



# Theatrical Technology Assessment

MODERATOR MATERIALS  
EMBEDDING TRANSDISCIPLINARY  
EDUCATION

Leon van der Neut  
Verena Schulze Greiving  
Klaasjan Visscher

Enschede 2023

Authors:

L.M.B. van der Neut

Dr. ir. V.C. Schulze Greiving

Prof. dr. ir. K. Visscher

Knowledge, Transformation & Society (KiTeS), Faculty of Behavioural, Management, and Social Sciences (BMS), University of Twente

For additional information and more cases please visit: <https://cta-toolbox.nl/>

Contact person: Klaasjan Visscher, [k.visscher@utwente.nl](mailto:k.visscher@utwente.nl)

Involved institutes: University of Twente & Saxion University of Applied Sciences

We wish to thank all those involved in the project. Special thanks go to the organizers of the Leergang Onderwijsinnovatie of the [ComeniusNetwork](#). The ComeniusNetwork is a network of innovators of post-secondary education in the Netherlands

Funded by the Netherlands Initiative for Education Research (NRO)

© Content is made available under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License (International)



# Table of Contents

TABLE OF CONTENTS .....	3
THEATRICAL TECHNOLOGY ASSESSMENT – MODERATOR MATERIAL “EMBEDDING TRANSDISCIPLINARY EDUCATION” .....	5
WHAT IS TTA?.....	5
SETTING AND MATERIALS .....	5
ORGANISATIONAL ASPECTS .....	6
TIMELINE OF THE PLAY (140 MIN.).....	6
MATERIALS TO BRING .....	7
SETTING THE ROOM.....	7
FACILITATING THE PLAY.....	8
STARTING THE SESSION.....	8
STARTING THE PLAY .....	9
REFLECTION DURING THE INTERMISSIONS .....	10
PRESSURE COOKER .....	11
<i>Contrastive version</i> .....	11
<i>Progressive version</i> .....	11
REFLECTION ASSIGNMENT .....	13
THE PLAY .....	14
CONTEXT OF THE PLAY .....	14
ROLE DESCRIPTION OF THE MODERATOR .....	14
<i>First session &amp; contrastive version</i> .....	14
<i>Second session of the progressive version</i> .....	14
OVERVIEW OF THE ACTORS .....	14
DESIGNED TENSIONS.....	15
REFERENCES .....	16
APPENDIX 1: BESCHRIJVING CASUS NEDERLANDS .....	17
DE PILOT.....	17
IMPLEMENTATIE BIJ GEZONDHEIDSWETENSCHAPPEN .....	17
APPENDIX 2: ROLBESCHRIJVINGEN NEDERLANDS .....	18
ONDERWIJSVERNIEUWER .....	18
ROLLEN RONDE 1 EN “CONTRASTIVE VERSION” .....	19
STUDENT BIOMEDISCHE TECHNOLOGIE.....	19
VOorzitter EXAMENCOMMISSIE PSYCHOLOGIE, DOCENT COGNITIEVE PSYCHOLOGIE .....	20
FACULTEITSBESTUURDER, PORTEFEUILLEHOUDER ONDERWIJS .....	21
OPLEIDINGSDIRECTEUR HEALTH SCIENCES .....	22
COLLEGA-DOCENT STATISTIEK .....	23
ROLLEN RONDE 2 VAN “PROGRESSIVE VERSION” .....	24
BELEIDSMEDEWERKER OCW, TEAM KWALITEITSZORG .....	24
HOOGLERAAR ONDERWIJSKUNDE .....	25
BESTUURSLID INTERSTEDELIJK STUDENTEN OVERLEG (ISO) .....	26
BESTUURSLID VNO-NCW.....	27
APPENDIX 3: OBSERVEERDER BESCHRIJVING NEDERLANDS.....	28
APPENDIX 4: CASE DESCRIPTION ENGLISH .....	29

PILOT .....	29
IMPLEMENTATION IN HEALTH SCIENCES .....	29
APPENDIX 5: ROLE DESCRIPTIONS ENGLISH.....	30
EDUCATIONAL INNOVATOR .....	30
ROLES SESSION 1 AND "CONTRASTIVE VERSION" .....	31
BIOMEDICAL TECHNOLOGY STUDENT.....	31
CHAIR EXAMINATION COMMITTEE PSYCHOLOGY, LECTURER IN COGNITIVE PSYCHOLOGY .....	32
FACULTY ADMINISTRATOR, PORTFOLIO HOLDER EDUCATION .....	33
DIRECTOR OF HEALTH SCIENCES PROGRAM .....	34
COLLEAGUE, LECTURER IN STATISTICS.....	35
ROLE DESCRIPTIONS SESSION 2 OF "PROGRESSIVE VERSION" .....	36
POLICY OFFICER MINISTRY OF EDUCATION, QUALITY ASSURANCE TEAM.....	36
PROFESSOR OF EDUCATIONAL SCIENCES.....	37
BOARD MEMBER DUTCH NATIONAL STUDENT ASSOCIATION (ISO) .....	38
BOARD MEMBER VNO-NCW.....	39
APPENDIX 6: OBSERVER DESCRIPTION ENGLISH .....	40
APPENDIX 7: MODERATOR CHEAT SHEET .....	40

# Theatrical Technology Assessment – Moderator Material

## “Embedding Transdisciplinary Education”

The stakeholder roleplay “Embedding Transdisciplinary Education” is developed to give teachers and other educational professionals insights into common challenges faced by educational innovators in complex and dynamic multi-stakeholder settings. In this roleplay, participants will develop and practice strategies to overcome these challenges and will be empowered in their journey to realise organisational change. This document provides guidelines for moderators, teaching material and practical tips for organizing and carrying out this stakeholder roleplay.

### What is TTA?

TTA, Theatrical Technology Assessment, is a learning activity that was designed for students “to explore and anticipate the socio-technical dynamics of emerging technologies, and to find ways to integrate their insights in nuanced innovation plans” (Visscher, 2020, p.5). The method is based on the concept of Constructive Technology Assessment (CTA) (Rip et al., 1995), which is a research methodology to assess technological developments in society and enable real-world stakeholders to anticipate or influence this development and embedding (Te Kulve, 2011). In educational settings, the focus is on understanding dynamics around innovations and new technologies in complex and uncertain situations, while developing the competencies to deal with this (Visscher, 2023). The roleplay simulation aspect of it allows the student to get an inside experience of stakeholder positions, including the conflicting and constructive relationships these stakeholders may have (Tjosvold, 2008). The method includes improvisational theatre to make actors more confident in their role while interactions are quicker and more interesting. It allows for the construction of the situation during the play because of its “yes-and” nature, which creates a certain path dependency and has room for alternative, new, or unexpected outcomes (Van Bilsen et al., 2013).

### *Goals of the TTA roleplay “Embedding Transdisciplinary Education”*

Core learning goals: Understanding complex stakeholder dynamics relevant for educational innovation; exploring strategies for educational innovators to deal with stakeholder dynamics and challenges around innovation

Contrastive execution, learning goal: developing and applying effective strategies to deal with complex stakeholder dynamics.

Progressive execution, learning goal: understanding complex stakeholder dynamics at different levels and in different stages of the educational innovation journey.

### Setting and materials

Number of participants: 10-20

The complete set of materials for this case can be found in this document as well as [online](#) and consists of the following:

- Moderator Materials (this document)
- Moderator Cheat Sheet (Appendix 7 and separate .pdf)
- Case description (Appendix 1 (NL) & 4 (EN) and separate .docx)
- Role descriptions (Appendix 2 (NL) & 5 (EN) and separate .docx)
- Observer instructions (Appendix 3 (NL) & 6 (EN) and separate .docx)

This document provides you with relevant information and organizational aspects useful for executing this stakeholder roleplay.

## Organisational Aspects

In a TTA session like this one, participants stand in the shoes of a stakeholder. Two rounds are held in which the participants play out the interactions between the stakeholders in front of an audience. The experience of the participants and observations of those in the audience provide the input for the reflection sessions after each round.

This section covers the organisational aspects needed to execute a TTA roleplay. Make sure to read into the materials before implementing a specific case. We provide bullet points on what to address to make the introduction and moderation of the case easier.

### Timeline of the play (140 min.)

10 (min.) – 20 (ideally max.) participants

Phase	Duration	Description
Introduction	10 min	·Introduce case, aim and background of the roleplay, goal of the initial discussion, and assign roles.
Preparation	15 min	·Give attendees time to read materials, think of a character name, and write this on a paper card. Towards the end of the preparation, let players strategize with an observer or player from round 2.
Warming up (extend in case of more time)	20 min	·Improvisational theatre exercise, make people enthusiastic, help them to enter character.
The Play - Session 1	20 min	·Introduction by the moderator, mention the setting, the reason for gathering, and goal of the session. Ask characters to introduce themselves and their perspective on the situation. Discussion should start naturally. If not, ask questions to probe tensions
Reflection 1	15 min	·Analyse stakeholder dynamics, observed tensions, group formation, and applied strategy. Involve observers, ask about acting. Involve/discuss strategies to address challenges.
Break & Preparation of pressure cooker	15 min	·Prepare pressure cooker (contrastive or progressive version) played out in session 2. Involve observers.
Briefing and Strategizing	10 min	·Players are introduced to changed circumstance and presented with a challenge. They are given 5 min. to strategize in pairs.
The Play - Session 2 Pressure cooker	20 min	·Players discuss to solve the presented challenge. Moderator can decide to step out and let actors discuss.
Reflection 2, Theory & Reflection assignment (extend in case of more time)	15 min	·In case of large groups, involve participants with digital platform of choice. Focus on discussion analysis, changes in the discussion of session 2 compared to session 1, and stakeholder influence on outcomes. Involve/discuss strategies to address the identified challenges. Reflect specifically on the role of the educational innovator in this situation.
<b><i>After the workshop [Suggested]</i></b>		
Reflection assignment		·Reflect on theory and own experience with educational innovation in relation to the observations in the role play ·Articulation of (new) insights

## Materials to bring

It is important that the people who will act out as well as the ones who will observe the roleplay are well informed about the context of the play. This can be facilitated by bringing printed copies of the case- and role-descriptions to class and allowing participants a moment to read.

- Moderator Cheat Sheet
- Case description (x number of persons present)
- Role descriptions (5 or 9 - 10, depending on choice of pressure cooker version and choice to double roles)
- Observer instructions (x number of non-players)
- Blank sheet of sturdy paper for character names (1 for each role + yourself as moderator)
- Markers for writing the character names
- A watch for keeping time

## Setting the room

Put all tables to the side to create a large open space. For the audience, put chairs in a semi-circle facing the front. At the end of the warming up, make a V-formation of two tables facing the audience. Put a chair for the moderator at the closed end of the V and 5 chairs behind the tables. The tables only serve to put up the name of the character. This set-up gives the actors room to play, unobstructed by a table and allows the observers an unobstructed view of the goings-on.

No multimedia equipment is required for the roleplay, unless this is preferred during the introduction or reflection moments.

## Facilitating the Play

This section describes how to facilitate the play and provides important tips for the form and decisions during the session. It is good practice to lead the group with 2 persons, one to introduce the case, stakeholders, and to play the moderator, and one to lead the warming up, pressure cooker, intermediate reflection sessions, and to keep track of the time. Make sure to guard the time well, often more can be discussed than time allows for.

### Starting the session

When introducing the session be as clear as possible on the origin of the concept, the outline of the session, and the goals. The introduction and goals can be found at the start of this document and the outline is included under “What is TTA?”.

Then, briefly introduce the context of the play. This should provide an overarching frame for the participants to put the case description and potentially their role in. This overarching frame can be found under “Context of the play”. Address the following:

- The general context of the play – “An innovative form of transdisciplinary education has been tested at Comenius University in the form of a pilot during an honours program.”
- The aims of the innovator – “After the pilot, the innovator wants to embed this innovative education in the regular curriculum.”
- Main functional characteristics of the innovation – “During the pilot, students from different disciplines worked together with stakeholders from industry to explore societally relevant questions.”
- The reason for the stakeholder meeting – “The extension of the pilot towards the regular curriculum is dependent on an internal subsidy. Various stakeholders from Comenius University come together to discuss the future of the innovation.”
- The aim of the stakeholder meeting – “The stakeholders need to decide whether the pilot becomes a mandatory part of the Health Sciences degree.”

