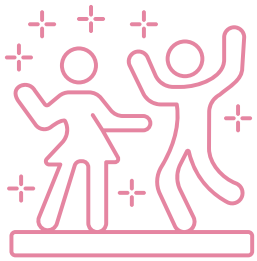


The 4E Model

Learning to dance with complex systems: from ego to eco systems thinking

THINKING | Complexity Awareness

What you will need:

- Up to 40
- Individual & group
- 1 hr preparation
- 2 hrs execution
- Miro board, sticky notes

Menu:

"Give students the experience to explore the challenges linked to the SDG Agenda and define actions after they have been able to explore the complexity of the topic.

—Maria Garcia Alvarez

I. Overview

Complexity and awareness are important for a comprehensive understanding of transition-making and its potential impact, which in turn enables informed decisions and take effective action.

"Decision-makers commonly mistake complex systems for simply complicated ones and look for solutions without realizing that 'learning to dance' with a complex system is definitely different from 'solving' the problems arising from it." (Roberto Poli, UNESCO chair of Anticipatory Systems). We invite students to move from a solutions-oriented mindset to a "*soul*utions"-oriented mindset. This implies alignment of the head, heart and hands.

The 4E Model is a practical tool that invites users to explore their role as transition makers and approach global challenges with a systemic thinking approach. The tool provides a framework to explore complex questions related to the SDGs and design processes of interdisciplinary collaboration that take into consideration the complexity and interconnectedness of global issues. The process of this model is to create societal value. The evaluation of the social value created is not made in monetary terms but in *values*. This invites users to reflect on the value of actions and engagement from another perspective.

Learning outcome

- The student is able to explore, engage, elaborate and evaluate complex systemic conditions and causalities

II. Learning Activity

Learning to dance with a complex system differs from 'solving' the problems arising from it. Therefore, the 4E Model is about changing the mindset to systemic thinking and moving beyond analytical thinking. The 4E Model is a serious game, with a playing board. The board has four quadrants, each representing one phase of the journey of creating societal value: Explore, Engage, Elaborate and Evaluate.

1. Setting the Scene

15 mins

Choose a complex question or issue you want to explore with the students, linking to the SDG agenda topics. You can provide students with an existing question or allow the students to explore their own issues or questions. Just make sure the questions you will use are not simple or complex managerial questions that have a feasible solution with traditional analytical problem-solving approaches. To explore if the issue is complex, you can use the wicked problems characteristics framework.

Subsequently, invite the students to start the journey through the 4E Model by using the Miro board.

Tip: a short explanation of working with Miro is included in the environment. Students will need to be able to use sticky notes, arrows to make connections and the voting system.

2. Exploring

45 mins

The aim of this phase is to visualise the complexity of the system. Ask the students to:

- Reflect on the complex question chosen;
- Define what are the causes of this issue (use the sticky notes and place them in the roots of the tree you find in the first quadrant);

- Define what are the consequences;
- Use arrows to link relations between causes and consequences;
- Decide within the student group, in which part of the whole system you want to play a role. Is the focus on one or more causes? Are the consequences addressed related to each other?
- Once you decided on a focus, use another colour Post-it to write this in the middle of the tree.

3. Engaging

15 mins

Students decide who they need to be invited to dance with them and create new movements and dynamics in the system.

It is important that students identify diverse stakeholders and actors that can play an important role in approaching the issue at hand. Provide them with the following tips:

- Try not only to identify the stakeholders that could be part of positive solutions but also those part of the problem.
- The engaging phase is about mapping the most important stakeholders that can together set the needed actions and mechanisms to solve the problem. Who are these stakeholders? Why are they important? What is needed from them to take action, or to provide knowledge? What networks do they represent?

Ask students to start with individual reflection and discuss this in the group. Let them use symbols or different Post-its colours to identify or group stakeholders on the Miro board.

4. Elaborating

30 mins

In this step, ask the students to move into action! Which seeds does each stakeholder need to plant to get to the multiple value creation they are aiming for?

Ask students to:

- Individually start mapping clear actions that each stakeholder and actor can do to create new dynamics in the system;

- Collectively group the actions and discuss how these actions can be executed. Consider collaborative ways for actors to take action;
- Be specific in the way they map actions. Define actions that are short-term, mid-term, or long-term;
- Include actions that can contribute to the avoidance of problems getting bigger or more complex;
- Be realistic. Actions need to be actionable.

