

Learning and Teaching in Higher Education (5 ECTS)

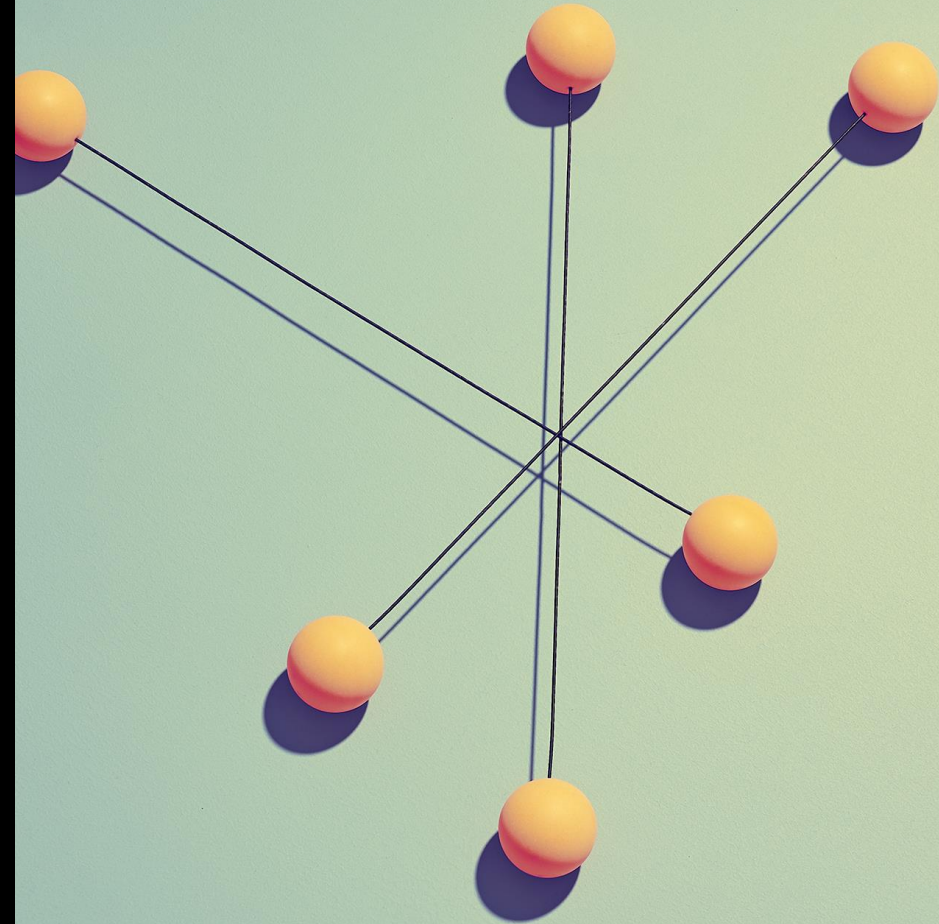
Session 4 – Becoming an expert

Anna Vilhunen & Linda Mäkinen

17.4.2024



Aalto-yliopisto
Aalto-universitetet
Aalto University



Schedule today 12.15–16.00



12.15–12.20 Orientation

Visitor: Maria Svanström from Aalto co-educator team

12.20–12.55 Future expertise and the role of higher education PART I

- Including pair discussion

BREAK (15 mins)

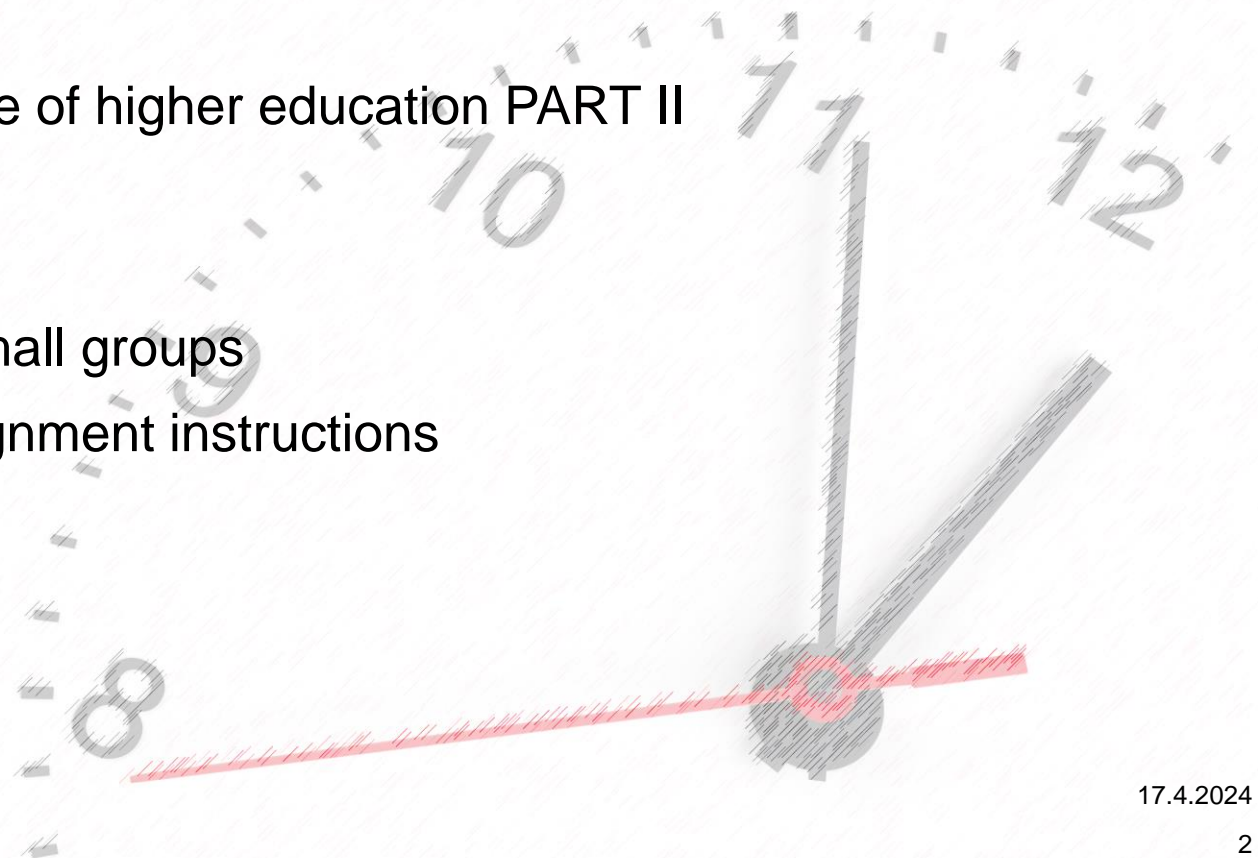
13.10–14.30 Future expertise and the role of higher education PART II