Now, roles have to be assigned to the attendees. Assign the roles based on interest or experience of participants (you can have people pick a role close to their experience, or a role that is furthest away). You can also let the participants just choose which role they want to play.

After the introduction, give people time to read their materials and prepare for their role. Invite actors and observers to read together and discuss a potential strategy of the stakeholder during the discussion, make sure of an even spread of observers among actors. Ask the actors to think of a name for their character, write this down on a sheet of paper, and put this in front of them. As a moderator you also think of a name and put this up (see Role Description of the moderator). Make sure to only refer to the actors by their fictive name during the session.

During the in-class preparation prior to the roleplay, it is beneficial for the play to give the participants time for strategizing about the meeting in pairs groups. Ideally, each role is paired up with an observer in the room. In case of limited participants, you can pair the roles from the first round with those of the second round. Be sure to specifically mention that they will be strategizing for the role of round one, to avoid mixing up the characters by mistake. Pair roles up like this:

- Student biomedical technology – ISO
- Examination Board chairperson & lecturer cognitive psychology – Ministry of OCW
- Faculty Board member – VNO-NCW
- Colleague, lecturer statistics – Full Professor Educational Sciences
- Education Innovator – Observer or Programme Director



After strategizing, ensure that all participants put the descriptions to the side. This makes that people will have to be imaginative and play their character more freely.

The warming up is next. Depending on the group size this can be done with the complete group, only the actors, or with the group of observers as 'one' role. There are several activities you can choose from:

- *Circle of emotions:* Everyone stands in a circle. You request a regular sentence that an attendee has said during the day ("I want coffee" or "What a beautiful morning" or the like). Additionally, you request an emotion. This makes a pair. One person starts by saying the sentence with the accompanying emotion. This is passed on through the circle and with each repetition, the emotion has to be stronger. After completing the round ask for a new sentence-emotion-pair and repeat. Make sure you have had a positive and a negative emotion. If at the end of the second round the emotion can still grow stronger, surprise them by announcing another round of the same prompt, while continuing to enlarge the emotion.
- *Silent Walk:* In the open space, ask everyone (observers pick a role) to walk as their character in silence. Begin this session by showing examples yourself, it is all about body language. During the session, prompts like "Does this person walk around like they are the top dog or more shy", "Are they comfortable looking others in the eye", and "Is this person intimidating towards others or not? [remember no shoving or pushing, can be laughed at]."
- *1 min introductions:* Ask the actors to introduce themselves to the observers in small groups as the character they will be playing.
- *Cheerleading:* Ask the actors and observers to psych each other up in groups (already formed), as if they were in a way too enthusiastic start-up environment. Sentences like "You/we can do this!" and "Go get 'em!" are well suited. Ask them to do this in a circle of emotions style, several rounds of repeating the sentence each time with more hype. Mention that this can be completely over the top.
- *Clapping:* Go round the circle clapping with eye contact, amp up the game by the possibility of going back with double clap. Pointing a clap to someone skips the circle. You can also try make two claps go around the circle.
- *Cluedo:* Have all but one participant leave the room, the location and murder weapon are told to the first person. One by one come in, location is portrayed without words, just sounds until the person knows and shakes their hand, then the weapon is portrayed, hand is given and then this person acts it out to the next one.

People will be nervous about playing, so make sure to exert enthusiasm towards the group from the introduction onwards. In the end, you are also playing a role and enthusiasm is contagious.

After the warming up, request the actors to enter the stage as their character (think of the way they walk, talk or sit), introduce themselves to each other, and make some small talk (the journey, building, lunch, etc.). As a moderator you play along with this. This enables the actors to step into the character role and activate the improvisational aspect of the play.

## Starting the play

When everyone is seated at the table the moderator starts the play with a welcome and short introduction. The following points can guide this introduction

- Name the setting (Comenius University, can be in any Dutch city), introduce yourself in character
- Mention who initiated the meeting and the reason for meeting (the Executive Board of the university)

- Mention the goal of the meeting “to decide whether the pilot becomes a mandatory part of the Health Sciences degree.”
- Mention some of the clear tensions present, for example:
  - The increased workload that comes with the implementation of this innovation for involved teachers
  - The educational format not directly compatible with existing examination requirements for the study and institutional structures concerning teacher allocation, intellectual property, and the distinction between education and work
  - The way the innovation challenges the boundary between education and industry, do students do work for the company, does the company provide education, or is it just a worthwhile collaboration?
- Give the word to the actors at the table
- “I believe not everyone knows each other at the table, so let’s start with a round of introductions, and please elaborate on what you think of the educational innovation”
- [After introductions] As soon as the discussion picks up, leave it to the actors. If this does not happen, ask one stakeholder to elaborate their perspective on the situation.
- [In the second half of the first round] Help the discussion to work towards the intended outcome

## Reflection during the intermissions

During the session there are two moments of reflection with the actors and observers on the roleplay, one after the first discussion round and one after the pressure cooker. The moderator, or preferably a well-informed colleague, leads the reflection. During the break after the first session, the moderator is responsible for deciding on the prompt for the pressure cooker, together with the observers of the session.

Begin the reflection by asking the observers what happened between the stakeholders during the play. Allow all people present to contribute to this. When possible, already make a link between underlying theories and observations and come up with strategies how to deal with the emerging tensions and conflicts. Some examples:

- Which tensions or conflicts did you observe during the discussion?
- How were the stakeholder positions distributed (predominant vs subordinate stakeholder positions, neutral vs engaged)? Who formed alliances, who were opponents?
- [To the actors] Why did you follow this particular strategy to defend your position during the discussion? Are you satisfied with the result of the discussion? How can you feed it back to your peers / colleagues?
- Which strategy would have helped [the stakeholder] in this particular situation?

For the innovators to learn from the exercise and successfully translate this into action, it is advisable to connect the reflections to strategies to overcome them. Suggested strategies are listed under the contrastive version of the pressure cooker (p. 11).

Do not start off with the question of how it was to play, while it may be natural to do so. The discussion on the contents of the play will be difficult to start up afterwards. Also, this is a question that can be best left for the second reflection or feedback in a digital survey after the session. Rather, ask questions that concern the characters that were played out, e.g. “What coalitions formed?” “How did this character influence the discussion?” “(How) was this person responded to?” or other questions as suggested above.

During the second reflection round, try to draw out contrasts with the first session and reasons why this may have occurred. Especially a reflection on what the group of the first session could have done differently in the first session can be of interest.

## Pressure cooker

The second session during the workshop is called the pressure cooker. There are two options for the pressure cooker, either one chooses for the contrastive or for the progressive version.

In the contrastive version, the first round is replayed using the strategies discussed during the reflection on its first iteration. This is especially suited to experience the difference between approaches of the innovator, which makes it well-suited for innovators who are looking to embed their innovation more firmly in their own institution. The challenge for the facilitator is to position everyone firmly in their roles, such as to avoid the discussion of the strategies to become a self-fulfilling prophecy.

In the progressive version, the results of the first round are used to extend the case, which is then discussed at the level of institutions. This brings out the interplay between the practical, local reality of the educational innovation and the organisational and administrative form that it takes on. Make sure this aligns with the interests of the participants. The challenge in this version lies in giving shape to a discussion that is concrete enough for the participants to effectively manifest their roles. What we suggest is to discuss the matter of establishing a complete transdisciplinary bachelor programme with the stakeholders in the second round.

### Contrastive version

This version is a re-play of the same situation with the same stakeholder roles with the goal to implement the discussed strategies to deal with the tensions (e.g., before talking to the critical colleague, think about adaptations in your innovation to ensure a better fit with the examination requirements, etc.). The roles at the table remain the same but can be played by different participants. Give participants the time and incentive to apply the discussed strategies in the second round. Instead of re-playing the same situation you can also pick an innovation of one of the participants and use this as case, yet with the same goal of implementing discussed strategies.

The tensions and strategies discussed during the reflection can be the starting point for this pressure cooker. Here is a list of strategies that were brought up when we tested this TTA with educational professionals.

- Anticipating the other's interest in the innovation.
- Getting commitment from willing stakeholders involved, like teachers willing to teach in the program or administrators who support the innovator's vision.
- Coalition formation is a step further and involves the gathering of those who have made a commitment to the innovation project.
- Involving the critic in the project.
- Being specific, taking away unclarity around the innovation and its operational aspects

Kick off the pressure cooker of the contrastive version in the same way that you started the first round. When you notice the discussion is picking up and the participants feeling comfortable, you can leave the table after the short introduction.

### Progressive version

For the progressive version, the discussion orients more towards institutional challenges that the innovator might face upon taking the innovation to the next level. You are free to base the progressive version on the outcomes of the first round. There are many forms that this can take e.g., the embedding of the educational format in (all) bachelor/master programs, as a selective

educational course (edubadges<sup>1</sup>) or implemented under the CROHO-code<sup>2</sup>. These situations trigger tensions around the quality of education, meeting industrial and/or (inter)national expectations on the quality of graduates, and the need for casting educational innovation into a structural form while ensuring a long-term and sustainable educational system.

What we suggest is to discuss the establishment of a transdisciplinary bachelor degree. This entails the embedding of transdisciplinary education in the existing institutional structures. This attempt to establish an educational programme that goes beyond disciplines runs into challenges like the required choice of a specific theme, discipline, and faculty at an existing institution. In addition to this, the available government funding for the programme is dependent on the percentage of education that is considered STEM. This brings in more funding than social sciences or humanities. The influence of this organisational embedding on the content of the programme is clear, through which its initial philosophy might be compromised. In addition, the successful launch of this programme, combined with the good reputation of Dutch education worldwide, could lead to a high influx of students. This could put an even bigger strain on the involved faculty.

Ideally, this outline is build forth on the outcome of the preceding session. During the break of the workshop, you as the moderator have the time to design the pressure cooker. What enables this progression well, is to imagine a situation that is five to ten years into the future. Try to centre the design on two considerations:

- Have tensions in the first session remained unaddressed that would be interesting to highlight?
- Have stakeholders been in the background, formed strong alliances, or any other consolidated position that should be shaken up?

Involve the observers in this process. Make use of the designed tensions and underlying theoretical concepts described further on in this document. These might help when you have to design a pressure cooker in a limited time span. Make sure to write down the key points of the pressure cooker prompt before starting the second session to increase the clarity of your story. Ensure to create a sense of urgency in the pressure cooker.

### Starting the progressive version pressure cooker

After the break and designing the pressure cooker, the stakeholders will come back into the room. Before kicking off, give players the briefing of the pressure cooker and allow them to strategize again in the same pairs as the strategizing before round 1. As a moderator you can choose to do another brief warming up exercise in character, like meeting the others in a hotel lobby. This helps the participants to enter their character. Make sure to address this in the introduction.

- Start the pressure cooker by introducing the time setting (5 years later) and the reason to convene
- [When having new actors] Make sure everyone introduces themselves again
- Make sure any papers with information (such as role description) are removed from the table. This will help the actors act more freely.
- Give an overview of what has happened, the pressure cooker prompt
- Provide a sense of urgency
- Request a timely response
- [Depending on how comfortable actors are playing] Moderator leaves upon the prompt of another important meeting or call

---

<sup>1</sup> <https://edubadges.nl/login>

<sup>2</sup> <https://www.scienceguide.nl/2023/06/niet-alfa-beta-of-gamma-onderwijs-van-de-toekomst-is-sigma/>

- [Towards end of pressure cooker] Moderator drops in to push for concrete outcomes, can decide to keep moderating

### Reflection assignment

The stakeholder roleplay can be combined with a reflection assignment to deepen the experience, e.g.:

- Describe the stakeholder dynamics you observed during the discussion. How did these change during the pressure cooker and why?
- Which strategies for innovation did you observe in the roleplay? How could these impact the embedding of the educational innovation?
- Which aspects could have been taken into account already in the first round of the discussion to overcome challenges and tensions present in the pressure cooker?
- Which conclusions do you draw from the roleplay for developing and embedding educational innovations?
- What other underlying theoretical concepts regarding stakeholder discussions are applicable to the roleplay?

