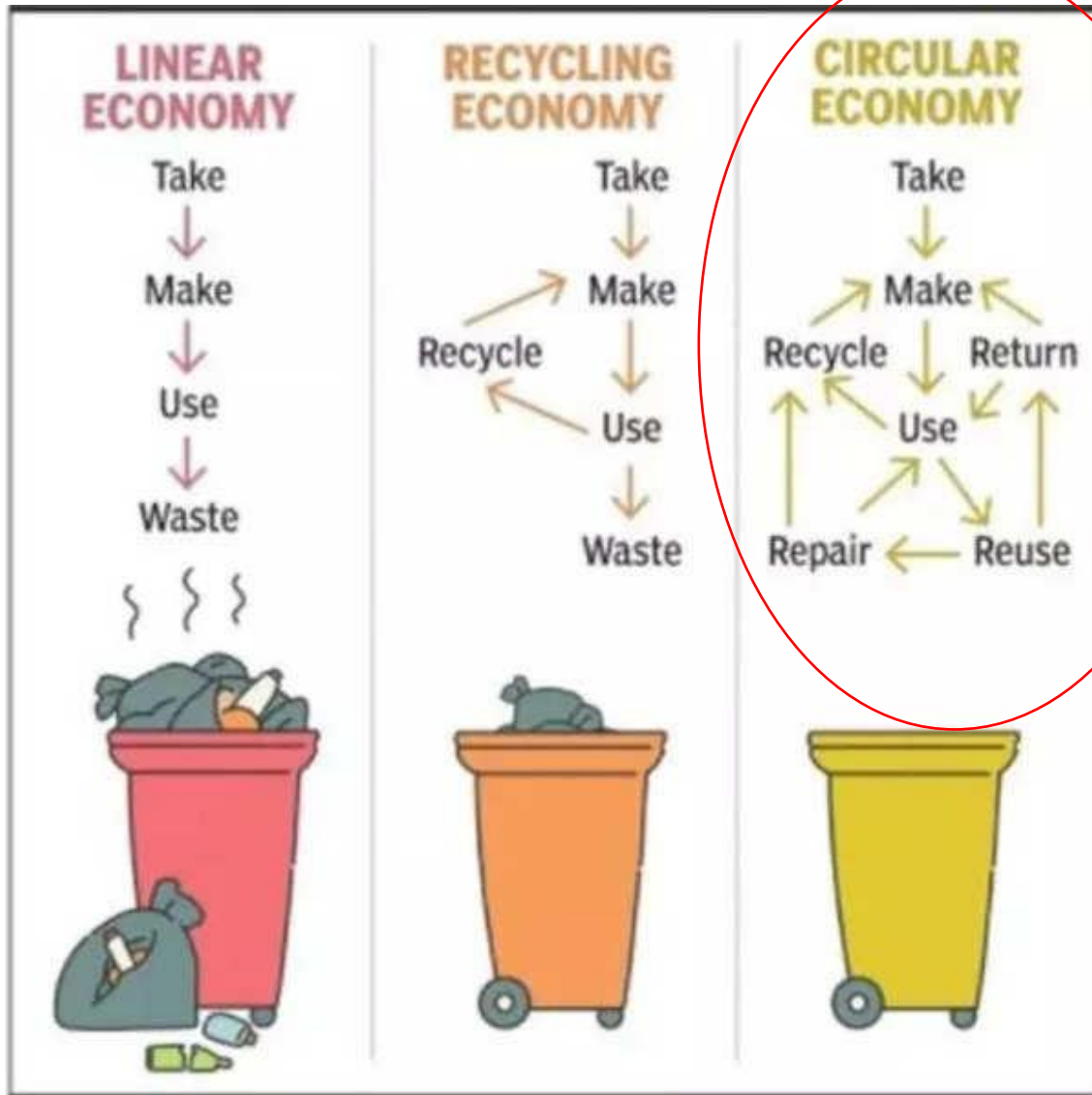


How to get Systemic Thinking to be a Learning Outcome of a Master's Program?