- Including Group work

BREAK (15 mins)

14.45–15.45 GROW Peer feedback in small groups

15.45–16 For the next time: Course assignment instructions



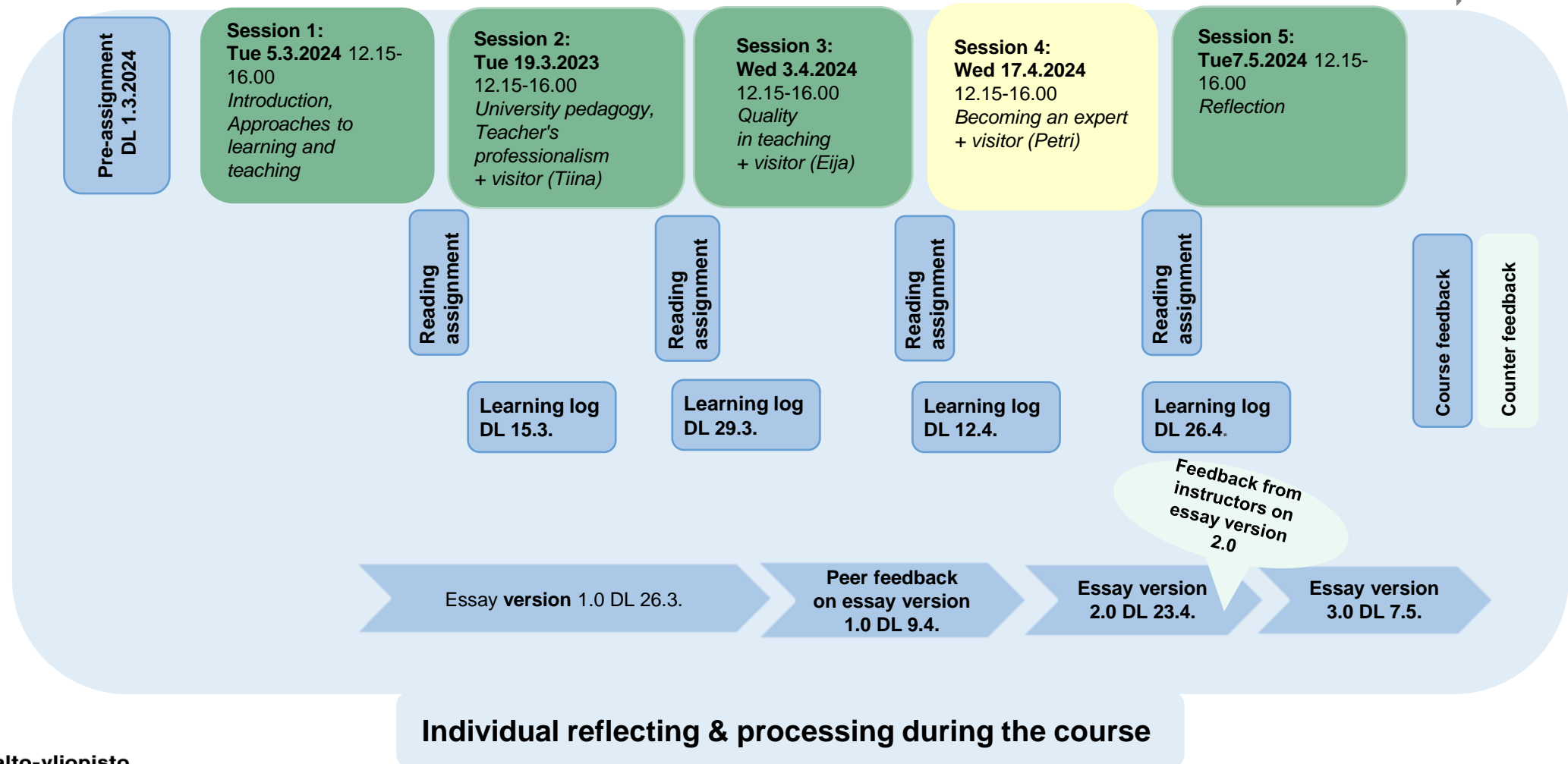
Learning outcomes for this course

After the course, you:

- will be able to identify, define and evaluate factors that affect your teaching,
- will be able to recognize different learning theories and have become aware of how they influence teaching,
- have formed own approach to teaching / teaching philosophy and you have knowledge on how to develop your teachership and teaching,
- you recognize factors which affect to the quality of teaching,
- know how to consider students as experts of the future, have reflected on your own expertise and your development as a teacher,
- be able to understand your own teaching in a wider context and envisage the expertise provided, by your own field of teaching and the future prospects of the field.

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Course timeline 5.3.-7.5.2024





Future expertise and the role of higher education

Maria Svanström, PhD, Aalto Co-Educator Team
maria.svanstrom@aalto.fi

Aalto Co-Educator Team (ACE)

The Aalto Co-Educator team supports and collaborates with teachers, programme directors and faculty members. The team's goal is to integrate solutions for sustainability through a lens of radical creativity, and entrepreneurial mindset into existing courses and programmes. Our eight enthusiastic experts in the three cross-cutting themes, pedagogy, training, and teamwork are here to support you!

[Aalto Co-Educator Team \(ACE\) | Aalto University](#)

Anticipatory competence as a sustainability skill



1. The world is in the middle of rapid changes

– what kind of skills will future experts need?

2. How can we as educators develop our anticipatory competence?

The five key sustainability competencies (among others Wiek & al.):

1. Systems thinking
2. Anticipatory competence
3. Normative competence
4. Strategic competence
5. Interpersonal competence

Aalto's strategy for a sustainable future