## The Play

In this section the context of the play is provided. It includes a general description, a role description of the moderator, an overview of the actors, and the tension that are expected to be present.

### Context of the play

Transdisciplinary education aims to equip students with the necessary skills to address today's societal issues collaboratively across various boundaries. At Comenius University, a pilot project on transdisciplinary education was conducted over two quarters as part of the honours program. The student evaluation of the pilot project yielded positive results, while the educational staff found it exciting yet time-consuming. Because of the positive and enthusiastic feedback of the students, the pilot leader aims to make the transdisciplinary minor a mandatory component for specific study programs and increase the number of participating students. To achieve this, the pilot leader has applied for funding from an internal educational fund, whose decision is discussed during this stakeholder meeting. The successful rollout of this initiative could inspire educational innovation in existing programs.

### Role Description of the moderator

During the play, you as a moderator have a role as well. Be sure to step into your role in full and make it clear to the participants that you are playing! Taking part in one of the warming up exercises in character is often very successful (like entering the hotel lobby yourself, introducing your character and inviting them to join you at the table for discussion).

### First session & contrastive version

You are a facilitator from the funding committee. Your goal in the meeting is to have the people heard in the final decision to be taken on the pilot funding. In case the people in the meeting are unable to come to an agreement on the funding, you will be the person to finally decide and motivate the decision.

### Second session of the progressive version

You are part of the facilitating team of the educational innovator. As a staff member of the Teaching and Learning Centre of Comenius University you have taken on some operational tasks within the innovator's team, like chairing this meeting for the exploration of the administrative form that would suit the innovation best.

### Overview of the actors

Always present:

- Educational innovator

Actors in first session and in the second session of the contrastive version:

- Student biomedical engineering
- Chair examination board & lecturer cognitive psychology
- Faculty director
- Colleague, lecturer statistics

Actors present in the second session of the progressive version of the pressure cooker:

- Policy maker at the Ministry of Education, team quality assurance
- Full professor in educational sciences
- Board member of ISO (national student representative)
- Board member of VNO-NCW (national representative of Dutch businesses)

## Designed Tensions

1. Educational innovation often challenges traditional ways of lecturing: when collaborating between different programmes, confronting educators with their different practices and cultures, and when involving students with a variety of disciplinary backgrounds, leading to a variety of backgrounds introduced into the classroom by students which helps shaping a relevant learning experience for all while simultaneously the need to establish a common practice of learning.
2. Different outcomes of educational innovations compared to traditional teaching methods may be challenging, for example the open-endedness and thereby complexity of a learning experience, while respecting defensive colleagues, maintaining student wellbeing, and operating within a rigid institutional framework (think of ECs, evaluation schemes, quality assurance, division of the academic year into quartiles etc.).
3. The changed relationship between the educational institution and external stakeholder by forming one learning community with students, teachers, and external organisations. This results in tensions around individual's expectations of education and the expectation that education is something done within the educational institution.

### Specific to within the institution (1<sup>st</sup> round)

4. The time-intensive character that is often related to educational innovations requires more hours from educational staff per student. In combination with growing student numbers and labour shortage, this results in higher workload for educational staff. This can compromise the valuable contribution to educational quality that the innovation brings.

### Specific to the national level (2<sup>nd</sup> round of progressive version)

5. Political and societal pressure to innovate education, deliver the highest quality education possible, and meet (industrial/(inter)national) expectations of quality education and the qualifications of graduates. This creates a sharp contrast to the institutional challenges of implementing educational innovation of high quality.
6. The necessity to cast the educational innovation into a structural form (like a formal educational program, new or under the CROHO of an existing program, edubadges, microcredentials, professional education at a University of Applied Science, Research University, or a (European) University Network) while ensuring the nature of the educational innovation in a sustainable, long-term system.

## References

Rip, A., Misa, T.J., and J. Schot (1995), *Managing technology in society: The approach of Constructive Technology Assessment*, London: Printer Publishers.

Te Kulve, H. (2011), *Anticipatory interventions and the co-evolution of nanotechnology and society*, doctoral dissertation, University of Twente.

Tjosvold, D. (2008), *Constructive controversy for management education; Developing committed, open-minded researchers*, *Academy of Management Learning & Education*, 7(1), 73-85

Van Bilsen, G., Kadijk, J., & C. Kortleven (2013), *Yes and...your business; The added value of improvisation in organizations*.

Visscher, K. (2020), *Theatrical technology assessment: a role-play simulation for bridging the gap between technology and society in interdisciplinary engineering education*. STEPS Working Paper Series.

Visscher, K. (2023). *Experiencing complex stakeholder dynamics around emerging technologies: a role-play simulation*. *European Journal of Engineering Education*, 1-19.



## Appendix 1: Beschrijving Casus Nederlands

Het onderwijs staat voor een complexe uitdaging: hoe kunnen studenten worden uitgerust met vakinhoudelijke capaciteiten én met de vaardigheden om de complexe maatschappelijke uitdagingen aan te pakken? Eén ding is zeker: één persoon kan deze uitdagingen niet alleen aan. Er is behoefte aan onderwijs waar studenten leren samenwerken over disciplinaire en culturele grenzen heen. Met andere woorden, er is behoefte aan transdisciplinair onderwijs.

Door externe belanghebbenden, docenten en studenten van diverse achtergronden gelijkwaardig te betrekken, wordt een leeromgeving gecreëerd waarin leerlingen zelf de complexe grenzen ervaren en leren hoe ze hierin een houding aannemen. Deze samenwerkingsleeromgeving vergt veel tijd. Het moet actief worden beheerd om succesvol te zijn, en het toezicht op studenten en de betrokkenheid van belanghebbenden zijn met name intensieve aspecten van deze omgeving.

Vanwege de open aard van transdisciplinair onderwijs past het slecht in de conventionele collegestijl, traditionele exameneisen en bestaande programmastructuren van het huidige onderwijssysteem. Initiatieven van dit soort eindigen daarom vaak als minors of buitenschoolse activiteiten in plaats van geïntegreerd te worden in opleidingsprogramma's.

### De pilot

Gedurende de eerste twee kwartalen van dit academisch jaar is een pilot voor transdisciplinair onderwijs uitgevoerd aan de Comenius Universiteit. De minor van 30 EC gericht op studenten in hun tweede studiejaar was een interfacultair initiatief, waarbij studenten en personeel van de afdelingen Psychologie, Informatica, Bedrijfskunde, Gezondheidswetenschappen, Biomedische Technologie, Bestuurskunde en Natuurkunde betrokken waren.

De pilot is geïnitieerd door een kernteam van vier docenten en gevolgd door in totaal 12 studenten uit alle programma's. De pilot bestond uit een project (20EC), micromodules (2EC elk) en een persoonlijke ontwikkelingslijn. Het project was verdeeld in een verkenning, individuele verdieping en integratiefase gedurende 20 weken. In dit project werden studenten uitgedaagd om een complexe uitdaging werkelijk te begrijpen en dit op een zelfgestuurde manier aan te pakken. In samenwerking met de innovator in de gezondheidszorg HealthWise lag de focus op e-health. Deze activiteiten werden ondersteund door bijeenkomsten tussen studenten, onderwijspersoneel en de externe organisatie, waardoor ad hoc organisatie van onderwijsactiviteiten en reflectie op leersurprises mogelijk was.

De resultaten van een studentenevaluatie van de pilot waren positief (8,7/10), terwijl het onderwijspersoneel het als opwindend maar uitdagend ervoer. HealthWise was positief verrast door de creatieve herformulering van hun professionele praktijk en waardeerde de leerervaring. Het deskundig oordeel vóór de proef door onderwijsprofessionals was zeer positief over de opzet van het onderwijs met de student centraal, maar waarschuwde voor een hoge werkdruk voor het onderwijspersoneel vanwege de responsieve aard van hun betrokkenheid.

### Implementatie bij Gezondheidswetenschappen

De leider van de pilot heeft de ambitie uitgesproken om de minor verplicht te maken in kwartaal 1 en 2 van jaar 2 van het bachelorprogramma Gezondheidswetenschappen en het aantal studenten in de loop van drie jaar te laten groeien tot 100 per cohort. Samenwerkingen met verschillende belanghebbenden, waaronder HealthValley, HyWorks, projectontwikkelaar van waterstofinfrastructuur in de Eemshaven, en ProDemos, een NGO gericht op het bevorderen van democratische waarden in de samenleving, zijn al veiliggesteld. Om de uitrol te realiseren, heeft de leider van de pilot steun nodig van het programma Gezondheidswetenschappen, de examencommissie, het personeel en het faculteitsmanagement. Volgens de prognose kan de implementatie voldoende worden gedekt door de conventionele financiering van onderwijs binnen de Comenius Universiteit.

## Appendix 2: Rolbeschrijvingen Nederlands

### Onderwijsvernieuwer

*Aanjager, nadruk op student-gericht onderwijs*

Als geïnspireerde onderwijsvernieuwer ligt je hart bij het onderwijs. Je brengt al tien jaar lang je expertise in bij de vakgroep health sciences aan *Comenius University*, waar je vastbesloten bent om een carrière op te bouwen rondom onderwijsinnovatie. Je haalt veel motivatie uit de uitdagende aspecten van je werk en schuwt het niet om stevige gesprekken aan te gaan.

Samen met drie collega's ben je twee jaar geleden een ambitieus project gestart om studentgericht en transdisciplinair onderwijs te ontwikkelen gefinancierd door een prestigieuze externe beurs. Je beschouwt het als een noodzaak om onderwijs te ontwikkelen dat niet alleen gericht is op het vergaren van specialistische kennis, maar ook op het ontwikkelen van brede vaardigheden en manieren van denken bij studenten. Voor jou eindigt het onderwijs niet bij *Comenius University*; je ziet studenten als individuen en wil hen helpen hun potentieel als 'young professionals' te realiseren.

Als gepassioneerde onderwijsvernieuwer streef je naar zichtbaarheid binnen de universiteit. Je wilt anderen inspireren en aanzetten tot verandering, en je ergert je wanneer mensen weerstand bieden of zich te bureaucratisch opstellen. Je ambitie is om je aanpak breder te implementeren in de rigide structuur van het onderwijssysteem. De reguliere vak- en tentamineringsstructuren zijn niet geschikt voor deze onderwijsvorm. Het belang van het proces dat studenten doorlopen, de uitdagingen die ze daarin vinden, hun houding ten opzichte van complexiteit en wat ze persoonlijk uit de ervaring halen moet worden erkent.

Om een positieve impact te hebben op het onderwijslandschap en vernieuwing te implementeren zou structurele inbedding een uitkomst zijn. Dit verzekert een plek om het transdisciplinaire onderwijs verder uit te werken en legt financiering voor onderwijzend personeel vast. Dit sluit perfect aan bij de wens van je project om beter te kunnen inspelen op de veranderende behoeften van studenten en om externe partners sterker bij het project te betrekken.