Silja Kostia, Principal Lecturer,

Head of Master's Degree Programme Risk Management and Circular Economy

MEL17



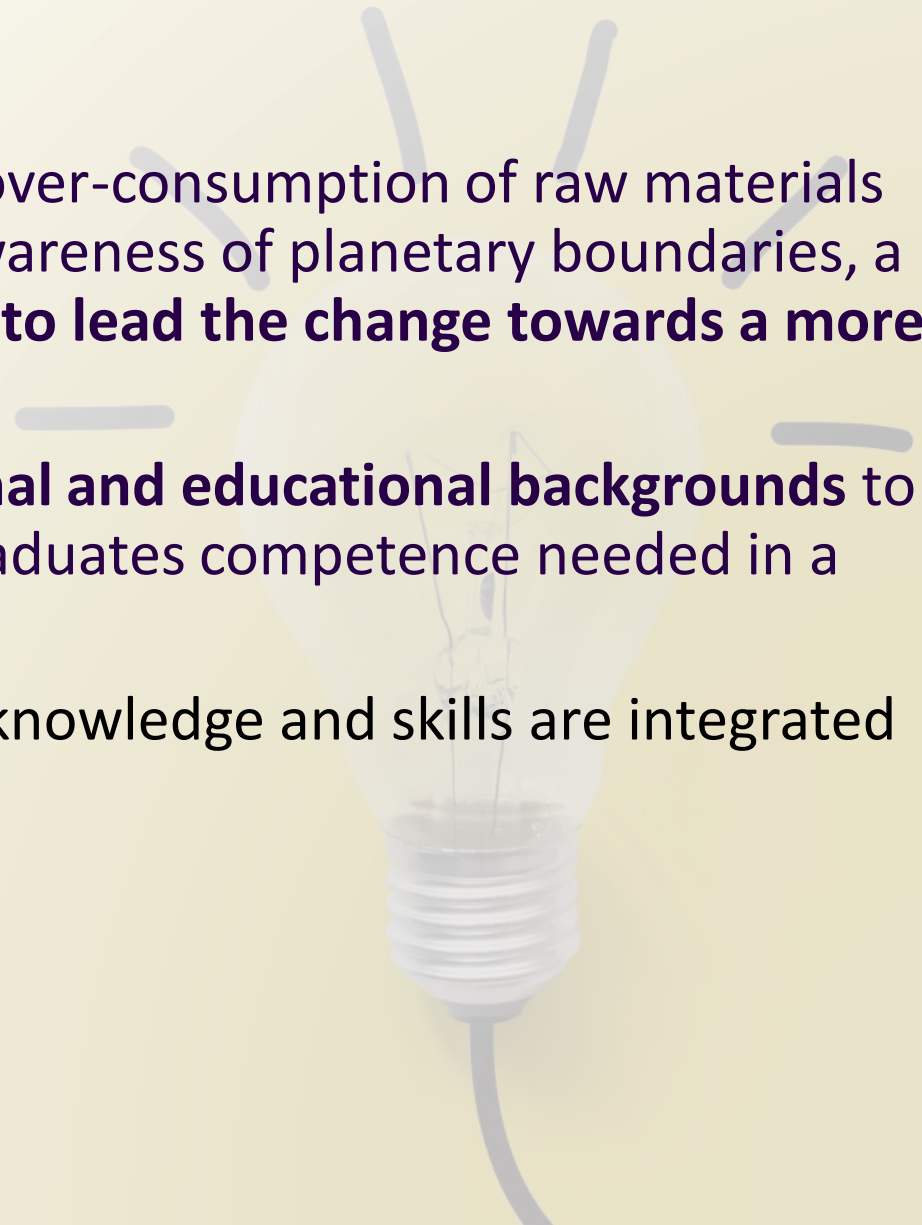
According to Ellen MacArthur Foundation “**A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems**” ([ref](#)).