*Aalto University's purpose is to shape a sustainable future. We do high-quality research, excelling and making breakthroughs in and across science, art, technology and business. **We spark the game changers of tomorrow**, and renew society with research-based knowledge, creativity and an entrepreneurial mindset. All our work is guided by the values of the university: responsibility, courage, and collaboration.*

[strategy | Aalto University](#)





Shaping a Sustainable Future.

“We are in the middle of a sustainability crisis, technological disruption, and a transformation of work life.”

“We take greater societal responsibility in degree education and continuous learning, in and across our key areas”

“Integrating sustainability and multidisciplinary studies into programmes”

Sustainable Development is...

“

..development that meets the needs of the present while safeguarding Earth's life-support system, on which the welfare of current and future generations depends.” (Griggs et al 2013, <https://www.nature.com/articles/495305a>)

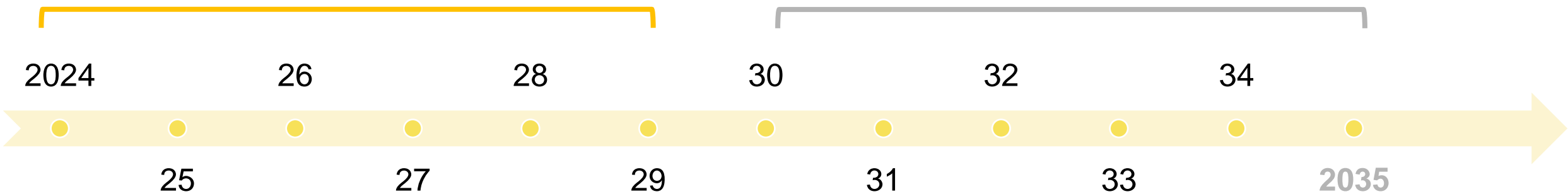
Different dimensions of sustainability:

Ecological, economic, social, and cultural



Why we need to incorporate solutions of sustainability in programmes and courses?

The students who start 2024–29 will **take part in building the carbon neutral Finland 2035** – those starting after, will graduate into a carbon neutral Finland.



Future consciousness as defined in future studies

“It has become obvious that the tools and solutions of the past will be inadequate in the face of the growing complexity of the 21st century.”
(Pouru-Mikkola & Wilenius 2021)

Futures consciousness consists of five dimensions: time perspective, agency beliefs, openness to alternatives, systems perception and concern for others (Pouru-Mikkola & Wilenius 2021). To this Johanna Ollila, Research Manager at Finland Futures Research Centre, adds creative thinking, self reflection, values thinking, critical thinking and knowledge of the future visions in the field one works in.

