapping will be evaluated to see if NBL fosters deeper learning and engagement. Specifically, we will compare the grades of the two groups for both the argument map and the exam, and qualitatively compare the feedback to the argument map to see whether NBL students provide more detailed, complete or nuanced arguments in their maps and in answers to open-ended exam questions. NBL may also be integrated into peer-feedback sessions to promote reflective dialogue and deeper insights.

4.3 Redesign of Course #3&4

The redesign of these courses, *Bachelorwerkgroep Antropologie* and *Academic Skills Lab*, centres on integrating VTS into the anthropology curriculum to enhance observation skills—key competencies for fieldwork. A series of VTS sessions have been scheduled, with pre- and post-tests to measure the development of students' inner dimensions, such as empathy and reflective thinking.

Methodology and Evaluation:

- **Baseline Measurement:** A pre-test using a selected image will be conducted to gauge students' observational skills and inner dimensions.

- **VTS Sessions:** These sessions will serve as both an introduction to VTS and a tool to deepen students' observational abilities.
- **Final Measurement:** A post-test to assess changes in students' observational skills and inner dimensions.

Course #4 follows the same structure as Course #3 but it is offered in English. The specific dates for VTS sessions and assessments will be adapted to the schedule of the English track. The course coordinators for both courses have collaboratively selected culturally appropriate and relevant images for the VTS sessions. For example, the image chosen for both the baseline assessment is shown in Figure 4.

Figure 4. Dinner with Toller Cranston - painting by Andrew Osta

Chapter 5: Student Perspectives

In the initial workshop, we invited students to visually represent their current perceptions of the education system at our university. One notable drawing, depicted in Figure 5, reveals a student's view of the prevalent use of PowerPoint presentations in a passive learning environment. According to the student, the conventional approach—where theoretical knowledge is predominantly conveyed through lectures—often falls short in fostering a deeper understanding of subjects, particularly in fields such as Environmental and Resource Management (ERM). The student suggested that learning about natural systems would benefit greatly from immersive, experiential education that takes place in the environment itself. This approach, they argued, would bridge the gap between theoretical knowledge and practical understanding.

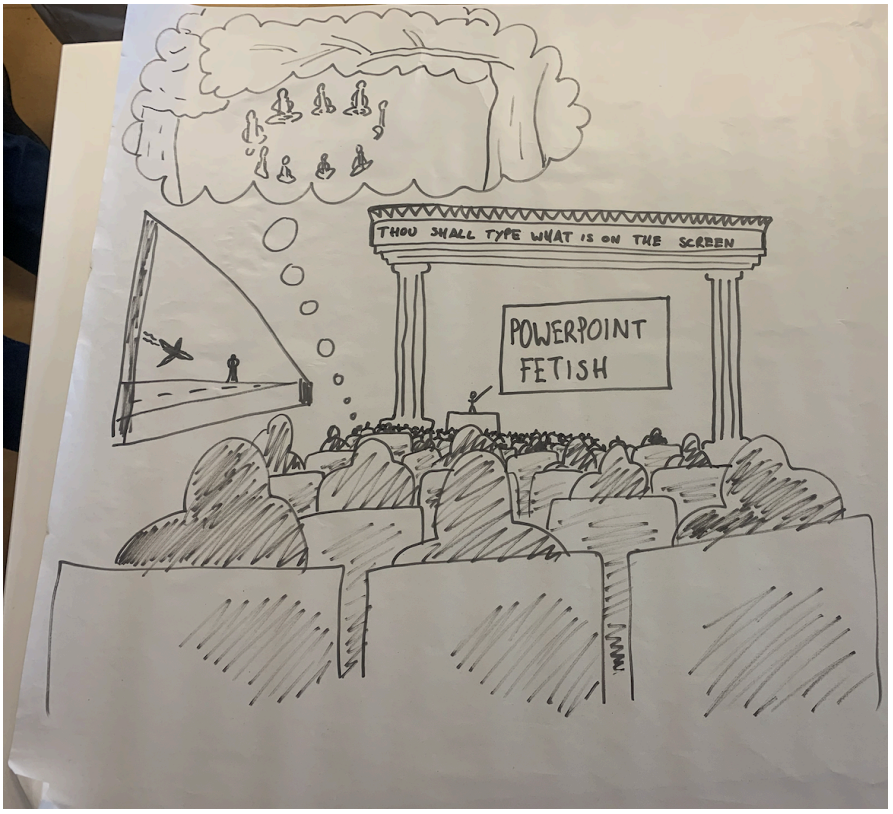

Figure 5. Student's perception on teaching methods in higher education, drawn at one of the co-creation workshops for this project

The student's drawing reflects a broader critique of traditional educational methods, where the philosophy of the method can sometimes be misaligned with the testing and assessment practices. This misalignment underscores the need for more reflective and introspective learning experiences. The introduction of Visual Thinking Strategies (VTS), Nature-Based Learning (NBL) and Art-Based Learning (ABL) methods aims to address these concerns by providing space for personal reflection and intrinsic knowledge development.

NBL, in particular, offers students the opportunity to engage in introspective practices, encouraging a deeper connection with the subject matter. This approach allows students to break away from rigid,

traditional methods and explore multiple perspectives. As one student put it, NBL provides a "freeing experience" that helps to reverse entrenched patterns of thinking, emphasising that there is not just one correct way to understand a concept. By facilitating personal reflection and open dialogue, NBL and ABL contribute to a more holistic and nuanced learning experience.