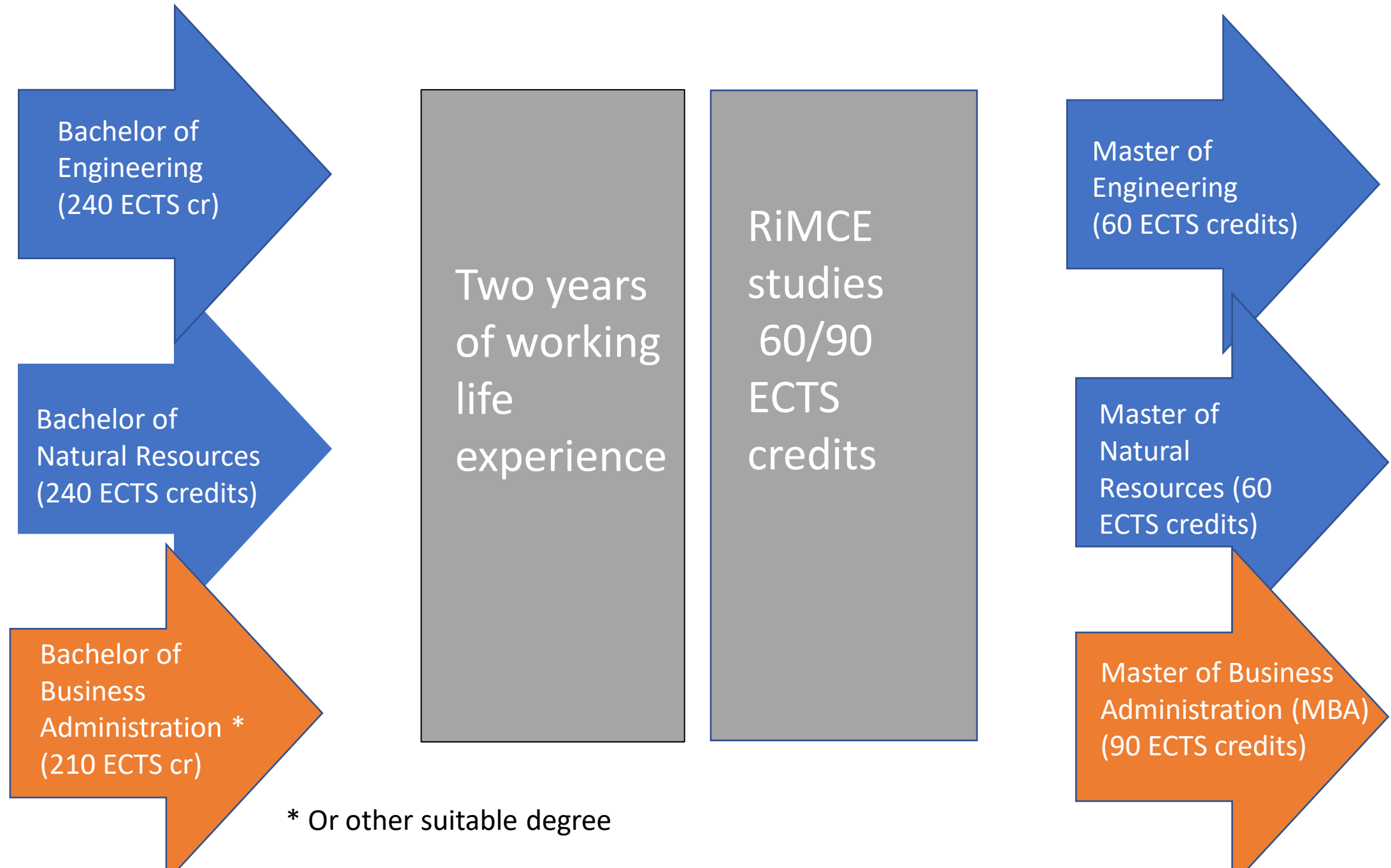


RiMCE concept

Circular economy professionals are needed because

- Climate change, the loss of biodiversity and over-consumption of raw materials requires **professionals of a new kind** with awareness of planetary boundaries, a solution-centric and change-agent's mindset **to lead the change towards a more sustainable future.**
- RiMCE brings people **with diverse professional and educational backgrounds** to study **by collaborative learning** giving the graduates competence needed in a modern working life.
- The circular economy and risk management knowledge and skills are integrated into students' **professional competence.**