"Our capability to think about the future manifests in our actions: our images and assumptions about the future influence our actions in the present, while our actions in the present contribute greatly to how the future begins to take shape." Pouru-Mikkola & Wilenius 2021

"Time has always provided the frame through which we are able to articulate both continuity and discontinuity, yet the linear-progressive temporal paradigm that we moderns take for granted is one that runs the risk both of forgetfulness (it does not allow for the return into the past that would ground us in history and provide us with continuity) and, at the same time, of repetition (it simultaneously and paradoxically traps us in the past, foreclosing the possibility of a radical break or the production of new horizons)."
Fanny Söderbäck 2012

Pair discussion:

How do you see the purposes of university education?



What are the main reasons for justifying the existence of university education in our world today?



In which ways is university education relevant in today's world where we face complex and global crises?



BREAK

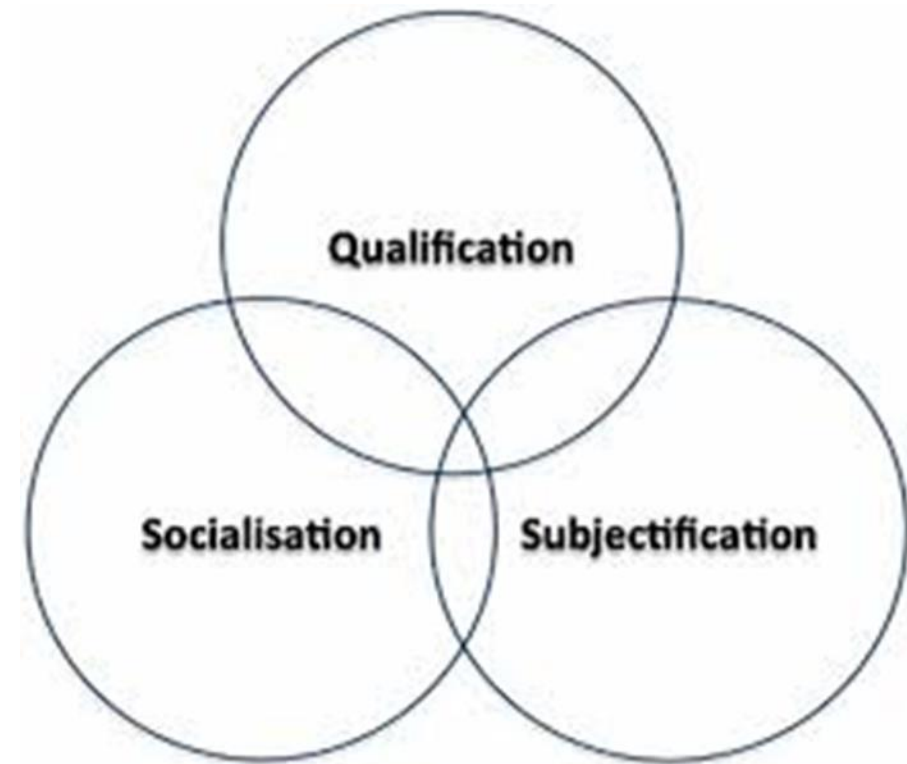
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Gert Biesta's three domains of education

Qualification: Transmission and acquisition of knowledge.

Socialisation: Initiation in traditions and ways of being and doing, such as cultural, professional, political and religious traditions.

Subjectivation: Coming to exist as subjects of initiative and responsibility.



Skills identified as central for employability in employability research

“The world of employment changes so rapidly that university teachers must prepare today’s university students **for jobs that do exist, those that might change in the future, and jobs that do not yet exist.**”

As a consequence, universities highlight timeless attributes such as professional and personal digital safety; learning and working collaboratively, including across time zones and using digital channels; resilience and mental wellbeing; the ability to judge the veracity of information (critical thinking); and global citizenship that includes understanding history, politics and international relations.”

Beverley Oliver in (Hunt & Chalmers, 2021) *University Teaching in Focus: A learning-centred approach*

Important working life skills listed by Aalto University graduates

*“Master’s graduates of Aalto University emphasized the ability to communicate own skills, previous work experience and the subject combination of the degree as the most important factors in finding employment. The respondents identified **the ability to learn and adopt new things, problem-solving skills, analytical and systematic thinking skills and self-direction** as the most important skills needed at work that developed during university studies.”*