5. Evaluating 15 mins

Invite the students to look back and imagine that all the actors have started collaborative processes and taken the described actions. Ask the students to consider:

- What will the impact have been on the complex issue?
- What kind of societal value has been created? Use the 5Ps of the SDGs: People, Planet, Profit, Peace and Partnerships. On the board, attached to each of these Ps are words that imply a value narrative.

Ask students to vote on the values they consider would have taken place if their dance worked out.

Afterwards, discuss the results of the voting. Are there any values created they did not expect?

III. Assessment

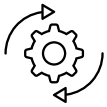
Assessment *for* learning is recommended after finishing the game. Students can conclude with an exchange of experiences among teams, followed by a short self-reflection at the individual level.

Purpose

Assessment *of* learning (summative assessment) aims to evaluate the extent to which students have achieved the intended learning outcomes.

Roles

Self-assessment



Characteristics

Assessment with reflective questions

Materials

Reflective questions

Assessment

Reflective questions

1. Can I identify and explain the different parts and components of a complex system? Do I understand the relationships and dependencies that exist between these parts?

2. Can I engage with different perspectives and stakeholder groups within the system? Can I identify and understand the different needs, values, and priorities of these groups?

3. Can I develop and evaluate potential interventions and actions? Can I identify and anticipate potential trade-offs and unintended consequences associated with different interventions?

4. Can I collaborate and engage with others to address complex systemic conditions and causalities? Can I identify and use effective tools and approaches to facilitate collaboration and collective action?

5. What are my own assumptions, biases and values when engaging with complex systemic conditions and causalities? Can I identify and evaluate the potential impact of my own perspectives on my analysis and evaluation of the system?

6. Can I integrate and synthesise different sources of information to develop a comprehensive and accurate understanding of complex systemic conditions and causalities?

7. Can I use effective communication strategies to engage and persuade others?

IV. Key Advice

The wicked problems characteristics framework from CMU Transition Design (Step 1) can be downloaded below.

MIRO board inspiration (Step 1)

Background information on the 4E model (Step 1):
The 4E tool is a serious game with a playing board with 4 quadrants. Each quadrant of the board represents one phase of the journey of creating societal value. You will start at the Explore quadrant and move in the following order: Explore, Engage, Elaborate and Evaluate.

The game allows the participant to take a second round or adjust other quadrants based on the final evaluation of the journey. You will use Post-its to write and share ideas, first individually and then discussed and clustered with the whole team. You need to control the time you will spend in each quadrant – we recommend 15 minutes per phase. Of course, you can extend the time depending on the framework you will use for this activity.

Essential is the following procedure: each phase starts with an individual round, where each participant writes down his/her own ideas before sharing and discussing this in the group. This allows all participants to express and share ideas and opinions, not just those who are the fastest or the loudest. All voices count.

Key Advice

Wicked problems characteristics framework from CMU Transition Design
The ten characteristics that help identify and understand complex, systemic problems that are difficult to solve are:

1. No definitive formulation
Wicked problems are difficult to define and have multiple, often conflicting, definitions.

2. No stopping rule
Wicked problems have no clear endpoint and there is no way to know when a solution has been reached.

3. Solutions are not true or false
There is no right or wrong solution to wicked problems, only better or worse solutions.

4. Every solution is a "one-shot operation"
Implementing solutions to wicked problems is irreversible and there is no opportunity to test solutions before implementing them.

5. No immediate and no ultimate test of a solution
The effectiveness of solutions to wicked problems cannot be determined immediately and their long-term impact is uncertain.