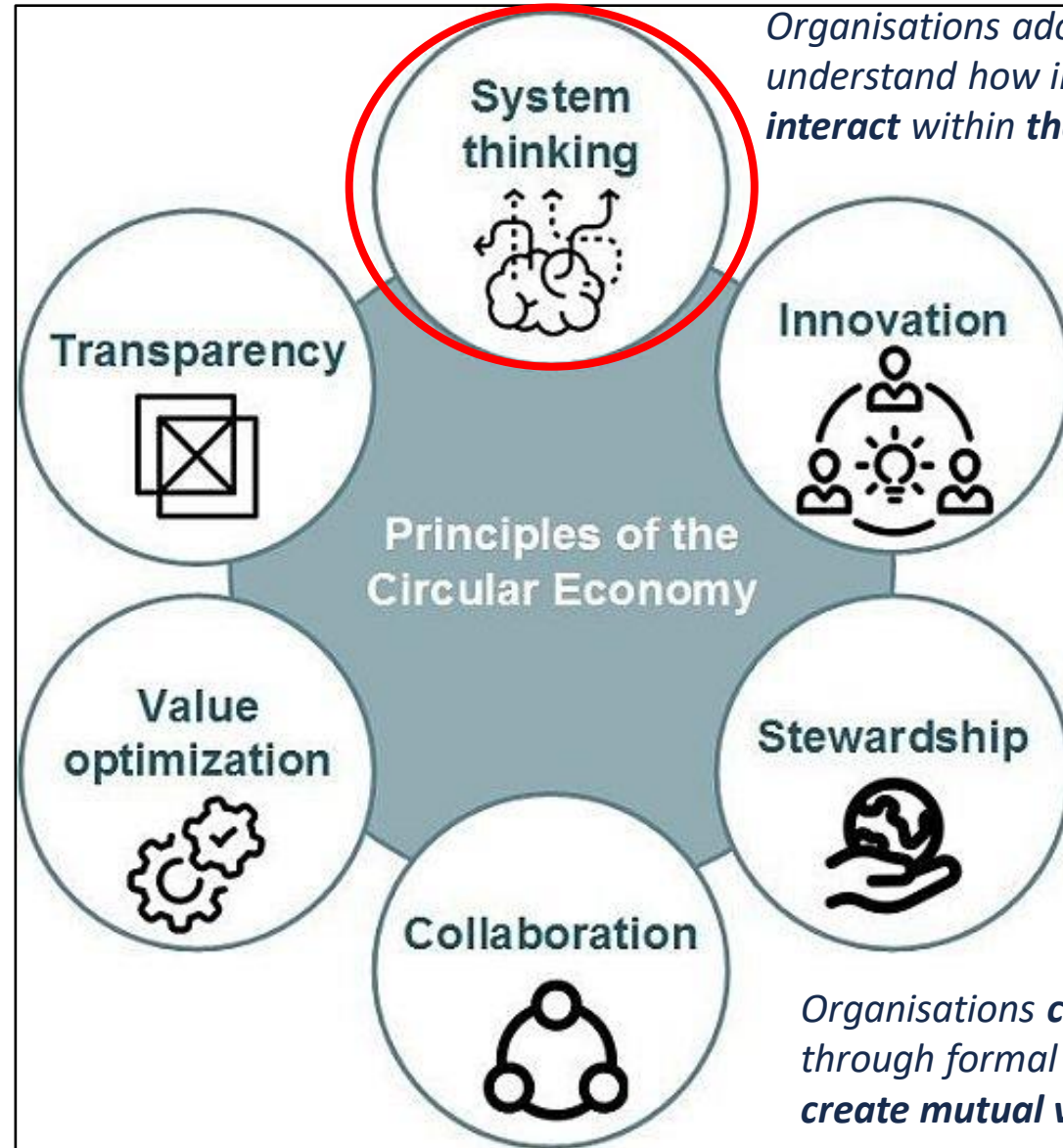


A graphic consisting of two overlapping blue rectangles. The front rectangle is on the right and contains the word 'Curriculum' in white. The back rectangle is on the left and is slightly offset upwards and to the left. A dark blue shadow is cast by the front rectangle onto the back one, creating a 3D effect.