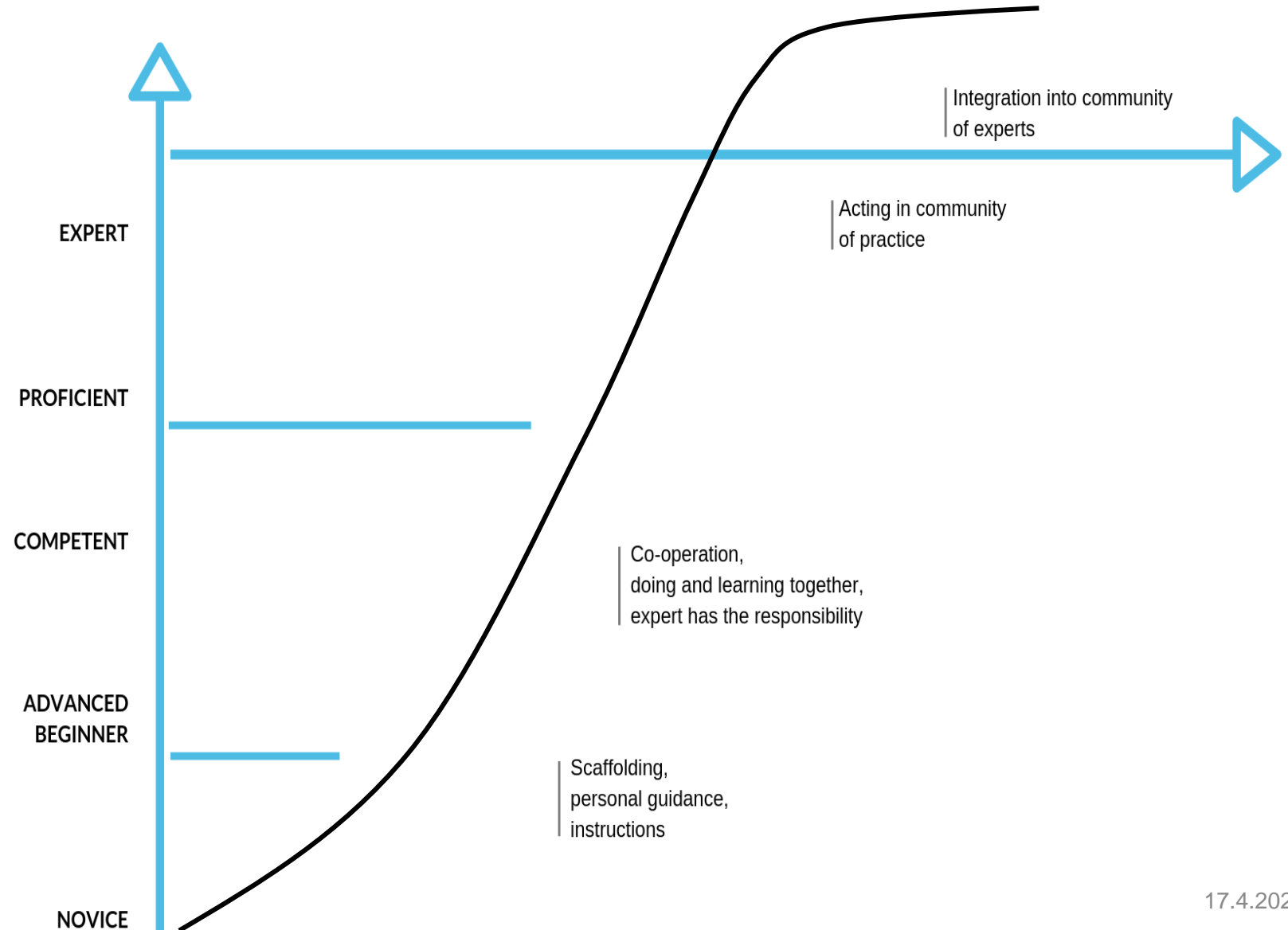
Aalto News on 13.9.2023: [Aalto University graduates valued in the job market | Aalto University](#)



To Become an Expert is a Process

Deliberate practice

- Long term practicing
- Focusing on improving performance in aspects that need it the most
- Using the latest scientific knowledge of the field
- Mentoring & social support and feedback are essential parts of the process



What to teach to our future experts?

- Who defines the desirable expertise?
- Working life-oriented approach or renewing working life?
- Life-wide learning
 - Diversified student body
- Planning, implementation and resources of teaching
- Global challenges and crises
- Development of technology
 - AI, social media

European higher
education
community

Government

Ministries

Working life

Organizations

University

Students

Wishes, expectations and regulations

Universities Act

*“The mission of the universities is to promote independent academic research as well as academic and artistic education, to provide research-based higher education and **to educate students to serve their country and humanity at large**. In carrying out their mission, the **universities shall promote lifelong learning, interact with the surrounding society and promote the social impact** of university research findings and artistic activities.”*

(Universities Act 2009/558, 2§ / section 2.)

What is expertise?

- **Relative approach: expertise is a result of learning, not an innate skill (psychological perspective)**
- **Special knowledge, acknowledgement of others (sociological perspective)**
- **Universities form around the expertise:**
 - Experts and novices meet
 - New experts are educated
- **Expertise and the title**
 - Teacher = expert, student = novice → Is that really so?
 - Career stages (e.g., tt-track)
 - The phases between?
- **Expertise is often tried to be measured**
 - University rankings, exams, theses, amount and quality of research, course feedback, graduation numbers...

Different types of expertise throughout life

Modern academic expertise:

Based on long and wide-ranging education. Their expertise is accrued slowly, within a framework of education, research and feedback obtained through research.

Vantage point-based expertise:

Journalists, the media, third and fourth sector actors, trade unions, entrepreneurs and actors in non-governmental organisations.

Experience-based expertise:

Experience-based expertise generally refers to expertise that has developed through the long-term experience amassed by a person or sometimes also an organisation.

Vision-based expertise:

Vision-based expertise is formed from working and operating in more strictly delimited non-governmental and environmental organisations. Vision-based experts may also be artists and content-providers in different sectors, such as documentary makers, theatre directors, scriptwriters and authors.