**Interesses:** Onderwijs vóór studenten ontwikkelen, eigen carrière als onderwijsvernieuwer

**Irritaties:** Mensen die altijd een probleem in plaats van een oplossing zien, bureaucratie

**Gewoontes:** Niet gauw uit het veld geslagen, raakt niet uitgepraat, enthousiaste gebaren

#### Factsheet

Studenten hebben in reflectie interviews positieve ervaringen gedeeld:

- “Ik voelde een soort van vrijheid in de minor, ik mocht écht bepalen wat ik ging doen voor het eerst in mijn studerende leven.” Student Psychologie.
- “Ons project met HealthWise kon werkelijk bijdragen aan wat ze doen in de lokale zorginstelling, dat vond ik echt supergaaf.” Student Biomedische Technologie.
- “Dit is hoe ik mijn ideale werk later voor me zie.” Student Bedrijfskunde

Naast de positieve ervaringen met de pilot heb je ook negatief feedback gekregen:

- De mededocenten in de minor benoemden wel de extra inspanning die nodig is om studenten te begeleiden.
- Studenten klaagden over de onduidelijke verwachtingen van hen en de brede opzet van de opdracht die in enkele groepen voor stress zorgde.
- Ook kostte de afstemming met de externe partij veel tijd voor studenten en docenten. Hier is het belangrijk om duidelijk de verwachtingen rondom tijdinvestering van het bedrijf en verwachte uitkomsten af te stemmen.

## Rollen Ronde 1 en “Contrastive version”

### Student Biomedische Technologie

*Enthousiast - kritisch*

Als 3e-jaars student biomedische technologie (BMT) heb je deelgenomen aan de pilot. Deze bood een totaal andere leerervaring dan je reguliere vakken. Het verschil was zo groot dat het voelde alsof je aan een compleet andere onderwijsinstelling studeerde. Tijdens de pilot werkte je samen met een team van drie aan de analyse van het maatschappelijke veld rondom e-health innovaties, gericht op het vergroten van de autonomie van de patiënt. De mogelijkheden voor verdieping waren eindeloos, en jullie team had de vrijheid om elke richting te verkennen die jullie wensten. Jullie kozen ervoor om je te richten op patiëntautonomie, terwijl andere studenten verschillende andere aspecten onderzochten, zoals de beleidscontext of de zorgbeleving van mensen. Jullie docent speelde een zeer ondersteunende rol tijdens dit proces, waarvoor je erg dankbaar bent.

Je bent van mening dat de minor kan verbeteren op het gebied van duidelijkheid tijdens het onderwijs. Onduidelijke verwachtingen zorgt voor stress onder studenten, wat vooral voortkomt uit gebrekkige communicatie over opdrachten en beoordelingen. Daarnaast verliep het project niet zoals je gewend was. Er ging veel tijd verloren aan het afstemmen met andere studenten en het verhelderen van verwarring tijdens discussies. Ondanks deze aanloopproblemen verliep het project na de eerste vijf weken soepel en was iedereen zeer gemotiveerd.

Als BMT-student ben je niet gewend aan open en creatieve processen. Je werkt doorgaans meer vanuit een theoretisch perspectief. Je specialistische BMT-kennis kwam beperkt aan de orde in het project. Je hebt echter wel waardevolle ervaring opgedaan op het gebied van samenwerking en je hebt meer vertrouwen in je eigen krachten gekregen. Dit heeft tot het inzicht geleid dat je geen puur theoretische wetenschapper bent, maar een praktische professional die technologische oplossingen ontwikkelt om de levens van mensen te veranderen en een positieve impact op de samenleving te hebben. In je toekomstige carrière wil je dus ook deze weg volgen.

*Interesses:* duurzaamheid en goed burgerschap vind je belangrijk, komt voor anderen op

*Irritaties:* mensen die alleen aan zichzelf denken of erg conservatief zijn

*Gewoontes:* activistisch gedrag, praat erg enthousiast over ervaringen met de pilot

#### Factsheet

Je hebt een vriendengroep overgehouden aan de minor, medestudenten waar je op kunt rekenen voor een extra paar ogen wanneer je ergens in vast zit. 3 van de 5 van je vriendengroep hebben ondertussen een baan gevonden. In het sollicitatieproces bleek de minor onverwachts een grote plus voor hen te zijn. De andere twee gaan verder studeren.

Door zelf verantwoordelijkheid te nemen voor de eigen taken binnen het project en deze succesvol af te sluiten heb je meer zelfvertrouwen gekregen. Dit komt je ook ten goede in je privéleven; in je hockeyclub durfde je dit seizoen lid in het bestuur te worden.

## Voorzitter Examencommissie Psychologie, Docent Cognitieve Psychologie

### Kritisch

Als voorzitter van de examencommissie van de opleiding psychologie heb je de wettelijke verantwoordelijkheid voor het waarborgen van de kwaliteit van de toetsing en voor de waarde van het diploma van de opleiding. Aan de pilot hebben studenten vanuit jouw opleiding deelgenomen. De opleidingsdirecteur van psychologie heeft interesse in structurele implementatie.

Hoewel je de minor ziet als een mogelijkheid voor studenten om een persoonlijke stempel op hun opleiding achter te laten, maak je je zorgen over de impact op de status van het diploma wanneer deze minor een integraal onderdeel van de opleiding wordt. Je hebt contact gehad met examencommissies van andere opleidingen, zoals biomedische technologie en gezondheidswetenschappen, en zij delen jouw zorgen. Het feit dat de leeruitkomsten lastig te formuleren zijn en vaak per student verschillen is de grootste zorg.

Je streeft ernaar om de werkvormen in het onderwijs te standaardiseren. Dit betekent het formuleren van specifieke opdrachten voor studenten met vastgestelde leeruitkomsten en beoordelingscriteria. Het liefst zie je dat de leerervaring van de student wordt opgedeeld in overzichtelijke onderdelen met specifieke tentaminering en becijfering, waarbij rubrics en een toetsplan worden toegepast. Op deze manier kan er een representatief overzicht worden gegeven van wat een student heeft geleerd op het diploma.

Als voorzitter van de examencommissie ben je toegewijd aan het handhaven van de academische standaarden en het waarborgen van de kwaliteit van het onderwijsprogramma. Je bent vastbesloten om een systeem te creëren waarin de waarde van de opleiding voor studenten optimaal wordt erkend, terwijl tegelijkertijd de standaardisatie van het onderwijsproces wordt bevorderd. Je werkt nauw samen met de andere leden van de examencommissie om dit doel te bereiken en studenten de best mogelijke educatieve ervaring te bieden.

*Interesses:*      standaarden en kaders, fijn om te weten waar je aan toe bent

*Irritaties:*      overhaaste acties zonder het voor en tegen af te wegen

*Gewoontes:*      laat met lichaamstaal afkeuring duidelijk merken, legt vaak de handen gevouwen op tafel bij het spreken

### Factsheet

Je vindt het belangrijk dat de onderwijsactiviteit van studenten zich niet vertaalt in verkapt werk voor de externe partij. Onderwijs moet een leerervaring blijven, geen werk voor de winst van een bedrijf.

Werkeloosheid van hbo en wo-gediplomeerden een jaar na afstuderen blijft gestaag dalen, wel zijn studenten in de sector taal en cultuur twee keer zo waarschijnlijk om zonder werk te zitten dan studenten in de techniek in 2021.

Het Nederlandse hoger onderwijssysteem wordt tot de top-10 van de wereld gerekend, mede door de hoge kwaliteit output die het levert.

## Faculteitsbestuurder, Portefeuillehouder Onderwijs

### Enthousiast-kritisch

Als faculteitsbestuurder ben je verantwoordelijk voor het leiden en vormgeven van de onderwijsvernieuwing binnen de faculteit. Je ziet de pilot als het begin van een compleet nieuwe manier van studenten opleiden. Je hecht enorm veel waarde aan het opleiden van verantwoordelijke, democratisch georiënteerde individuen. Voor jou reikt onderwijs verder dan alleen kennis vergaren; de onderwijsinstelling moet ook nauw samenwerken met lokale partners van Comenius University en geworteld zijn in de samenleving.

Je bent je bewust van de spanning die deze innovatie in de organisatie teweegbrengt, en dat is tegelijkertijd je grootste zorg. Hoewel je het idee van onderwijsvernieuwing prachtig vindt, is het essentieel dat de organisatie stabiel blijft. Je voorganger heeft de positie moeten verlaten omdat deze te ver voor de troepen uitliep en daarmee de spanningen binnen de organisatie verhoogde. Je bent zeer voorzichtig om niet dezelfde fout te maken, maar je wilt wel jouw stempel drukken op het onderwijs binnen de faculteit.

Je erkent dat de werkdruk op het personeel al hoog is, mede door groeiende studentenaantallen in de afgelopen jaren en een krappe arbeidsmarkt. Ondanks dat merk je dat deze onderwijsvernieuwing een positieve energie in het team teweegbrengt. Sommige medewerkers lijken ondanks de extra werkdruk veel energie uit het project te halen. Je maakt je echter zorgen over degenen die overwerkt zouden kunnen raken en over het verlies van mensen die geen energie uit de vernieuwing halen. Idealiter wil je dat docenten geen uitgebreide voorbereiding hoeven te treffen om het transdisciplinair onderwijs te kunnen geven.

In een recent gesprek met het College van Bestuur hebben zij laten weten geld beschikbaar te willen stellen voor de financiering van onderwijsinnovatie binnen jouw faculteit. Je onderwijsvisie wordt door het College van Bestuur gedeeld. Er zijn echter ook andere belangrijke thema's, zoals blended learning en student well-being, waar projecten op lopen en die ook financiering vereisen. Er is geld, maar uiteindelijk zijn de middelen beperkt en kunnen niet alle onderwijsinnovaties gefinancierd worden.

*Interesses:* je eigen signatuur achterlaten door je werk, positieve werksfeer, de boel bij elkaar houden

*Irritaties:* een negatieve mentaliteit, mensen die tegen werken

*Gewoontes:* gebruikt een stopwoord, zit rechtop om gehoor te krijgen

#### Factsheet

Sinds 2015 is het aantal studenten in het hoger onderwijs aanzienlijk gegroeid, van ongeveer 700.000 naar bijna 820.000 studenten. De verwachtingen zijn dat deze groei in de komende jaren nog door zal gaan, vooral voor master studenten. Daarna zal de groei in studentenaantallen afvlakken, begünstigd door de Nederlands demografiek.

Subsidies voor onderwijsinnovaties leiden zelden tot (blijvende) impact op het onderwijs buiten dat wat door de desbetreffende docent gegeven wordt.

## Opleidingsdirecteur Health Sciences

*Enthousiast-kritisch*

Als opleidingsdirecteur van de opleiding health sciences ben je verantwoordelijk voor de onderwijskwaliteit van het programma en alles wat daarbij komt kijken. Dat wil zeggen het begeleiden en organiseren van de ontwikkeling van nieuw lesmateriaal, de evaluatie van dit onderwijs en manier hoe het programma op elkaar aansluit. Jij bent het startpunt voor onderwijzers die iets willen veranderen binnen de opleiding.

Transdisciplinair onderwijs is vaker opgekomen in gesprek met andere vernieuwers en je ziet de kracht er zeker van in. Je hebt goed contact gehad met de onderwijsvernieuwer wanneer deze de pilot op aan het zetten was. Nu ligt de vraag voor op deze vernieuwing ook werkelijk onderdeel wordt van het vaste curriculum van de opleiding health sciences, onder andere.

De huidige leerdoelen van de opleiding lijken aan te sluiten bij het onderwijs wat de onderwijsvernieuwing beoogt. Zo stimuleert het directe contact met externe partijen de aansluiting van het onderwijs bij de beroepspraktijk en draagt de complexe leeromgeving bij aan de zelfredzaamheid van de student. Echter kan het niet met zekerheid worden gezegd of studenten in deze onderwijsmodule ook vakinhoudelijke kennis specifiek aan Health Sciences leren. De studenten verdiepen zich namelijk in stof die relevant is voor hun onderdeel van het project, dit draagt dan wel weer bij aan hun zelfredzaamheid.

De complexiteit van de vernieuwing brengt met zich mee dat het niet van tevoren onder woorden te brengen is wat studenten allemaal leren in het project. Er is sprake van zogehete 'learning surprises', ervaringen waar studenten belangrijke inzichten opdoen maar die voor elke student anders zijn. Het mooie is dat deze heel goed aansluiten bij de ontwikkeling van de student zelf, het lastige is dat dit niet opgenomen kan worden als leerdoel. Dit betekent ook dat hier dus geen verantwoording op de 'normale' manier over kan worden afgelegd en dit ook niet gewaarborgd kan worden door een vorm van toetsing. Dit kan alleen achteraf middels het lezen van reflecties of het hebben van gesprekken met studenten worden bevestigd. Dit heeft volgens jouw veel aandacht nodig wil het concept slagen binnen conventionele opleidingen.

