

Curriculum development practices in WAT Master's Programme

Sharing some experiences from
the programme persuader's point of view



Program leadership – working areas

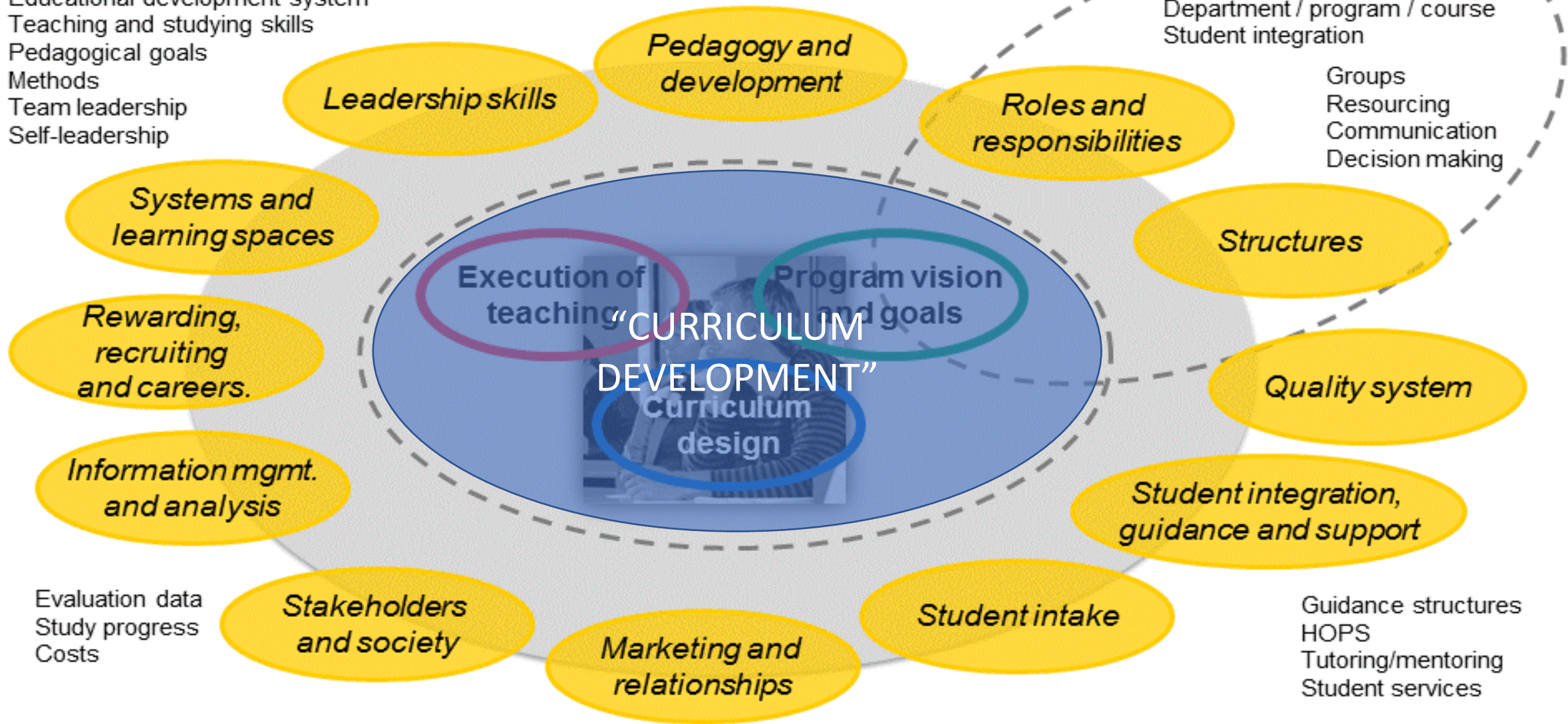
This conceptualisation from Aalto peda course formed my own basis