Mikko Jakonen 2017

Life-wide learning

“Almost half of employees' key competencies will change in just five years.”

Petri Suomala & Tom Lindholm (2024)

<https://www.aaltoee.fi/en/aalto-leaders-insight/2024/all-of-us-must-invest-in-lifewide-learning-to-stay-competitive>

How to integrate sustainability skills in courses and programs

The five key sustainability competencies

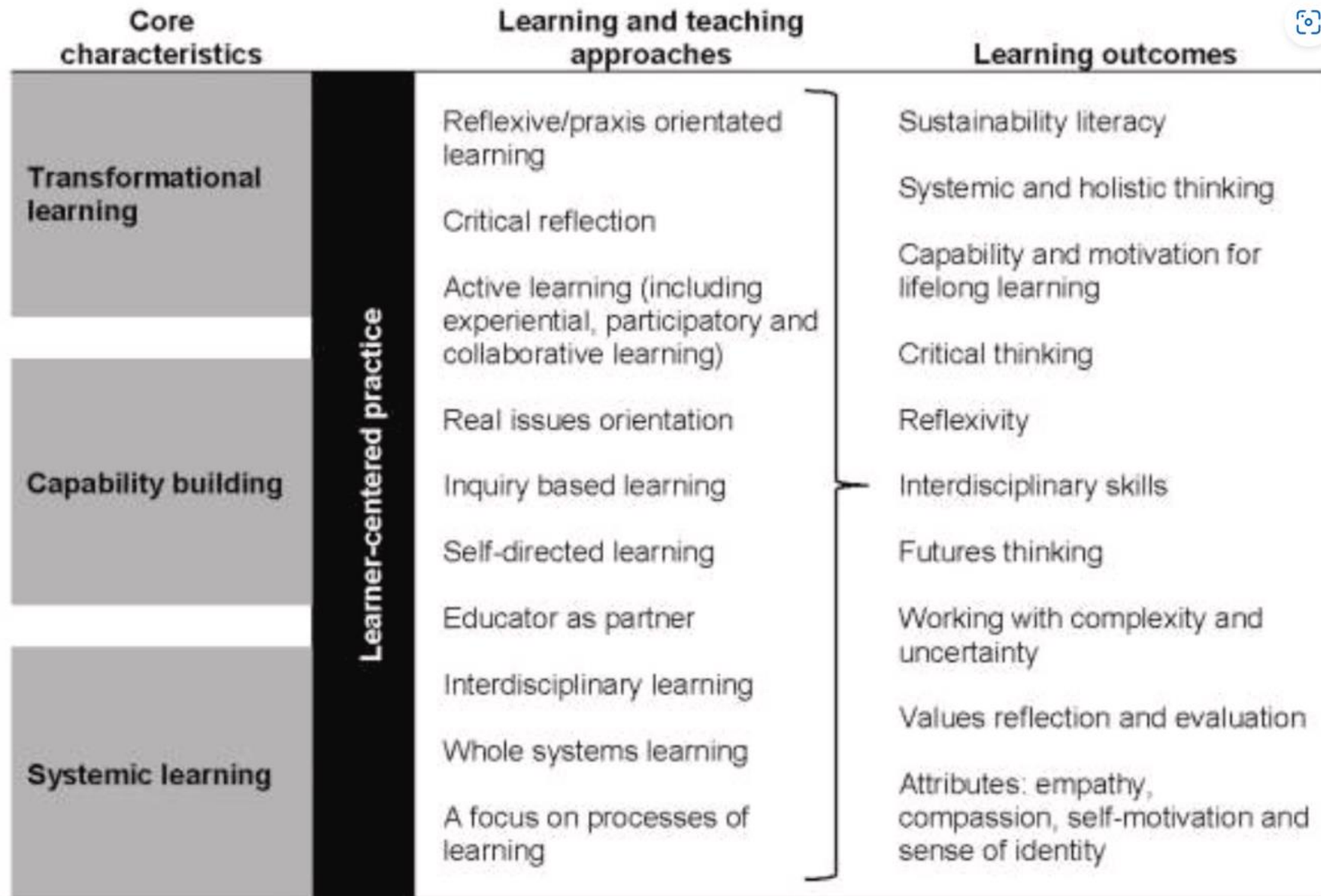
(among others Wiek & al.):

1. Systems thinking
2. Anticipatory competence
3. Normative competence
4. Strategic competence
5. Interpersonal competence



<https://link.springer.com/article/10.1007/s11625-011-0132-6>

Good practice teaching and learning in SE



Kirsi Yliniemi, Senior Lecturer, Chemistry and Materials: Contradictory research data inspires students to think critically

“We have to decide whether we want to make a full course on sustainability, or if we want to add just teasers here and there. What I have found very valuable when incorporating sustainability topics into teaching is that one can do the changes incrementally”

“I have discovered that areas where the research data is contradictory and uncertain are nice corners to start when the aim is to teach sustainability skills. How do we make a decision when we have contradictory data or lots of ambiguity, such as in the case of nanotoxicity and nanosafety?”