Wat ook niet onbelangrijk is, is dat studenten en het werkveld zich erg positief uitlaten over dit soort onderwijs. Studenten krijgen oprechte bewegingsvrijheid en verantwoordelijkheid, wat vaak in contrast staat tot traditioneel onderwijs en hen de kans geeft fouten te maken in een veilige omgeving. Het werkveld houdt via deze weg contact met de vooruitgang in hun veld, ontvangen een kritische blik op hun werkzaamheden en leggen contact met mogelijk toekomstige werknemers. Iets wat ze erg waarderen in tijden van krapte op de arbeidsmarkt.

*Interesses:* Mooi onderwijs bieden en studenten motiveren

*Irritaties:* Onderwaardering voor studenten en het eigen werk

*Gewoontes:* Verteld graag vol passie over ervaringen met studenten,

### Factsheet

De opleiding Health Sciences bestaat sinds 2010 op Comenius University en ontvangt nu zo'n 100 studenten per cohort

## Collega-docent Statistiek

### Defensief-Kritisch

Als docent Statistiek ben je een expert in je vakgebied en gedij je goed in een gestructureerde omgeving waar het duidelijk is wat er van je verwacht wordt en hoe je hieraan kunt voldoen. Een goede balans tussen werk- en privéleven is voor jou belangrijk. Je was onderdeel van het team dat de pilot heeft gedraaid, en je hebt gemengde ervaringen opgedaan. Het samenwerken met de praktijk was interessant en vernieuwend, iets wat je nog niet eerder had gedaan. Echter, de kwaliteit van de statistische analyses viel een beetje tegen, vooral vanwege de uitdagingen bij het verkrijgen van kwalitatief-hoogwaardige data uit de werkpraktijk.

De teamleider heeft je gevraagd om ook deel uit te maken van het docententeam wanneer de minor wordt uitgebreid. Hoewel je dit niet direct hebt afgeslagen, was je verrast dat je werd gevraagd. Je voelt je comfortabel en zelfverzekerd in het geven van de huidige vakken, die goed gestructureerd zijn en hoog gewaardeerd worden. Vanwege je heldere hoorcolleges ben je vorig jaar door de studenten van de wiskundeopleiding zelfs genomineerd als docent van het jaar. Je bent vertrouwd met het voorzien van studenten van vakinformatie in algebra en statistiek.

Het vooruitzicht dat deze onderwijsinnovatie jouw onderwijs mogelijk gaat beïnvloeden, staat je echter niet aan. Hoewel er van jou als docent verwacht wordt studentgericht onderwijs te geven, zie je dat deze vorm van onderwijs veel meer inspanning vereist en onzekerheid geeft dan je gewend bent. Je bent op zoek naar mogelijkheden om de inhoud van je vroegere vakken in te bouwen in het transdisciplinair onderwijs wanneer dit wordt uitgerold, zodat je het materiaal kunt hergebruiken en je werkdruk niet te hoog wordt.

Als docent is het voor je belangrijk om hoogwaardig onderwijs te blijven leveren en tegelijkertijd deel te nemen aan de onderwijsvernieuwing. Je wilt de uitdaging aangaan om je onderwijsaanpak aan te passen aan de nieuwe vereisten als je daarvoor de nodige ondersteuning en middelen krijgt om succesvol te zijn in deze veranderingen.

*Interesses:* cijfers en feiten, werk-privé balans, collega's niet overbelasten

*Irritaties:* onduidelijkheid, idealisme zonder realisme, hoge eisen en ambities

*Gewoontes:* licht-nerveus, zit veel aan gezicht bij gevoel van onzekerheid

#### Factsheet

Vanuit je eerdere contact met bedrijven waar afstudeerders hun eindopdracht doen, merk je dat de technische competenties van studenten erg gewaardeerd worden. De soft-skills pikt een student gaandeweg het werkende leven wel op. Hard-skills moeten de kern van een opleiding zijn.

Je hebt van verscheidene studenten in de pilot gehoord dat ze het moeilijk vonden om hun disciplinaire achtergrond terug te laten komen in het project wat ze uitvoeren vanwege de complexiteit waarin dit geplaatst wordt.



## Rollen ronde 2 van “Progressive version”

### Beleidsmedewerker OCW, Team Kwaliteitszorg

*Enthousiast - kritisch*

Als medewerker van het ministerie van Onderwijs, Cultuur en Wetenschap (OCW) in het team kwaliteitszorg ben je gepassioneerd over onderwijsvernieuwing en bied je het graag de ruimte. Het systeem zou niet in de weg moeten staan van innovatie. Tegelijkertijd is het belangrijk dat aan (toekomstige) studenten duidelijk kan worden gemaakt wat ze kunnen verwachten van dit vernieuwende onderwijs.

Je gelooft dat student-gericht onderwijs de toekomst heeft en je merkt op dat OCW meebeweegt met deze ontwikkeling, waarbij meer procesgerichte doelstellingen binnen opleidingen worden ondersteund. Dit legt echter een grotere nadruk op de scholing van de begeleiders van dit proces, zodat de kwaliteit van de leerervaring gewaarborgd kan worden. Het is cruciaal voor de kwaliteit en transparantie van het onderwijs, om dit proces duidelijk te kunnen vertalen naar disciplines, activiteiten, en beoordelingen. Transdisciplinair onderwijs is moeilijk als opleiding op te zetten omdat het niet aan de substantiële inhoudseis voldoet.

Je ziet deze onderwijsvernieuwing als een prachtige mogelijkheid om Nederlands hoger onderwijs van wereldklasse te realiseren. Deze positie heeft Nederland behaald met de huidige institutionele organisatie en eisen, en daar ben je dus ook niet van plan om van af te wijken. Ook deze innovatie moet goed kunnen passen in de huidige structuren.

Nederland wordt voor haar kwalitatief goed onderwijs ook internationaal geprezen. Dit maakt je erg trots, vooral omdat internationale studenten een belangrijke rol spelen in de Nederlandse samenleving en economie. Deze onderwijsvernieuwing op landelijk niveau zou dus ook internationaal aandacht kunnen trekken. Je bent je bewust van de groeiende werkdruk binnen instellingen.

Daarnaast benadruk je het belang van het behouden van het publieke karakter van hoger onderwijs. Je vindt het belangrijk dat er een scheidslijn blijft bestaan tussen private partijen en publieke onderwijsinstellingen. De industrie bijvoorbeeld mag niet bepalen wat studenten moeten leren, en onderwijsinstellingen moeten geen adviesbureaus worden voor private partijen. Het belang van de ontwikkeling van de student en de samenleving moeten centraal blijven staan in de aangeboden onderwijsactiviteiten.

**Interesses:** Kwaliteitsborging van Nederlands hoger onderwijs, tot de wereldtop behoren, student-gericht onderwijs

**Irritaties:** Ontkennen algemeen publiek belang van onderwijs, onderwijs slechts relevant achten voor de economie

**Gewoontes:** Houdt mensen graag te vriend, verwacht aandacht van anderen, kalm, attent

#### Factsheet

Internationalisering is van groot strategisch belang voor Nederland. In het wetenschappelijk onderwijs is de instroom van internationale studenten sterk gestegen van 28% in 2015 naar 40% in 2021/2022. In totaal zijn op het moment 23% van de totale studentenpopulatie internationale studenten.

Subsidies voor onderwijsinnovaties leiden zelden tot (blijvende) impact op het onderwijs buiten dat wat door de desbetreffende docent gegeven wordt.



## Hoogleraar Onderwijskunde

### Defensief - kritisch

Als Hoogleraar Onderwijskunde aan de Universiteit Flevoland ben je een erkend en vooraanstaand expert op je vakgebied. Met jarenlange ervaring en talrijke publicaties heb je jezelf nationaal en internationaal gevestigd als een autoriteit in het vakgebied en speel je een essentiële rol in het bevorderen van inzicht en kritisch denken over onderwijsvernieuwing.

Je vindt dat de voorgestelde onderwijsvernieuwing, zoals vaker bij zogenaamde innovaties, nog onvoldoende is bewezen en je maakt je zorgen dat breed ingevoerd transdisciplinair onderwijs de kwaliteit van lang bestaande en goed geïmplementeerde programma's kan ondermijnen. Je kritische houding ten opzichte van vermeende onderwijsvernieuwingen draag je vaak publiekelijk uit, bijvoorbeeld door middel van opiniestukken in de Volkskrant.

Je uit ook bezorgdheid over de nadruk op soft skills die studenten tegenwoordig moeten leren, zoals transdisciplinaire samenwerking en zelfontplooiing, ten koste van vakinhoudelijke kennis. Je vreest dat echte vakkundigheid verloren kan gaan. Hierbij ben je kritisch op de oriëntatie van dit onderwijs op multinationale ondernemingen. Je vraagt je af of de publieke zaak en de wetenschap er ook bij gebaat zijn.

Je hecht veel belang aan het waarborgen van een goede kwaliteit van onderwijs. Daarom benadruk je de noodzaak van effectieve methoden om nieuwe onderwijsvormen te kunnen toetsen en te standaardiseren, zodat de kwaliteit gewaarborgd blijft. Als een voorbeeld van een geslaagde standaardisatie heb je zelf meegewerkt aan de ontwikkeling van een edubadge die de vaardigheden van studenten op het gebied van het zoeken en correct gebruiken van wetenschappelijke literatuur certificeert.

Je neemt aan deze bijeenkomst deel om jouw expertise en ervaring in te brengen om de kwaliteit van het onderwijs te waarborgen en de impact van vernieuwingen kritisch te beoordelen.

**Interesses:** Onderzoekdiscipline, academische waarden, opleiden van competente experts, kwaliteitsbehoud binnen het Nederlandse hoger onderwijs

**Irritaties:** Pragmatisch gemotiveerde keuzes, ongefundeerde uitspraken

**Gewoontes:** Onderbreekt anderen met vragen of opmerkingen wanneer geïrriteerd, zeer expressief, tikt op tafel wanneer deze nadenkt

#### Factsheet

De effectiviteit van onderwijsinnovatie in termen van leeruitkomsten voor studenten is alles behalve vanzelfsprekend. Maar zelden wordt er informatie verzameld over de effectiviteit van innovaties en nog minder vaak wordt dit breder gedeeld. Evidence-based innovatie moet de standaard zijn.

Subsidies voor onderwijsinnovaties leiden zelden tot (blijvende) impact op het onderwijs buiten dat wat door de desbetreffende docent gegeven wordt. Onderwijsinnovaties zouden moeten worden opgezet met de intentie om breder gedeeld en geïmplementeerd te worden. Je ziet instellingsamenwerkingen als een goede vorm om dit te borgen.

Edubadges zijn digitale certificaten over verworven kennis of vaardigheden en worden uitgereikt voor geaccrediteerde onderwijsprogramma's en activiteiten. Ze dragen bij aan een flexibeler onderwijssysteem en aan "Life-Long-Learning". Uit onderzoek is gebleken dat de adequate beoordeling van voorkenniseisen voor edubadge programma's en de angst voor de versnippering van het onderwijs een grote uitdaging is voor opleidingen.

## Bestuurslid Interstedelijk Studenten Overleg (ISO)

*Enthousiast - kritisch*

Als Bestuurslid van het Interstedelijk Studenten Overleg (ISO) en voormalig student liberal arts and sciences aan een University College speel je een cruciale rol in het vertegenwoordigen van de studentenbelangen en het pleiten voor kwalitatief en inclusief onderwijs. Je bent sterk onder de indruk van het voorgesteld onderwijsconcept en ziet dit als een waardevolle innovatie in het onderwijslandschap.