Learning centered approach
 Educational development system
 Teaching and studying skills
 Pedagogical goals
 Methods
 Team leadership
 Self-leadership

Learning-centered culture
 Strategic development themes

University / school /
 Department / program / course
 Student integration

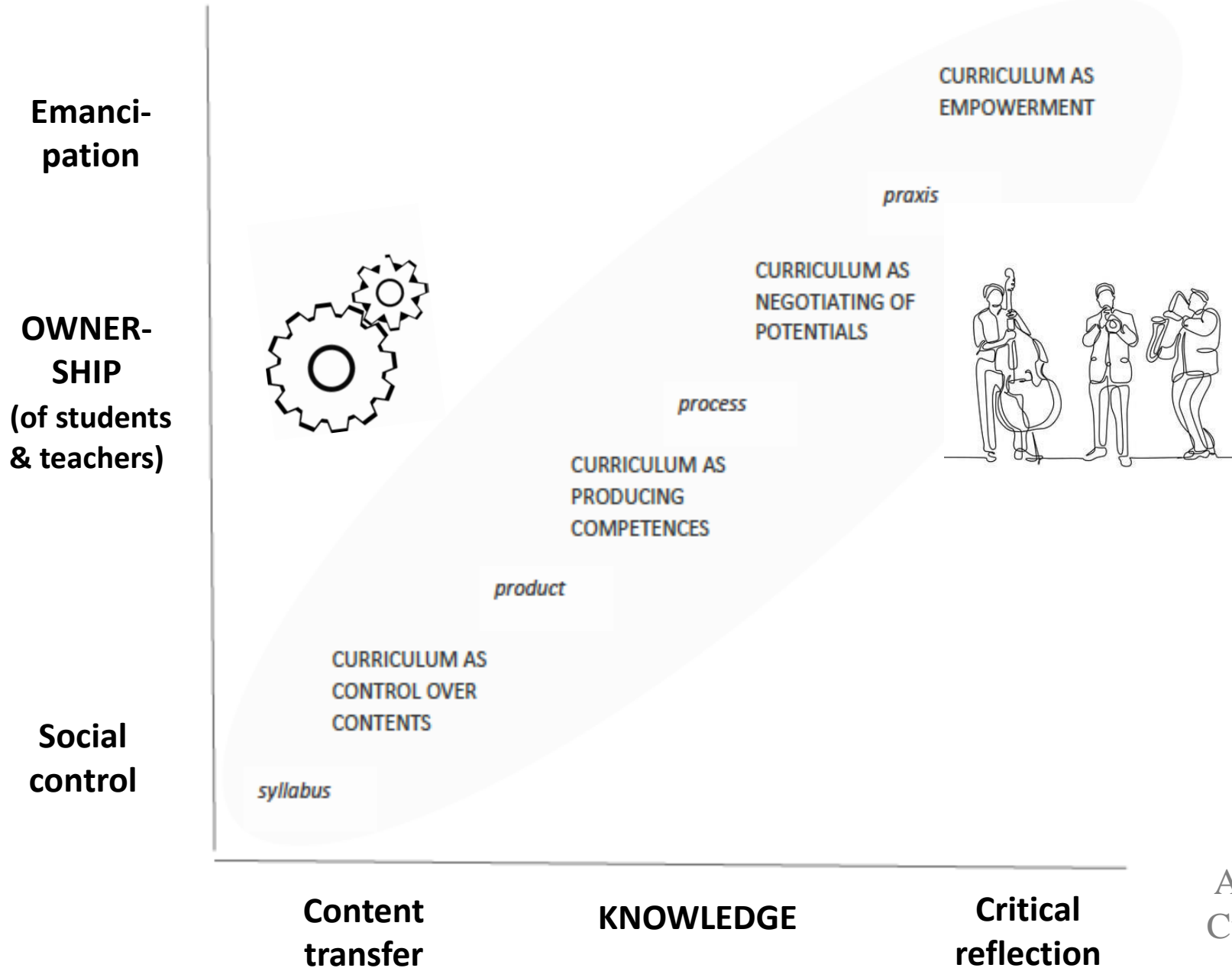
Groups
 Resourcing
 Communication
 Decision making