Jukka Suomela, Professor in Computer Science: We teach sustainability in terms of professional responsibility

It is not easy to find natural places for integrating sustainability into Computer Science Bachelor's programs. Despite this, the Department of Computer Science at Aalto University has managed to take many steps into the right direction in this regard, among others by teaching sustainability under the umbrella of professional responsibility.

“It is natural to integrate themes of professional responsibility into courses. At least the way I understand the term, it also includes sustainability. It also includes many other things, such as general skills in being an expert, how to behave as an expert, and very importantly, it also includes ethics”, says Jukka Suomela, Associate Professor in Computer Science at Aalto University.

Jaan Praks, Professor in Electronics and Nanoengineering: Sustainability requires communication skills and ability to think in large scales

Education is the tool which is sustaining the civilization by shaping it into a form which fits into planetary boundaries, says Jaan Praks, Professor in Electronics and Nanoengineering at Aalto University. As central sustainability skills he highlights systems thinking and skills in communication.

The universities shall according to Praks give the basic essential building blocks for thinking in the scale of the planet. Furthermore, we need according to him skills to perceive different time scales.

“Luckily, in for example the last 50 years, we have been having satellites and can, thus, visualize what has exactly been happening on the surface of the planet and inside the system that we try to sustain. We have for example knowledge of how glaciers and ice flows are working.”

Group work: Future expertise in your field

It is year 2040 and you desire to have the best experts in your research group / organization / business.

What does the operation environment look like? You can start by making a simple thinking exercise where you sketch one of two changes that might take place and affect the future trends in your field.

What kind of expertise **would you value in such a situation? Why? (knowing – acting – being)**

Group work: future expertise in your field

Snowball method

1. Independent reflection 5 min? Write your thoughts on a paper
2. Discuss with a pair in 10 min
3. Discuss in a group with 4 persons 15 min
4. Share the good ideas with the whole group 5 min → key take-aways



BREAK

Photo from stock images

Oral feedback on the essays



Feedback

Constructive	Unconstructive/ destructive
Is about an issue/action	Is about a person
Justifies the views	Contains judgements (good/bad)
Is useful for development	Does not necessarily benefit anyone
Takes into account the recipient's state of development, situation, ability to receive feedback etc.	Does not take the recipient into account, is given only from the evaluator's perspective
States observations	Makes subjective conclusions / interpretations
Two-way process, the recipient has an opportunity of responding	One-way process

Groups

A: Anna A., Hossein, Filip & Anna E.

B: Samuel, Paula, Antony & Lauri J.

C: Talvikki, Aino, Tomi & Evi

D: Gopika, Solip, Mohamed & Mashrura

E: Timo, Matti, Aleksii & Hanna

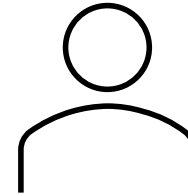
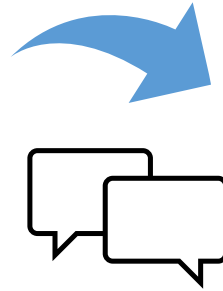
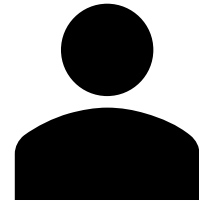
F: Jara, Lauri & Laura

Roles and tasks in the feedback discussion (12 min per round)



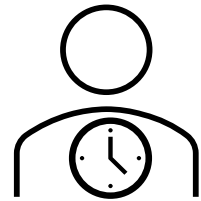
Instructor

- Starts by interviewing the student of the writing process.
- Gives constructive feedback and tries to build a dialogue with the student.



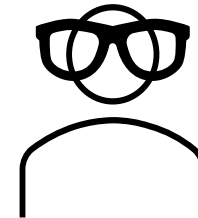
Student

- Listens, reflects and answers the questions



Timekeeper

- Takes care of the schedule.
- Tells when there is one minute left for giving feedback.



Observer (~2 min)

- Observes the quality of the feedback discussion and summarizes the discussion:
 - What was the dialogue like between the student and the instructor?
 - How did the questions promote the discussion?
 - Was the feedback constructive?
 - How did the coach act in the situation?



GROW model

– a framework to give feedback on / guide the process

(Whitmore, John: Coaching for Performance)

Modified GROW model (12 min per round)



Set goal (~2 min)

- How would you define your goals for writing the essay?

Reality (~2 min)

- What have you done? What has helped you to write the essay?
- How close are you in completing your essay on a scale of 1-10 (if 10 means best possible situation and 0 opposite to it)?

Opportunities and options (~2 min)

- What do you have to do to complete your essay and achieve your goals?
- Is there something that prevents you to carry out your plans?

Wrap-up: What – when – by whom + will to do it (~4 min)

- What are the next small steps that will be carried out next in order to move on in your writing processs?
- How can you solve the possible obstacles?