Je bent zeer enthousiast over student-gericht onderwijs en je bent van mening dat dit de standaard zou moeten zijn voor alle vormen van onderwijs. Je gelooft dat het essentieel is dat het onderwijs aansluit bij de behoeften en interesses van de student, aangezien zij degenen zijn die er het meest uit moeten halen. Het voorgestelde onderwijsconcept belooft studenten goed voor te bereiden op de arbeidsmarkt en op het aanpakken van grote maatschappelijke vraagstukken.

Je vindt het belangrijk dat studenten de vrijheid hebben om te kiezen wat hen het meest aanspreekt. Je benadrukt echter ook het belang van goede studiebegeleiding om studenten te ondersteunen bij het navigeren door deze mate van vrijheid en om hun succes te waarborgen, zowel binnen als buiten de opleiding. Dit zie je graag terug in de manier hoe transdisciplinair onderwijs georganiseerd wordt.

Je maakt je zorgen of de intensieve begeleiding van studenten gewaarborgd na het succes hiervan in de pilot. Dit zie je als essentieel voor een goede leerervaring. Je pleit voor het verminderen van administratieve lasten voor docenten en het aantrekken van meer goed opgeleid onderwijspersoneel. Je bent een voorstander van toegankelijkheid van het onderwijs voor alle studenten. Je benadrukt dat binnen de EU/EER discriminatie tussen studenten is verboden.

Het welzijn van studenten staat hoog op je prioriteitenlijst. Je maakt je met name zorgen over de mentale gezondheid van studenten, die al jaren achteruitgaat. Je erkent dat de autonomie die studenten krijgen in dit onderwijsconcept een grote uitdaging is, waarbij sommigen kunnen opbloeien door het gevoel van vrijheid, terwijl anderen eronder kunnen lijden. Je verwacht dat de druk op studenten toeneemt door het voorgestelde onderwijsconcept, wat zowel positieve als negatieve gevolgen kan hebben.

**Interesses:** Student-gericht onderwijs, studentenwelzijn, gelijkheid en wereldverbetering

**Irritaties:** Onbelangrijk worden geacht als student, onderbroken worden

**Gewoontes:** Neigt naar grootspraak, herhaalt eigen standpunten in discussie, licht-activistisch, spreekt energiek

### Factsheet

Uit onderzoek van het ministerie blijkt dat 50% van studenten in Nederland psychische klachten ervaart. 1 op de 9 studenten ervaart ernstige psychische klachten. Bijna 7 op de 10 studenten ervaren emotionele uitputtingsklachten. Er is een verband tussen veerkracht en afwezigheid van psychische klachten, daarom wordt voorgesteld om meer aandacht te richten in de onderwijspraktijk op het tegengaan van eenzaamheid onder studenten.

Edubadges maken geaccrediteerd onderwijs toegankelijk door bestaande opleidingen op te breken in kleinere stukken en na volbrenging hier een digitaal bewijs van kennis en vaardigheid voor uit te geven, de zogenaamde Edubadge. Dit draagt bij aan een flexibeler onderwijssysteem en aan "Life-Long-Learning".

## Bestuurslid VNO-NCW

### Constructief - kritisch

Als Bestuurslid van VNO-NCW, de grootste werkgeversorganisatie in Nederland, vertegenwoordig je de belangen van werkgevers. Je bent zelf oprichter van een sterk groeiend ICT bedrijf in het oosten van het land en doet regelmatig projecten met studenten van *Comenius University*, waaronder de pilot van de hier besproken onderwijsinnovatie.

Vanuit een onderzoek binnen VNO-NCW naar samenwerking tussen studenten en bedrijven gaven werkgevers aan dat ze het belang zien van afgestudeerden die ook goed zijn in transdisciplinair werken. Deze vaardigheden zijn erg belangrijk voor de projecten binnen bedrijven, maar ook de vak kennis is cruciaal en mag niet verwaarloosd worden in het curriculum. Met name in sector beta-techniek zijn nijpende tekorten aan arbeidskrachten. Je vindt het belangrijk dat het onderwijssysteem voldoet aan de arbeidsvraag van het bedrijfsleven, daarom zet VNO-NCW zich in voor onderwijs wat beta-techniek georiënteerd is en studenten transdisciplinaire skills bijbrengt.

Je benadrukt de waarde van professional learning en erkent het belang van continue ontwikkeling van vaardigheden en kennis binnen het bedrijfsleven, ookwel life long learning genoemd. Je hebt dit zelf ervaren door een van je projectleiders die een externe cursus heeft gevolgd. Hoewel je de waarde hiervan inziet, was het moeilijk om voldoende tijd vrij te maken voor de projectleider, aangezien dit kostbaar was en vaak op het laatste moment moest worden geregeld.

Terwijl je erg tevreden bent met de uitkomsten van de studentenprojecten binnen de pilot maakt je je ook zorgen over de mogelijke impact van je betrokkenheid bij dit project op je bedrijf, met name met betrekking tot personeelskosten, tijdsinvestering en beschikbare middelen. Zeker voor kleinere bedrijven binnen VNO-NCW zou dit een grote uitdaging kunnen zijn. Je vraagt je af hoe de opbrengsten opwegen tegenover de kosten die je moet inzetten.

**Interesses:** Belang van bedrijfswereld in onderwijs vestigen, doorontwikkeling van werknemers organisatorisch en financieel mogelijk maken, pragmatische en toekomstbestendige oplossingen

**Irritaties:** Academische hoogdravendheid, onbelangrijk gevonden worden

**Gewoontes:** Down-to-earth, neemt graag het woord, zit vaak achterover

#### Factsheet

In het laatste kwartaal van 2022 was één derde van het totaal aantal opstaande vacatures in de sectoren techniek en ICT (107.000 van in totaal 335.000 vacatures). Ongeveer één vierde van deze vacatures stond al voor het vierde kwartaal open (30.000 van de 107.000 vacatures).

Er zijn op het moment slechts 23 overheidserkende opleidingsmogelijkheden in de sector Techniek en ICT op hbo en wo master-niveau met een maximale studieduur van 12 maanden. 13 hiervan zijn voltijdsopleidingen.

Je bent bekend met het idee van professional learning certificates en ziet dit als een goede vorm voor dit onderwijsconcept vanwege de goede integratie met de werkpraktijk.

## Appendix 3: Observeerder Beschrijving Nederlands

Je taak is om de discussie zorgvuldig te observeren, de dynamiek en conflicten tussen de verschillende stakeholders te identificeren en belangrijke spanningen te vinden die relevant zijn voor de onderwijsinnovatie. Je kunt aantekeningen maken tijdens de discussie van interessant gedrag dat je opmerkt. De volgende vragen kunnen je helpen tijdens je observatie:

- Welke stakeholder is overheersend in de discussie en wie is eerder ondergeschikt?
- Welke conflicten en spanningen komen naar voren tijdens de discussie? Hoe reageren de stakeholders op deze kwesties?
- Wie heeft allianties gevormd? Wie staat tegenover elkaar?
- Welke spanningen, zorgen of risico's van de innovatie worden zichtbaar tijdens de discussie? Hoe reageren de stakeholders hierop?

Na de eerste discussieronde gaan we naar de 'pressure cooker' - een tweede scène waarin stakeholders opnieuw een vergelijkbare innovatie bespreken, mogelijk in een andere setting. Om de pressure cooker te ontwerpen, richt je vooral op deze vragen:

- Vanuit de eerdere discussie, welke punten zouden interessant zijn om op te volgen?
- Waar zie je spanningen in de toekomst?
- Welk evenement zou een gamechanger kunnen zijn voor de innovatie of voor de betrokken stakeholders?

Tijdens de tweede discussieronde richt je je op deze vragen:

- Wat betekent de uitkomst van de discussie voor de ontwikkeling van de onderwijsinnovatie?
- Welke ontwerpaanpassingen zouden kunnen worden gemaakt in de innovatie/organisatie om sommige van de besproken problemen te voorkomen?
- Hoe beïnvloeden de gebeurtenissen in de eerste sessie de huidige discussie?

## Appendix 4: Case Description English

Education is facing a complex knot: how to equip students with the capacities to address the wicked societal challenges of today? One thing is for certain, one person is not able to take on this challenge alone. That is why there is a need to educate students who can collaborate across boundaries of all sorts, institutional, cultural, disciplinary, personal, and societal - a main driver for transdisciplinary education.

By involving external stakeholders, teachers, and students from a wide variety of backgrounds as equals, a collaborative learning environment is set up where all learners experience the complex boundaries and environments themselves and how to act in them. This collaborative learning environment is time consuming. It must be actively managed to succeed, and the supervision of students and engagement of stakeholders are particularly intensive aspects of this environment.

Because of the open nature of transdisciplinary education, the conventional lecture style, embedded examination requirements, and the existing governance structure of educational institutions are challenged. Initiatives of the sort therefore often end up as minors or extra-curricular activities instead of integrated into degree programs.

### Pilot

During the first two quarters of this academic year, a pilot in transdisciplinary education has been performed at *Comenius University*. The 30 EC elective minor geared towards students in their second year of study has been a cross-faculty initiative, involving students and staff from the Psychology, Computer Science, Business Administration, Health Sciences, Biomedical Engineering, Public Administration, and Physics departments.

The pilot was initiated by a core team of four educators, followed by in total 12 students from all programs, and comprised of a challenge (20EC), small courses (2EC each), and a personal development line. The project was divided into an exploration, individual deepening, and integration phase over the course of 20 weeks. In this project, students are challenged to make sense of the situation and find a goal in a self-directed manner in the context of e-health in collaboration with health care innovator HealthWise. These activities were supported by weekly meetings between students, educational staff, and the challenge provider allowing for ad hoc organisation of educational activities and the reflection on learning surprises.

The results of a student evaluation on the pilot were positive (8.7/10), while the educational staff experienced it as exciting yet challenging. HealthWise was positively surprised by the creative reframing of their professional practice and appreciated the learning experience. Expert appraisal preceding the try-out by educational professionals was very positive about the student-centred setup of the education but warned about high workload for the educational staff because of the responsive nature of their involvement.

### Implementation in Health Sciences

The pilot leader has expressed the ambition to make the minor a mandatory element in Q1 and Q2 of year 2 of at least the health sciences bachelor programme and grow the number of students to 100 per cohort over the course of three years. Confirmation for collaboration with various external stakeholders, including HealthValley, a public-private collaboration in the East of the Netherlands, HyWorks, the lead developer of hydrogen infrastructure in the Eemshaven, and ProDemos, an NGO from the Hague focused on promoting democratic values in society, are already secured. To realize the roll-out, the pilot leader needs support from the health sciences programme, the examination board, staff, and faculty management. According to the prognosis, the implementation can be sufficiently covered by the conventional financing of education within Comenius University.

## Appendix 5: Role Descriptions English

### Educational Innovator

Enactor, emphasis on student-centred education

As an inspired educational innovator, your heart is dedicated to education. For the past ten years, you have been contributing your expertise to the health sciences department at *Comenius University*, where you are determined to build a career focused on educational innovation. You draw motivation from the challenging aspects of your work and are not afraid to engage in tough discussions.

Two years ago, together with three colleagues, you initiated an ambitious project to develop student-centred and transdisciplinary education, funded by a prestigious external grant. You consider it a necessity to develop education that not only focuses on acquiring specialized knowledge but also on cultivating broad skills and ways of thinking in students. For you, education doesn't end at Comenius University; you see students as individuals and want to help them realize their potential as young professionals.

As a passionate educational innovator, you aim for visibility within the university. You want to inspire others and catalyse change, and you are frustrated when people resist or adopt bureaucratic stances. Your ambition is to broaden the implementation of your approach and break through the rigid structure of the educational system. The traditional course and examination structures are not suitable for this form of education. For you, it's about the process students go through, the challenges they encounter, their attitude toward complexity, and what they personally gain from the experience.

To have a positive impact on the educational landscape and bring innovation to the way students learn and grow, you need the necessary solid ground. Implementation in a bachelor programme would secure a place to develop transdisciplinary education further and ensure funding for educational staff. Implementation aligns perfectly with the needs of your project to better respond to the changing needs of students and to involve external partners more deeply.