Evaluation data
 Study progress
 Costs

Guidance structures
 HOPS
 Tutoring/mentoring
 Student services

CURRICULUM AND ITS DEVELOPMENT



Curriculum: different views

1. Syllabus
2. Product
3. Process
4. Praxis

→ Curriculum development thus very much about programme leadership (as I understand it), and vice versa

THREE LESSONS LEARNT FROM WAT

- **Plan well** – and preferably early

- Requires more time at the beginning, but makes your life easier in the long run

EXTRA:

Share & steal 😊

→ **Utilise others' experiences**

- **Structures & routines to ensure development**

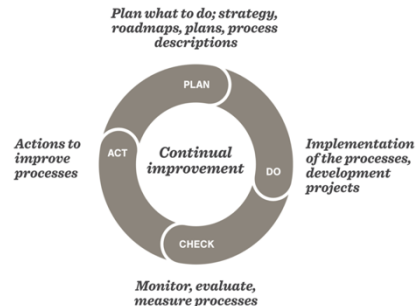
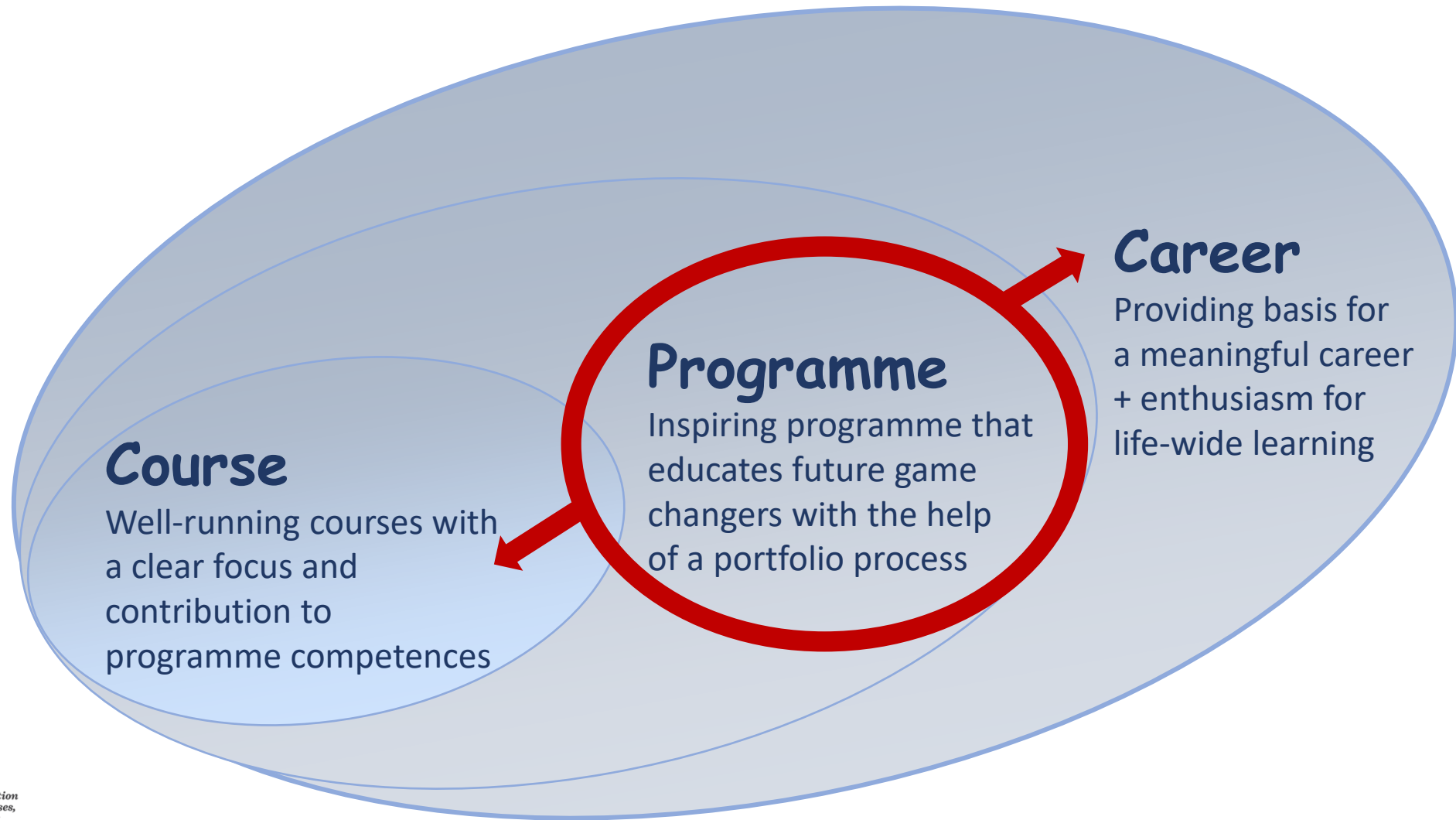
- Establish clear structures & communicate them to teachers and students: link to the workload, too