Group members: X, Y, Z, F

- Round 1: instructor **X**, student **Y**, observer **Z** and timekeeper **F**
- Round 2: instructor **F**, student **X**, observer **Y** and timekeeper **Z**
- Round 3: instructor **Z**, student **F**, observer **X** and timekeeper **Y**
- Round 4: instructor **Y**, student **Z**, observer **F** and timekeeper **X**

Each round:

- The instructor gives constructive feedback and discusses with the student (10 mins).
- The observer observes the quality of feedback discussion and gives feedback of the instruction at the end (2 mins).
- The timekeeper takes care of the schedule.

After the rounds, if there is time:

- Make yourself notes of the feedback discussion so you can continue writing the essay based on the feedback.



Group members: X, Y, Z

- Round 1: instructor **Z**, student **X**, observer & timekeeper **Y**
- Round 2: instructor **Y**, student **Z**, observer & timekeeper **X**
- Round 3: instructor **X**, student **Y**, observer & timekeeper **Z**

Each round:

- The instructor gives constructive feedback and discusses with the student (10 mins).
- The observer & timekeeper takes care of the schedule and observes the quality of feedback discussion and gives feedback of the instruction at the end (2 mins).

After the rounds, if there is time:

- Make yourself notes of the feedback discussion so you can continue writing the essay based on the feedback.

Thoughts on the method (GROW model)?

E.g.,

- Could you use this method in your own teaching or supervision?
- Is there something you need to consider when using this method with the students?
- How did it feel to give feedback orally?
- Was it easy/difficult to give constructive feedback?
- How did it feel to receive feedback?

Assignments

Assignments for the last session 7.5.2024, instructions on MyCourses



1. Write your essay, version 2.0, DL 23.4.2024.

→ You will receive written feedback from the instructors on the version 2.0 by April 29!

N.B. Essay version 3.0 DL is 7.5.2024!



Learning log 4, DL 26.4.2024



Reading assignment: Hunt & Chalmers (2021) *University Teaching in Focus. A learning-centred approach.*

Chapter 15: Building your career through teaching, p. 328-342



Essay version 2.0: My approach to learning and teaching

Next week!

The aim of this essay is to begin to formulate your approach to learning and teaching. When you combine theoretical knowledge with your prior experiences, reflect on your values and thoughts, you begin to develop your own approach to learning and teaching. You can use your pre-assignment, learning logs and discussions of learning concept (mind-maps) as a starting point for your essay.

- The essay is written in a reflective, personal and appropriate style. Use references and cite them properly.
- The length of final essay version is around 4–6 pages.
- Deadline for version 2.0 is on the **23 April 2024**.
- Utilize the peer feedback on the essay version 1.0 when finalizing version 2.0.
- Return the essay in MyCourses version 2.0 submission box.



Learning log 3, DL 26.4.2024

Next week!

The aim of the learning logs is to focus and follow your learning and become aware of your thought processes. Learning log is a reflective writing concerning **the topics presented in the previous contact session**. It is a unique record of your thinking and learning during the course.

Questions for the 4th and final [learning log](#):

- How would you define expertise? Keep in mind these three domains: knowing, acting and being.
- What kind of activity the changing world requires in terms of updating your own expertise? (E.g., as a researcher and/or teacher of your own field of science, student, specialist...)
- What factors need to be considered when supporting students' growth towards future experts?



Reading assignment

Chapter 15: Building your career through teaching, p. 328-342

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Hunne, Lynt & Chalmers, Denise (edit.) 2021. *University Teaching in Focus. A learning-centred approach*. 2. edition. London: Routledge. Available from Aalto Primo as an online edition (log in to get the access to the book):

https://primo.aalto.fi/permalink/358AALTO_INST/ha1cg5/alma999510057406526

Mid-course feedback from session 3

Most useful for your development thus far:

- Topics: learning theories and pedagogical approaches
- Literature and journal recommendations
- Methods: discussions, assignments & reflection (related to the material)
- General arrangements: the place, time, and colleagues that make the environment for the sessions

What could be developed?

- More time for discussions (e.g., based on the reading assignments) – on the other hand some people prefer more teacher-led teaching
- Shorter in-person sessions
- More weight on learning theories (and link to practice?)
- More information per topic/theme and even maybe less topics?
- More information about some specific teaching methods

Your most useful learnings thus far:

- Personal development as a teacher: pedagogical approach, different methods
- Perceptions of students have developed
- Understanding of overall structure of Aalto has enhanced
- More engaged in thinking about effective learning, ideas for reflection
- Exposure to different teaching and learning methods - inspiration
- The discussion on different stakeholders in Aalto in organizing teaching was useful in understanding the big picture
- Given me some time to think about my teaching and how to improve it
- It has given me a better understanding of different aspects to consider for teaching

Learning logs

What is high-quality teaching?

- “Depends on who you’re asking.”
- Quality frameworks
- Consists of components such as...
 - high quality content
 - high quality delivery

Your ideas on how to promote high quality as a teacher:

Knowing	Acting	Being
Subject knowledge Other knowledge, e.g., on <ul style="list-style-type: none"> • Motivation • Workload calculation • Teaching & learning methods • Communication 	Active approach (before, during, after) Capability to apply and adjust methods Clear and transparent approach Ability to engage students Capability to create safe and inclusive environment	Motivated to teach (inner motivation) Well-being Inclusive Flexible

Thank you!