Interests: Developing education for students, own career as an education innovator

Irritations: People who always see a problem instead of a solution, bureaucracy

Habits: Not easily discouraged, talkative, enthusiastic gestures

#### Factsheet

Students have shared positive experiences in reflection interviews:

- "I felt a kind of freedom in the minor; I could truly decide what to do for the first time in my studying life." - Psychology Student.
- "Our project with HealthWise could really contribute to what they do in the local healthcare institution, and I found that really awesome." - Biomedical Technology Student.
- "This is how I envision my ideal work in the future." - Business Administration Student.

In addition to the positive experiences with the pilot, you have also realized that coordination with the external party took a lot of time for both students and teachers. It is crucial to clearly align expectations regarding time investment from the company and expected outcomes.

## Roles Session 1 and "Contrastive version"

### Biomedical Technology Student

*Enthusiastic - Critical*

As a third-year student in biomedical technology (BMT), you participated in the pilot. This offered a completely different learning experience than your regular courses. The difference was so significant that it felt like you were studying at an entirely different institute. During the pilot, you worked with a team of three on the analysis of the societal context surrounding e-health innovations. The possibilities in the project were endless, and your team had the freedom to explore any direction. Your group chose to focus on patient autonomy, while other students investigated various aspects such as policy context or people's healthcare experiences. Your teacher played a very supportive role during this process, for which you are very grateful.

You believe that the minor can improve in terms of clarity during education. Unclear expectations cause stress among students, mainly stemming from inadequate communication about assignments and assessments. Additionally, the project did not unfold as you were accustomed to. A lot of time was lost in coordinating with other students and clarifying confusion during discussions. Despite these initial challenges, the project ran smoothly after the first five weeks, and everyone was highly motivated.

As a BMT student, you are not used to open and creative processes. You typically work more from a theoretical perspective. Your specialized BMT knowledge was of little use in the project. However, you gained valuable experience in collaboration and gained more confidence in your abilities. This insight led to the realization that you are not just a theoretical scientist but a practical professional who develops technological solutions to change people's lives and have a positive impact on society. In your future career, you want to follow this path.

Interests: Sustainability and good citizenship are important to you; you stand up for others.

Irritations: People who only think of themselves or are very conservative.

Habits: Activist behaviour enthusiastically talks about experiences with the pilot.

#### Factsheet

You have formed a group of friends from the minor, fellow students whom you can rely on when you're in a rut. Three out of the five members of your friend group have found jobs. In the job application process, the project unexpectedly turned out to be a significant advantage for them. The other two are continuing their academic studies.

By taking responsibility for your tasks within the project and successfully completing them, you have gained more self-confidence. This has also benefited you in your personal life; this season in your hockey club, you dared to become a member of the board.



## Chair Examination Committee Psychology, Lecturer in Cognitive Psychology

### *Critical*

As the chair of the examination committee for the psychology program, you bear the legal responsibility for ensuring the quality of assessment and the academic value of the program's diploma. Students from your program participated in the pilot, and the program director of psychology is interested in its structural implementation.

While you see the minor as an opportunity for students to leave a personal mark on their education, you have concerns about the impact on the status of the diploma when this minor becomes an integral part of the program. You have been in contact with examination committees from other programs, such as biomedical technology and health sciences, and they share your concerns. The difficulty in formulating learning outcomes that often vary per student is the major concern.

You aim to standardize teaching methods. This involves formulating specific assignments for students with defined learning outcomes and assessment criteria. Ideally, you would like to see the student's learning experience divided into manageable components with specific examination and grading, incorporating rubrics and a test plan. This way, a representative overview can be provided of what a student has learned upon graduation.

As the chair of the examination committee, you are committed to upholding academic standards and ensuring the quality of the educational program. You are determined to create a system in which the value of the program is optimally recognized for students, while simultaneously promoting the standardization of the educational process. You work closely with other members of the examination committee to achieve this goal and provide students with the best possible educational experience.

Interests: Standards and frameworks, reassuring to know where one stands

Irritations: Hasty actions without weighing the pros and cons

Habits: Expresses disapproval with body language, often places folded hands on the table while speaking

#### Factsheet

You consider it important that students' educational activities do not translate into work for external parties in disguise. Education should remain a learning experience, not unpaid labour.

Unemployment for graduates of research universities and universities of applied sciences one year after graduation continues to steadily decline, although students in the language and culture sector are twice as likely to be unemployed as students in the technical sector in 2021.

The Dutch higher education system is considered among the top 10 in the world, partly due to the high-quality output it delivers.



## Faculty Administrator, Portfolio Holder Education

### *Enthusiastic-Critical*

As a faculty administrator, you are responsible for leading and shaping educational innovation within the faculty. You see the pilot as the beginning of a completely new way of educating students into responsible and democratically oriented individuals. For you, education goes beyond acquiring knowledge; the educational institution must also collaborate closely with local partners of Comenius University and be rooted in local society.

You are aware of the tension that this innovation brings to the organization, and that is simultaneously your greatest concern. While you find the idea of educational innovation beautiful, it is essential that the organization remains stable. Your predecessor had to leave the position because she was too far ahead of the troops, thereby increasing tensions within the organization. You are careful not to make the same mistake, but you still want to leave your mark on education within the faculty.

You acknowledge that the workload on staff is already high, partly due to growing student numbers in recent years and a tight labour market. Despite this, you notice that this educational innovation brings positive energy to the team. Some staff members seem to derive a lot of energy from the project despite the extra workload. However, you are concerned about those who could become overworked and the potential loss of people who do not derive energy from the innovation. Ideally, you want teachers to not have to make extensive preparations to be able to teach transdisciplinary education.

In a recent meeting with the Executive Board, they expressed a willingness to allocate funds for the financing of educational innovation within your faculty. Your educational vision is shared by the Board. However, there are also other important themes, such as blended learning and student well-being, where projects are ongoing and also require funding. There is money, but ultimately resources are limited, and not all educational innovations can be financed.

Interests: Leaving your own mark through your work, a positive work atmosphere, holding things together

Irritations: A negative mentality, people who resist collaboration

Habits: Uses crutch words, sits upright to be heard

Factsheet
Since 2015, the number of students in higher education has significantly increased, from approximately 700,000 to almost 820,000 students. Expectations are that this growth will continue in the coming years, especially for master students. Afterward, the growth in student numbers will flatten, favoured by Dutch demographics.
Subsidies for educational innovations rarely lead to (lasting) impact on education beyond what is taught by the respective teacher.

## Director of Health Sciences Program

*Enthusiastic-Critical*

As the director of the Health Sciences program, you are responsible for the educational quality of the program including guiding and organizing the development of new teaching materials, evaluating this education, and ensuring the coherence of the program. You are the starting point for educators who want to make changes within the program.

Transdisciplinary education has come up more often in conversations with other innovators, and you see its strength. You have had good contact with the educational innovator when setting up the pilot. Now the question arises whether this innovation will actually become part of the permanent curriculum of the Health Sciences program, among other things.

The current learning objectives of the program seem to align with the education that the innovation aims for. Direct contact with external parties stimulates the connection of education with professional practice, and the complex learning environment contributes to the autonomy of the student. However, it is uncertain whether students in this educational module also learn subject-specific knowledge specific to Health Sciences. The students research material that is relevant to their part of the project, which in turn contributes to their self-reliance.

The complexity of the innovation means that it cannot be articulated what students will learn in the project beforehand. There are so-called 'learning surprises,' experiences where students gain important insights, but which are different for each student. The beauty is that these align very well with the development of the student themselves, but the challenge is that this cannot be included as a learning objective. This also means that there can be no accountability in the conventional way, and it cannot be guaranteed through a form of assessment. This can only be confirmed afterwards through reading reflections or having conversations with students. According to you, this needs a lot of attention for the concept to succeed within conventional education.

What is also important is that students and the professional field express very positive views about this type of education. Students are given genuine freedom of movement and responsibility, which often contrasts with traditional education and gives them the opportunity to make mistakes in a safe environment. The professional field stays in contact with the progress in their field through this method, receives a critical view of their activities, and establishes contact with potential future employees. This is something they highly appreciate in times of labour market tightness.

Interests: Providing beautiful education and motivating students

Irritations: Undervaluation of students and one's own work

Habits: Enjoys passionately sharing experiences with students

<b>Factsheet</b>
The Health Sciences program exists since 2010 at Comenius University and currently receives about 100 students per cohort.

## Colleague, Lecturer in Statistics

### *Defensive-Critical*

As a lecturer in statistics, you are an expert in your field and thrive in a structured environment where expectations and how to meet them are clear. Striking a good balance between work and personal life is important to you. You were part of the team that conducted the pilot, and you had mixed experiences. Collaborating with the industry was interesting and innovative, something you had not done before. However, the quality of the statistical analyses was a bit disappointing, mainly due to challenges in obtaining high-quality data from the practical work environment.

The team leader has asked you to be part of the teaching team when the minor is implemented in Health Sciences. Although you did not immediately decline, you were surprised to be asked. You feel comfortable and confident in delivering the current courses, which are well-structured and highly appreciated. Due to your clear lectures, you were even nominated as the teacher of the year by students in the mathematics program last year. You are familiar with providing students with subject information in algebra and statistics.

However, the prospect that this educational innovation may influence your teaching is not appealing to you. While you, as a lecturer, are expected to provide student-centered education, you see that this form of education requires much more effort and uncertainty than you are used to. You are looking for ways to incorporate the content of your previous courses into transdisciplinary education when it is rolled out, so you can reuse the material and keep your workload manageable.

As a lecturer, it is important for you to continue delivering high-quality education while participating in educational innovation. You are willing to take on the challenge of adapting your teaching approach to the new requirements if you receive the necessary support and resources to be successful in these changes.

Interests: Numbers and facts, work-life balance, not overburdening colleagues

Irritations: Uncertainty, idealism without realism, high expectations and ambitions

Habits: Slightly nervous, tends to touch face when feeling uncertain

#### Factsheet

From your previous interactions with companies where students collaborate on their final assignments, you have noticed that the technical competencies of students are highly valued. Soft skills are acquired gradually in the working life. Hard skills should be the core of an education.

You have heard from several students in the pilot that they found it challenging to incorporate their disciplinary background into the project they were working on due to the complexity in which it was placed.

## Role descriptions session 2 of “Progressive version”

### Policy Officer Ministry of Education, Quality Assurance Team

*Enthusiastic - Critical*

As an employee of the Ministry of Education, Culture, and Science (OCW) in the quality assurance team, you are passionate about educational innovation and are eager to give it space. The system should not hinder innovation. At the same time, it is crucial that (prospective) students can clearly understand what they can expect from this innovative education.

You believe that student-centred education is the future, and you observe that the Ministry is moving along with this trend, supporting more process-oriented objectives within programs. However, this places a greater emphasis on training the facilitators of this process to ensure the quality of the learning experience. It is crucial for the quality and transparency of education to clearly translate this process into disciplines, activities, and assessments. Transdisciplinary education is challenging to establish as a program because it does not meet the substantial content requirement.

You see this educational innovation as a wonderful opportunity to keep up world-class higher education in the Netherlands. The country has achieved this position with the current institutional organization and requirements, and you have no intention of deviating from that. This innovation must also fit well into existing structures.

The Netherlands is internationally praised for its quality education, of which you are very proud, especially because international students play a significant role in Dutch society and the economy. This national-level educational innovation could also attract international attention. You are aware of the growing workload within institutions.

Additionally, you emphasize the importance of maintaining the public character of higher education. It is essential to keep a distinction between private entities and public educational institutions. For instance, the industry should not dictate what students should learn, and educational institutions should not become consulting firms for private entities. The development of the student and society should remain central in the offered educational activities.