- Cyclical assessment & development: data matters!

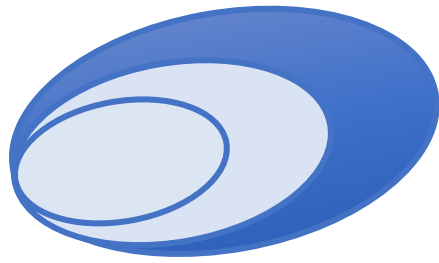
- **Engage all, but think how**

- Teachers are busy so lot of curriculum development easily done separately (by both teachers and programme leaders): targeted engagement to build common understanding

PROGRAMME DEVELOPMENT: CONTEXT



**Three levels linked through PDCA cycle
+ portfolio & mentoring process**



The career level

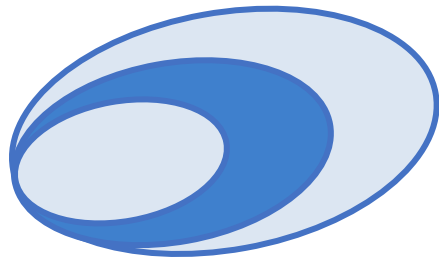
Objective i.e. 'sign of quality':

Providing a basis for a meaningful work and enthusiasm for life-wide learning

Timespan: 5+ years

Assessment: Alumni feedback
and stakeholder feedback

→ In focus: employment and career,
competence and professional identity



The programme level

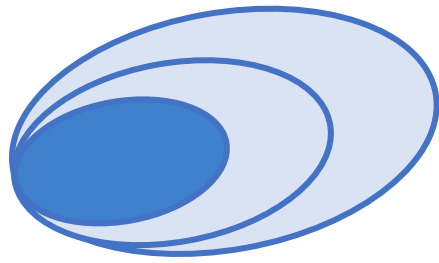
Objective i.e. 'sign of quality':

Comprehensive and inspiring programme that provides students with a strong professional profile

Timespan: 2 years

Assessment: Student portfolios,
graduate feedback, teachers feedback,
Aalto evaluations

→ In focus: programme and its learning
objectives & competences



The course level

Objective i.e. 'sign of quality':

Well-running course that both challenges and inspires + forms a coherent part of the programme