Curriculum

Organisations are **open about decisions and activities** that affect their capacity for transition towards a more circular and sustainable mode of operation and are willing to **communicate** these in a clear, accurate, timely, honest and complete manner.

Organisations **maintain** all products, components and materials **at their highest value and utility** at all times.



Organisations adopt **a holistic approach** to understand how individual decisions and activities **interact within the wider system they are part of**.

Organisations continually **innovate to create value** by enabling the sustainable management of resources through the **design of processes, products/services and business models**.

Organisations **manage the direct and indirect impact** of their decisions and activities within the wider system they are part of.

Organisations **collaborate internally and externally** through formal and/or informal arrangements to **create mutual value**

Model of the Circular Economy CEC framework

General knowledge

AWARENESS AND MINDSET

Planetary boundaries and CE principles

Technical and analytical skills

Cross-cutting skills

COMPETENCE 1
Circular product
design strategies

COMPETENCE 2
Circular business
models

COMPETENCE 3
Systems management
and digitalisation

Interdisciplinarity

DISCIPLINARY AND SECTORAL SPECIALISATION

In CE i.e.,
LCA experts,
(re)cycling experts,
renewable energy experts
etc.

Deep knowledge

System thinking,
Stewardship,
Transparency

Collaboration,
Innovation

Innovation
Value Optimization

TOWARDS A CIRCULAR ECONOMY
Skills and competences for STEM
professionals

Autumn term

Spring term (plus next autumn term)

Kick off for Risk
Management and
Circular Economy

Circular Economy Value
Chains and Consumer
Engagement

Sustainability
Measuring and Life
Cycle Assessment
(LCA)

Academic
Research and
Practices

MBA 20 + 20 + 20

MEng M Natural
resources

20 + 10

Company Financial
Management

Leadership and
Intercultural
Communication

Development of
Circular Economy
Business

Innovation Pipeline of
Circular Economy
Products and Services

A free choice course

A free choice course

A free choice course

A free choice course:
Megatrends and
Future Foresight

Climate University courses, TAMK Master's courses,
Campus online courses, Courses from and with
international partners, Collaboration with TaU