Interests: Quality assurance of Dutch higher education, being among the world's top, student-centered education

Irritations: Denial of the general public importance of education, considering education only relevant for the economy

Habits: Likes to keep people on good terms, expects attention from others, calm, attentive

#### Factsheet

Internationalization is of great strategic importance for the Netherlands. In higher education, the intake of international students has increased significantly from 28% in 2015 to 40% in 2021/2022. Currently, 23% of the total student population are international students.

Subsidies for educational innovations rarely lead to lasting impact on education beyond what is taught by the respective teacher.

## Professor of Educational Sciences

### *Defensive - Critical*

As a Professor of Educational Sciences at the University of Flevoland, you are a prominent expert in your field. With years of experience and numerous publications, you have established yourself nationally and internationally as an authority in the field and play an essential role in promoting understanding and critical thinking about educational innovation.

You believe that the proposed educational innovation, as is often the case with so-called innovations, is not yet sufficiently supported by evidence, and you are concerned that widely implemented transdisciplinary education may undermine the quality of long-standing and well-implemented programs. Your critical stance towards supposed educational innovations is often expressed publicly, for example, through opinion pieces in The Guardian.

You also express concerns about the emphasis on soft skills that students are expected to learn nowadays, such as transdisciplinary collaboration and self-development, at the expense of subject-specific knowledge. You fear that genuine expertise may be lost, and you are critical of the orientation of this education towards multinational corporations. You question whether the public interest and science also benefits.

You attach great importance to ensuring the quality of education. Therefore, you emphasize the need for effective methods to assess and standardize new educational forms to ensure quality. As an example of successful standardization, you have contributed to the development of an edubadge that certifies students' skills in searching for and correctly using scientific literature.

You participate in this meeting to contribute with your expertise and experience to ensure the quality of education and to critically assess the impact of this innovation.

Interests: Research discipline, academic values, training competent experts, quality preservation within Dutch higher education

Irritations: Pragmatically motivated choices, unfounded statements

Habits: Interrupts others with questions or comments when irritated, very expressive, taps on the table when thinking

#### Factsheet

The effectiveness of educational innovation in terms of learning outcomes for students is anything but obvious. Rarely is information collected about the effectiveness of innovations, and even less often is this shared more broadly. Evidence-based innovation should be the standard.

Subsidies for educational innovations rarely lead to lasting impact on education beyond what is taught by the respective teacher. Educational innovations should be set up with the intention of being shared and implemented more broadly. You see institutional collaborations as a good way to ensure this.

Edubadges are digital certificates of acquired knowledge or skills and are awarded for accredited educational programs and activities. They contribute to a more flexible education system and to "Life-Long-Learning." Research has shown that the adequate assessment of prerequisites for edubadge programs and the fear of the fragmentation of education pose a significant challenge for educational programs.

## Board Member Dutch National Student Association (ISO)

*Enthusiastic - Critical*

As a Board Member of the Dutch National Student Association (ISO) and former student of liberal arts and sciences at a University College, you play a crucial role in representing student interests and advocating for quality and inclusive education. You are highly impressed by the proposed educational concept and see it as a valuable innovation in the educational landscape.

You are very enthusiastic about student-centred education and believe that this should be the standard for all forms of education. You think it is essential that education aligns with the needs and interests of students, as they are the ones who should benefit the most. The proposed educational concept promises to prepare students well for the job market and addressing major societal issues.

You emphasize the importance of students having the freedom to choose what appeals to them the most. However, you also stress the importance of good academic guidance to support students in navigating this degree of freedom and ensuring their success, both inside and outside the program. This is something you would like to see reflected in how transdisciplinary education is organized.

You are concerned about whether the intensive guidance of students will be maintained after its success in the pilot. You see this as essential for a good learning experience. You advocate for reducing administrative burdens for teachers and attracting more well-trained educational staff. You are a supporter of accessibility to education for all students and emphasize that within the EU/EEA, discrimination between students is prohibited.

The well-being of students is high on your priority list. You are particularly concerned about the mental health of students, which has been declining for years. You acknowledge that the autonomy students gain in this educational concept poses a significant challenge, with some thriving on the sense of freedom while others may suffer. You anticipate that the pressure on students will increase due to the proposed educational concept, which can have both positive and negative consequences.

Interests: Student-centred education, student well-being, equality, and improvement of the world

Irritations: Feeling disregarded as a student, being interrupted

Habits: Inclined to exaggerate, repeats own viewpoints in discussions, slightly activist, speaks energetically

### Factsheet

According to the Ministry's research, 50% of students in the Netherlands experience mental health issues. 1 in 9 students experiences severe mental health issues. Almost 7 in 10 students experience emotional exhaustion. There is a correlation between resilience and the absence of mental health issues, so it is proposed to focus more on addressing loneliness among students in educational practices.

## Board Member VNO-NCW

### *Constructive - Critical*

As a Board Member of VNO-NCW, the largest employers' organization in the Netherlands, you represent the interests of employers. You are the founder of a rapidly growing ICT company in the eastern part of the country and frequently engage in projects with students from Comenius University, including the pilot of the educational innovation discussed here.

Based on research within VNO-NCW on collaboration between students and companies, employers expressed the importance of graduates being proficient in transdisciplinary work. These skills are crucial for projects within companies, but domain-specific knowledge is also vital and should not be neglected in the curriculum. Especially in the beta-technology sector, there are severe shortages of labour. You emphasize the importance of the educational system meeting the labour demand of the business sector. Therefore, VNO-NCW advocates for flexible and demand-driven education that is oriented towards beta-technology and imparts transdisciplinary skills to students.

You highlight the value of professional learning and recognize the importance of continuous development of skills and knowledge within the business sector, also known as lifelong learning. You have experienced this yourself, one of your project leaders attended an external course. While you see the value of this, it was challenging to free up enough time for the project leader, as it was costly and often had to be arranged last minute.

While you are very satisfied with the outcomes of student projects within the pilot, you also have concerns about the potential impact of your involvement in this project on your company, particularly regarding personnel costs, time investment, and available resources. This could be a significant challenge, especially for smaller companies within VNO-NCW. You wonder how the returns weigh against the expenses you have to make.

Interests: Advocating for the role of the business world in education, facilitating the organizational and financial development of employees, pragmatic and future-proof solutions

Irritations: Academic hubris, feeling disregarded

Habits: Down-to-earth, likes to take the lead in discussions, often leans back

#### Factsheet

In the last quarter of 2022, one-third of the total number of open vacancies was in the technology and ICT sectors (107,000 out of a total of 335,000 vacancies). Approximately one-fourth of these vacancies had been open since the fourth quarter (30,000 out of the 107,000 vacancies).

There are currently only 23 government-recognized training options in the technology and ICT sector at the bachelor's and master's levels with a maximum duration of 12 months. Thirteen of these are full-time programs.

You are familiar with the concept of professional learning certificates and see this as a suitable form for this educational concept due to its effective integration with the work environment.

## Appendix 6: Observer Description English

Your task is to carefully observe the discussion, identify the dynamics and conflicts between the different stakeholders, and find important tensions relevant for the education innovation. You can take notes during the discussion of interesting behaviour you see. The following questions might help you during your observation:

- Which stakeholder is predominant in the discussion and who is rather subordinate?
- Which conflicts and tensions come up during the discussion? How do the stakeholders react upon these issues?
- Who formed alliances? Who opposes each other?
- Which tensions, concerns or risks of the innovation become visible during the discussion? How do the stakeholders react to this?

After the first discussion round we move to the ‘pressure cooker’ – a second scene in which stakeholders discuss a similar innovation again, potentially in a different setting. To help design this, focus on these questions:

- From the earlier discussion, which points would be interesting to follow up on?
- Where do you see tensions in the future?
- Which event could be a gamechanger for the innovation or for the stakeholders involved?

During the second discussion round you focus on these questions:


- What does the outcome of the discussion mean for the development of the educational innovation?
- Which design adaptations could be made in the innovation / organisation in order to prevent some of the discussed problems?
- How do the proceedings of the first session affect the current discussion?

## Appendix 7: Moderator Cheat Sheet


See next page



# Education Innovation Cheat Sheet: Preparation

Duration (2h 15min)	Subject	Setting the scene	Warming up	Checklist To bring
20 min	Introduction & Reading	<b>Introduction</b> <ul style="list-style-type: none"><li>• Method origin (TTA)</li><li>• Outline of today</li><li>• Goals of the session</li><li>• The innovation</li><li>• Aim of stakeholder meeting</li><li>• Introduce roles and impersonate briefly</li><li>• Distribute roles</li></ul> <b>Goal of 1st Meeting:</b> Decide on embedding of a transdisciplinary module in the Health Sciences bachelor programme	<ul style="list-style-type: none"><li>• Circle of emotions, sentence + emotion</li><li>• Silent walk in character</li><li>• 1 min introduction as character</li><li>• Cheerleading, hype each other up</li><li>• Clapping, pass a clap around the circle</li></ul>	 <b>Checklist To bring</b>
20 min	Warming up			<input checked="" type="checkbox"/> Moderator Cheat Sheet <b>1x</b>
20 min	Session 1			<input checked="" type="checkbox"/> Technology Description <b>X</b> number of attendees
15 min	Reflection 1			Role Descriptions
15 min	Break and Prep pressure cooker		<input checked="" type="checkbox"/> <b>5 or 9-10</b> (Progressive version or double roles)	
10 min	Briefing & Strategizing		Observer Instructions	
20 min	Session 2 "Pressure Cooker"		<input checked="" type="checkbox"/> <b>X</b> number of non-players	
15 min	Reflection 2, Theory, & Reflection assignment		<input checked="" type="checkbox"/> Sturdy sheets of paper <b>6 or 10-11</b>	
			<b>Tips</b> <ul style="list-style-type: none"><li>• Be enthusiastic</li><li>• Provide implicit assurance by acting</li><li>• Play your own role</li><li>• Fun and laughing allowed!</li></ul>	<input checked="" type="checkbox"/> Markers for writing the character names
				<input checked="" type="checkbox"/> Watch to keep time

# Education Innovation Cheat Sheet: The Play

<div> <b>Tensions</b> In discussion</div> <p><b>Traditional education.</b> the collaborative nature of transdisciplinary education challenges conventions</p> <p><b>Open-ended learning.</b> due to the complexity of this education, set learning outcomes cannot be ensured for students</p> <p><b>Workload.</b> the quality of education increases, yet the innovation requires more time per student</p> <p><b>Initial risks.</b> Attitude of team members   Aligning activities with program goals   Clarity of expectations</p>	<b>Kick off Session 1</b> Bring up in introduction	<b>Session 2</b>	<b>Duration</b> (2h 15min)	<b>Subject</b>
	<b>The setting:</b> Comenius university	<b>Contrastive Version</b> after reflecting on Session 1 and discussing innovator strategies, give the actors the opportunity to implement this by playing the same setting again (incl. lobby moment)	20 min	Introduction & Reading
	<b>Reason for meeting:</b> End of pilot, at initiative of innovator	<b>Progressive Version - Design Pressure cooker</b>	20 min	Warming up
	<b>Goal of the meeting:</b> Decide on (the conditions of) making the innovation a mandatory component of Health Sciences	<b>Start</b> with the outcome of the first session	20 min	Session 1
	<b>Reflection - Strategies for innovators.</b> Anticipating others' interests   Gathering commitment   Coalition formation   Involve the critic   Be specific and concrete	<b>Imagine</b> a situation 5 years in the future	15 min	Reflection 1
		<b>Base the scenario on</b>	15 min	Break and Prep pressure cooker
		<ul style="list-style-type: none"><li>• Suggested embedding</li><li>• Any tensions left unaddressed</li></ul>	10 min	Briefing & Strategizing
		<b>Make it urgent</b>	20 min	Session 2 "Pressure Cooker"
			15 min	Reflection 2, Theory, & Reflection assignment

Enschede, 2023

Design by: Leon van der Neut  
Authored by: Leon van der Neut  
Verena Schulze Greiving  
Klaasjan Visscher

For more cases see <https://cta-toolbox.nl/>  
Contact person: Klaasjan Visscher, [k.visscher@utwente.nl](mailto:k.visscher@utwente.nl)