Timespan: Study period

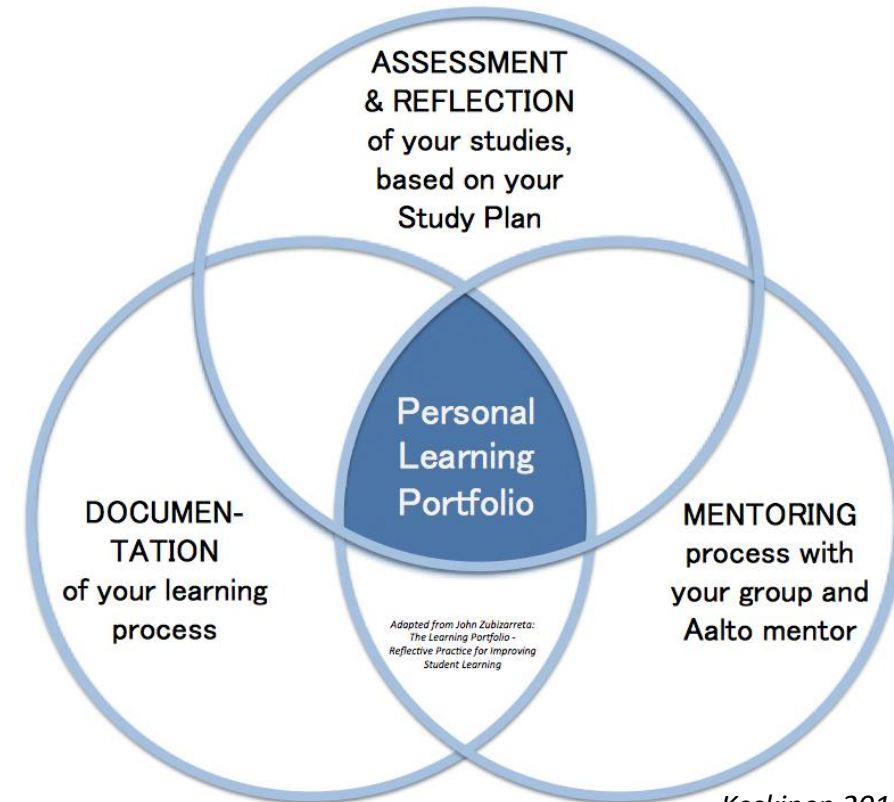
Assessment: Course feedback, student portfolio, teachers feedback

→ In focus: course functionality + it's role for the programme and the students

Programme-level assessment & development

- Course-specific feedback surveys & their synthesis
- Personal Learning Portfolios
- Mentoring process (twice a year + group meetings)
- WAT Survey at the end of first year
- WAT Synthesis Session with students and teachers
- WAT Teachers' Workshop

...and then repeat!



WAT Synthesis session

14:00- Welcome & introduction

**14:05- Synthesis & reflection:
Assessing your own learning**

BREAK

15:00- Feedback and professional identity in WAT

- Synthesis on your survey answers + reflections (20 min)
- Your professional identity & WAT: Group discussion with mentors (45 min)
- Open discussion (15 min)

BREAK

16:30- Next steps: 2nd year, incl. exchange + Thesis

Some aims:

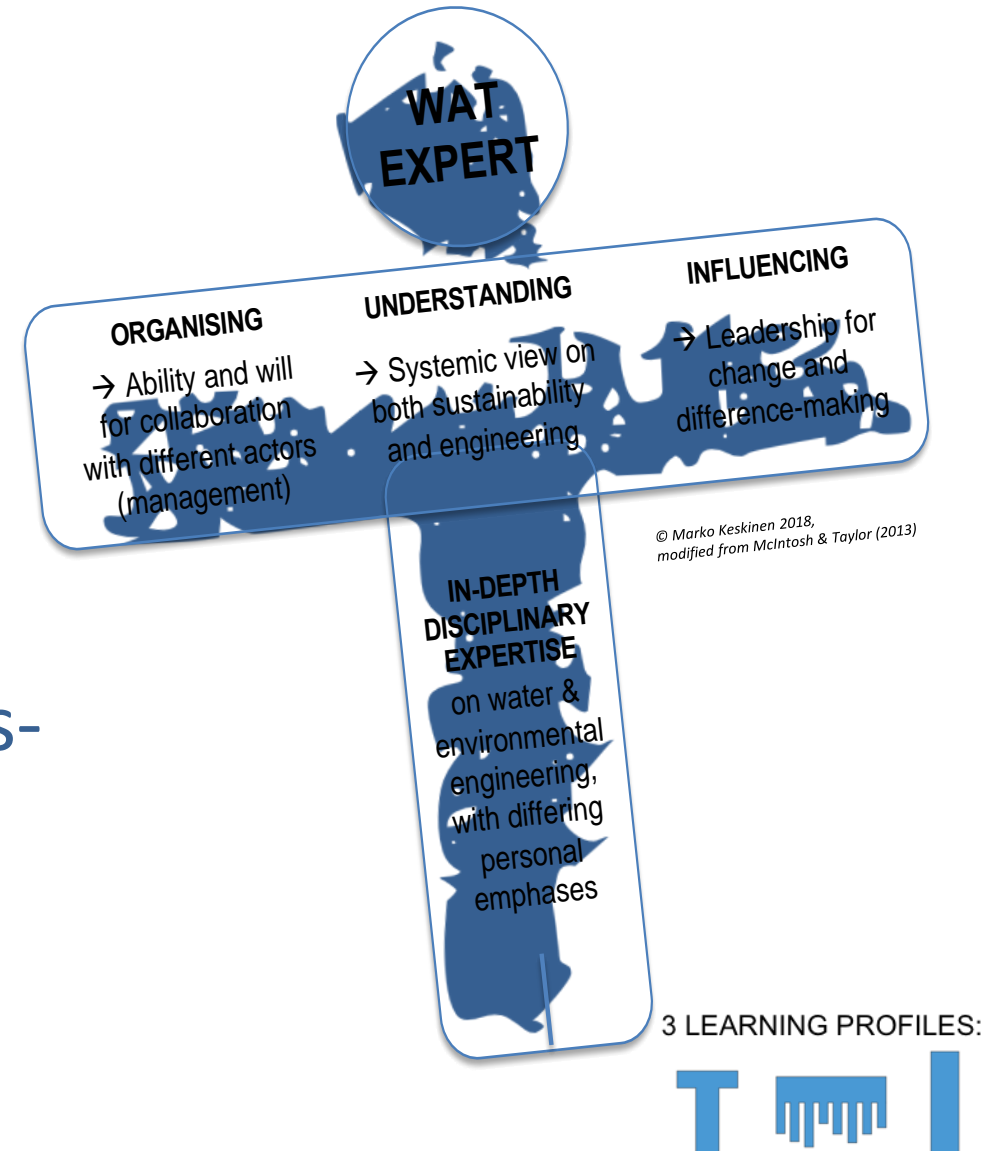
For students to come together (for the last time) to think and discuss their learning during the first year i.e. major studies
→ Also discussion on professional identity

To provide possibility for mentors/teachers to discuss with students and see a bigger picture beyond their own courses
→ Links them more closely to programme development, too 😊

T-SHAPED LEARNING PROFILES IN WAT

To succeed in (working) life, our graduates require both hands and legs

- **LEGS:** in-depth field-specific expertise
- **HANDS:** willingness and capability to collaborate with other fields in a cross-cutting manner to ensure a sustainable and functioning society



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- Cyclical assessment & development: data matters!

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**THANK
YOU!**

PUBLICATIONS RELATED TO OUR
WAT MASTER'S PROGRAMME:

[https://mycourses.aalto.fi/course/
view.php?id=30301](https://mycourses.aalto.fi/course/view.php?id=30301)



Marko Keskinen, WAT Programme Director

(@aalto.fi) → Please get in touch if you have further questions!