**Risk Management and Circular
Economy #RiMCE**

Master's thesis



Pedagogy

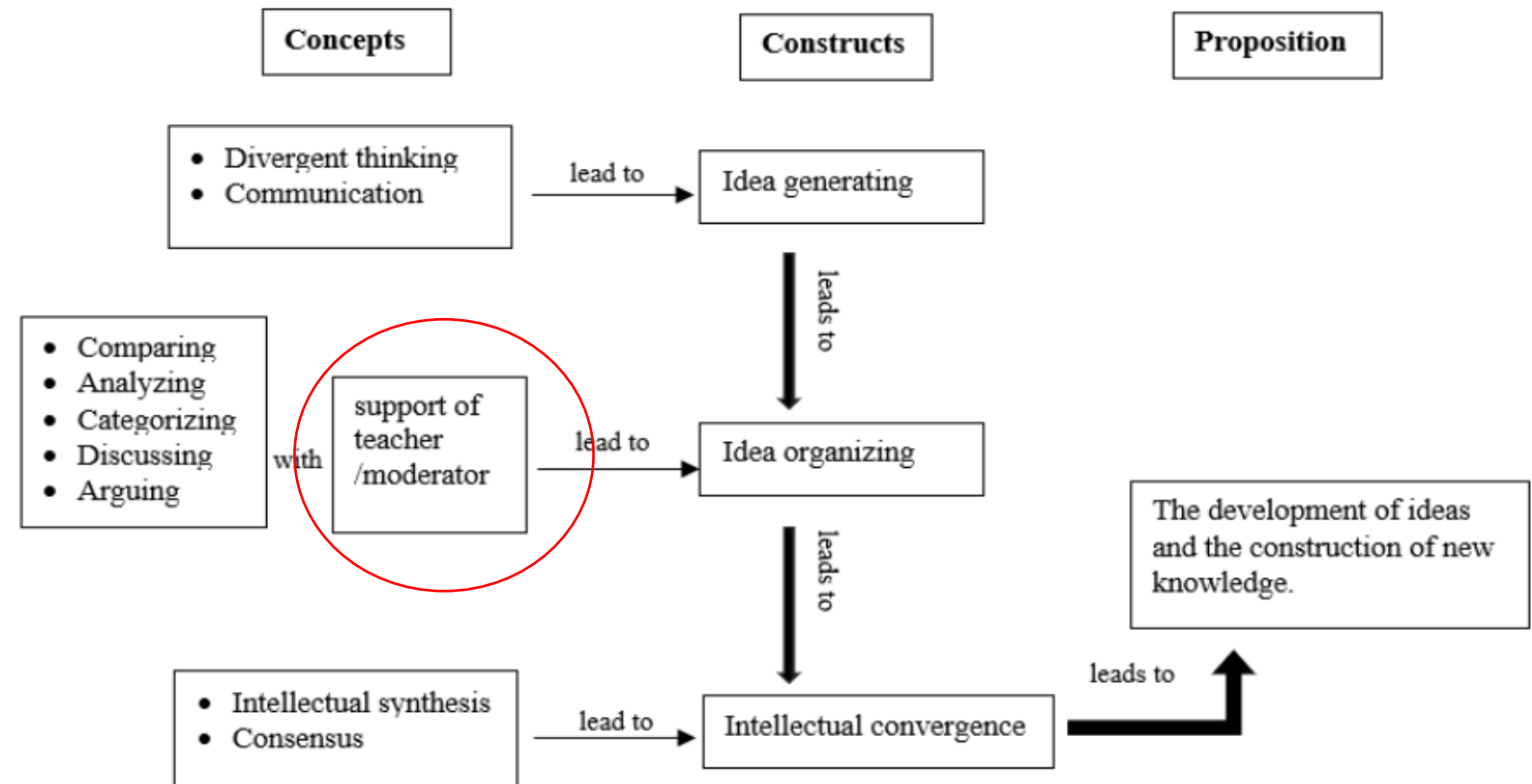
Collaborative learning

*Discussion and development actions around **circular economy requires more systemic perspective**. A paradigm shift is needed in the way **things and whole systems are being designed**. **Multidisciplinary networks and co-creation** are needed instead of silos.*

Do we really have collaborative learning as a cross-cutting pedagogical choice?

Figure 1 presents the process and relationship between concepts, constructs, and the proposition of OCL theory.

Figure 1
Model of Online Collaborative Learning Theory



The image features two overlapping blue rectangular shapes. The shape on the left is a solid blue rectangle. The shape on the right is a larger blue rectangle that overlaps the first one, with a dark blue shadow cast onto it from the left. The word "Leadership" is written in white text on the right-hand blue shape.

Leadership

Curriculum process

+++

- Feedback session with alumni
- A lot of discussions with TAMK experts, and with international partners
- TAMK curriculum process is complicated but supports the development
- Curriculum writing was open

- Lack of opportunities for team discussions and co-writing (because of limited resources)
- Lack of interest?

Towards systemic thinking as a learning outcome

We need shared understanding about **how pedagogical choices can advance learning systemic thinking in a program level**

How to motivate and commit teachers (resources are still lacking...) is a **leadership challenge**

Collaboration that provides **clear and specific goals** and **knowledge sharing** has the potential to greatly impact not only our processes of working together but also the products that are the results of that collaboration.

Leslie Rush in MELposium

First RiMCE Alumni meeting in April 2022

- Happy to connect with you in LinkedIn
- [Silja Kostia | LinkedIn](#)