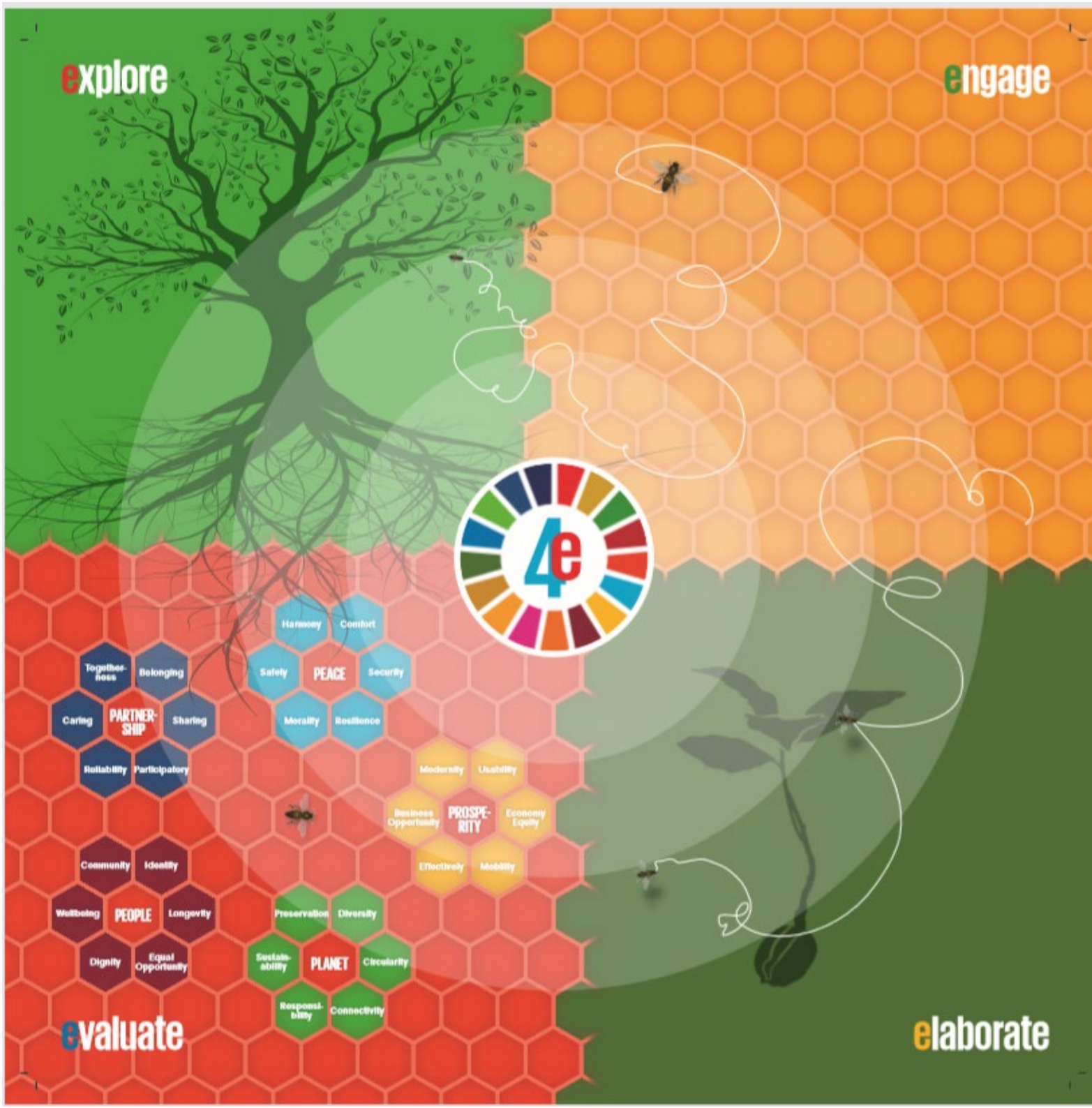
6. Not a problem with a single cause
Wicked problems are complex and systemic, with many interdependent causes and effects.

7. Stakeholders have different values and priorities
Different stakeholders have different values, priorities and perspectives, which can make it difficult to agree on a solution.

8. Not solvable by experts alone
Wicked problems require collaboration and input from a wide range of stakeholders, including non-experts.

9. No permanent solution
Solutions to wicked problems are temporary and will require ongoing attention and adjustment.

10. Every wicked problem is essentially unique
Each wicked problem is unique, and there is no way to generalise solutions from one problem to another.



V. References

Alvarez, M. D., & Rijsdijk, L. E. (2017). Value Creators: an innovative learning environment to shape the future together and find glocal soulutions to the challenges ahead. Journal of the European Honors Council, 1(2), 1–4.
https://doi.org/10.31378/jehc.17

Can theory-U be a valid model to design a university course for transdisciplinary SDGs education? A retrospective view on the "Value Creator" course in the Bachelor of Business Administration at Windesheim Honours College.

Poli, R. (2013). A Note on the Difference Between Complicated and Complex Social Systems. Cadmus, 2(1), 142–147.