ADDITIONAL SLIDES

The context:

**COURSES –
PROGRAMME –
CAREER**

The way:

**ENGAGE
EVERYONE, BUT
WITH A PURPOSE**

The process:

**CLEAR STRUCTURE
WITH CYCLICAL
ASSESSMENT = DATA-
DRIVEN DEVELOPMENT**

Publications on WAT

WAT Alumni survey related publications:

<https://aaltodoc.aalto.fi/handle/123456789/31604>

<https://www.mdpi.com/2071-1050/10/8/2605>

<http://bit.ly/KarvinenVehmasKeskinen>

WAT Stakeholder survey report in Finnish here:

<http://urn.fi/URN:ISBN:978-952-60-3785-1>

<https://bit.ly/WAT-vesitalous>

Muuttuvien työelämätaitojen sisällyttäminen tekniikan alan koulutukseen: tapaustutkimus Aalto-yliopiston vesi- ja ympäristötekniikan maisteriohjelmasta

11.3.2019


tagit: työelämätaidot, urakehitys, vesi- ja ympäristötekniikka, yliopisto



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Article
Building a More Sustainable Society? A Case Study on the Role of Sustainable Development in the Education and Early Career of Water and Environmental Engineers

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Water & environment

KEY COMPONENTS & MANAGEMENT SYSTEMS
IN WATER & ENVIRONMENTAL ENGINEERING

WATER & ENVIRON-
MENTAL SERVICES

HYDROLOGY &
HYDRAULICS

WATER & ENVIRONMENTAL QUALITY

SOCIETAL CONTEXT &
DIFFERENT DRIVERS AND SCALES

DESIRE FOR
PROBLEM-SOLVING

COMPREHENSIVE &
CRITICAL THINKING

MULTIDISCIPLINARY
& -SECTORAL VIEW

INTERACTION &
TEAM WORK

SUSTAINABLE &
FUNCTIONING SOCIETY

Engineering skills

COMPUTATIONAL METHODS
(e.g. modelling, statistics, GIS)

EXPERIMENTAL
METHODS &
DATA ANALYSIS

UNCERTAINTY &
MAGNITUDES

PROJECT SKILLS: PLANNING,
IMPLEMENTATION AND MANAGEMENT

WAT COMPE- TENCIES

SKILLS

KNOW-
LEDGE

IDEN-
TITY

Our graduate is able to:

- 1) Recognise the key **components and management systems in water and environmental engineering**, and understand the relevance of **sustainability** for the field
- 2) Understand the principles of the **hydrological cycle** and movements of water in natural and built environments
- 3) Define and differentiate the main sections of **water and environmental services**, with focus on the treatment of water and waste water
- 4) Understand the key principles of **water and environmental quality**
- 5) Identify the **societal context** relevant to the water and environment, and comprehend the different **scales** (spatial and temporal) and key **drivers** applicable to water and environmental engineering

Our graduate is able to:

- 1) Apply **key computational methods** related to water and environmental engineering
- 2) Understand relevant **experimental methods and data analysis** processes, including the use of data archives
- 3) Comprehend **uncertainty and different orders of magnitude** related to the measurements, data analysis and modeling
- 4) Recognise and analyse the main components of water- and environment-related **planning, implementation and management processes**, and use related **basic project skills**

ILOs: identity

(i.e. general
working-life skills)

Our graduate:

- 1) Is motivated and has a desire for **problem-solving**
- 2) Thinks in a **comprehensive and critical manner** about his/her work and field
- 3) Maintains a **multidisciplinary and -sectoral view** related to water and environmental engineering
- 4) Is able to work as a part of a team and has relevant skills for **interaction and communication**
- 5) Promotes a **sustainable and functioning society**

WAT Synthesis Session: Assessing what you have learned

- 1) *Read carefully the Learning Outcomes for Knowledge, Skills and Identity skills*
- 2) *Select (for each) 1-2 Learning Outcomes that you have learned **MOST OF***
- 3) *Select (for each) 1-2 Learning Outcomes that you have **NOT learned so well***
- 4) *Write short comments for each ILO*

*WRITE SO THAT WE UNDERSTAND, PIIIZ 😊
(we will collect your answers)*

8 min