The integration of these methods has been suggested as beneficial across various courses within the ERM curriculum. For instance, in courses such as "Causes and Consequences of Environmental Change," these methods could be employed to share "Stories of Hope," illustrating positive examples of environmental change. Similarly, in courses like Environmental Economics, the methods could challenge traditional economic theories, encouraging critical examination of market mechanisms, individualism, and global trade's impact on the environment. By incorporating personal perspectives and reflective practices, these methods can offer new insights into classic economic theories and their real-world applicability.

Moreover, students suggested that integrating these methods could foster a more inclusive and dynamic learning environment. For example, encouraging students to bring personal photographs related to the course topics could enrich classroom discussions with diverse viewpoints. This practice would not only enhance engagement but also provide a platform for students to connect personal experiences with academic content.

In conclusion, the feedback from students highlights the potential of VTS, NBL and ABL to transform the educational experience by aligning teaching methods with reflective, experiential learning. By addressing the gaps identified in traditional education and fostering a more participatory approach, these methods offer promising avenues for enhancing both the depth and relevance of learning in environmental studies and beyond.

Chapter 6: Way Forward

The next steps for the project involve strategic implementation and evaluation to ensure the broader adoption and sustained impact of the new educational methods introduced. This chapter outlines the strategies for advancing the project, addresses potential challenges, and discusses the long-term vision for enhancing sustainability education.

6.1 Next Steps and Broader Implementation

A crucial component of this project is the empirical assessment of transformative learning outcomes. To measure the impact of the newly introduced methods across the courses, we will employ the following three strategies:

6.1.1 Assessing Student Agency

For Course #1, we will evaluate how the newly integrated methods influence students' sense of agency. We plan to use narrative analysis linked to established frameworks, such transformative learning theory (Stuckey et al, 2013), or IMAGINE, an assessment framework focused on inner and outer transformation in education (Ives, 2023), to determine whether these methods facilitate meaningful transformation. This approach will help fill a gap in existing literature by providing empirical evidence on the effectiveness of these methods in promoting transformative learning.

6.1.2 Implementation and Evaluation of Nature-Based Learning

In Course #2, Nature-Based Learning (NBL) will be integrated into two sessions. The first session will focus on aligning students' projects with their inner motivations, while the second will encourage them to explore alternative perspectives. To evaluate the impact of NBL, we will compare the exam performance and argument maps of students who participated in the NBL sessions with those who did not. This comparison will offer valuable insights into how NBL enhances cognitive and reflective abilities, as well as its practical applications.

6.1.3 Measuring Effectiveness of Visual Thinking Strategies

For Courses #3 and #4, we will implement a multi-faceted evaluation approach:

- **Baseline and Final Measurement**: Students will first engage with a VTS prompt about a piece of art, and later respond to a similar prompt with a different artwork. This process will help us assess changes in their interpretative skills. The analysis will be linked to Abigail Housen's levels of "aesthetic development" (DeSantis & Housen, 2007).

- **Feedback Collection**: We will gather students' perceptions and experiences of VTS through a questionnaire administered at the end of the course. This may be conducted orally or in writing, with the results documented for further analysis.
- **Instructor Feedback**: Feedback will also be collected from instructors regarding their experiences with VTS sessions. This will include observations of personal experiences, group dynamics, and feedback received. The collected data will be analysed to identify trends, learning moments, and areas for improvement, supporting the ongoing refinement and broader adoption of the methods.

These steps will help us assess the impact of the new methods and ensure their effective implementation across the university.

6.2 Addressing Potential Challenges

Implementing these new methods at a broader scale presents several challenges:

1. **Resistance to Change**: Faculty and students may be hesitant to adopt new methods. To address this, we will provide training sessions and workshops to demonstrate the benefits and practical applications of NBL and VTS. Sharing early successes and positive outcomes from pilot courses will help build support.

2. **Resource Constraints**: Integrating new methodologies requires additional resources and planning. We will seek support from university departments and external funding sources to ensure that the necessary resources are available. Collaborative efforts with other institutions and stakeholders may also provide additional support.

3. **Consistency in Evaluation**: Ensuring consistent and accurate evaluation of transformative learning across different courses and instructors may be challenging. To address this, we will develop standardised evaluation tools and guidelines and offer training to instructors on their implementation.

6.3 Long-term Vision

The long-term vision for this project is to influence sustainability education on a larger scale by:

1. **Establishing a Model for Transformative Learning**: By documenting and publishing empirical findings on the impact of ABL, NBL and VTS, we aim to create a model that can be replicated and adapted by other institutions. Potential articles and research papers will contribute to the academic discourse on transformative learning and educational innovation.

2. **Scaling Up Across the University**: Successful implementation and positive outcomes from the pilot courses will serve as a foundation for scaling these methods across other departments

and programs within the university. We will advocate for the integration of A/NBL and VTS into broader curricula, leveraging support from academic leaders and educational policymakers.

3. **Influencing Sustainability Education Globally**: By sharing our experiences and findings with a wider academic community, we hope to inspire similar initiatives at other institutions. The project aims to contribute to a global movement towards more dynamic, experiential, and reflective approaches to sustainability education.

In conclusion, the project's way forward involves strategic implementation, addressing potential challenges, and maintaining a focus on long-term goals. By fostering a culture of transformative learning and leveraging empirical research, we aim to enhance sustainability education and promote meaningful change both within and beyond our university.

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