



Aalto University

# Learning and Teaching in Higher Education (5 cr)

*Maire Syrjäkari ja Päivi Kinnunen*  
*Contact session 1: 2.2.2017*



Photo: Maire Syrjäkari, 2014

# WELCOME TO THE COURSE!

Learning and teaching in higher education (5 cr):

1. Contact session: University pedagogy and learning theories

Instructors:

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# Schedule

9.00-11.00

Welcome!

Who are we?

Introduction to the course

Pre-assignment and expectations for the course

11.00-12.00

Lunch

12.00-15.15

Learning and Learning theories

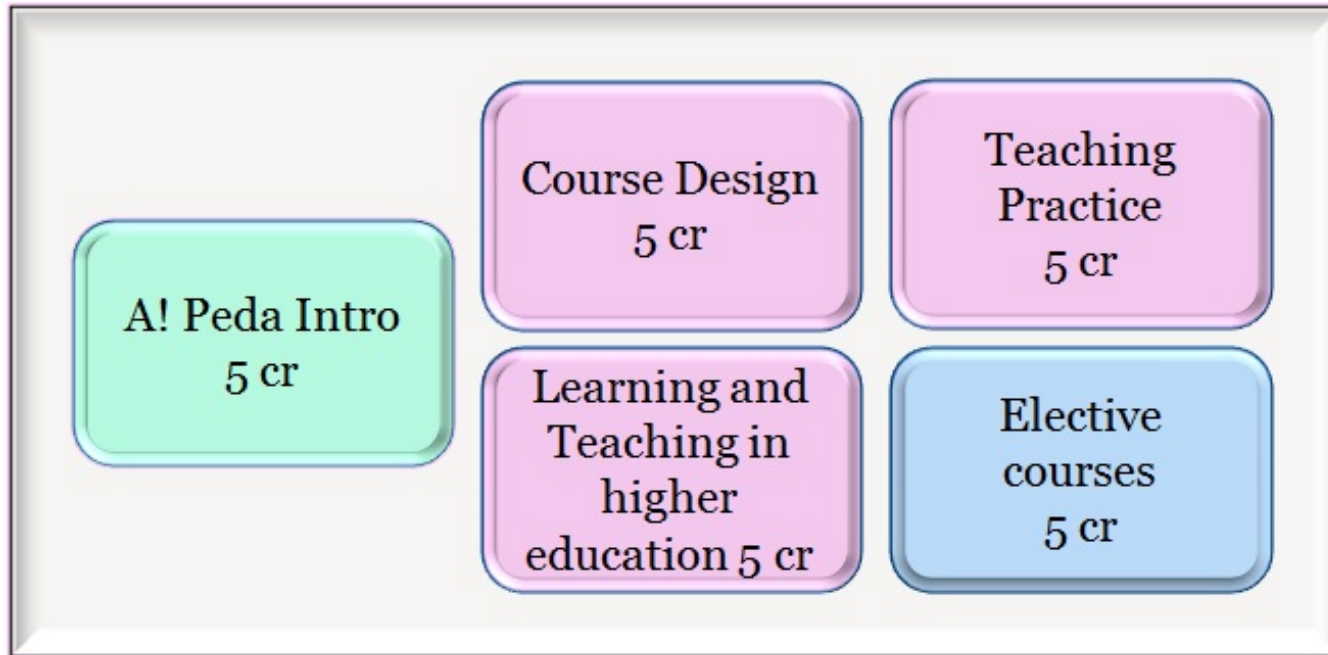
Researching the education of own field

15.15-15.30

For the next session

Feedback

# Aalto University Pedagogical Training (25 cr)



- > Learning and teaching in higher education (5 cr)
- > Pre-assignment
- > 1st Contact Session 2.2.2017
- > 2nd Contact Session 15.2.2017
- > 3rd Contact Session 7.3.2017
- > 4th Contact Session 28.3.2017
- > Essay final version: My approach to teaching and learning
- > If you missed a teaching session
- > Literature and links
- > For Aalto users
- > Recognition of prior learning (RPL)

[Course overview](#)

Listen

COURSE ADMINISTRATION

SWITCH ROLE TO...

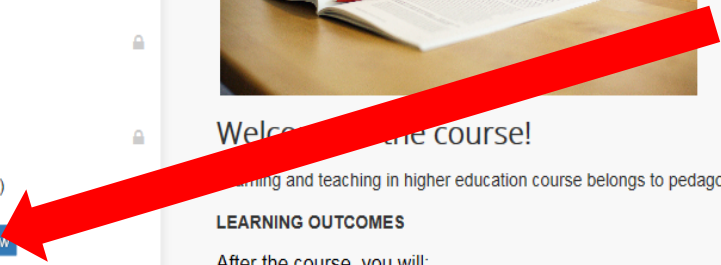
RECENT ACTIVITY

Activity since Tuesday, 31 January 2017, 12:16 PM

## Learning and teaching in higher education (5 cr)



**Behind this link you find Course Description**



### Welcome to the course!

Learning and teaching in higher education course belongs to pedagogical training entity (25 cr).

#### LEARNING OUTCOMES

After the course, you will:

- be able to identify, define and evaluate factors that affect your choices and decisions in teaching
- be able to recognise different theories of learning and you have become aware of how they affect your teaching
- have formed your own theory-in-use for teaching
- 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.

#### COURSE SCHEDULE

#### PROGRESS BAR

No activities or resources are being monitored. "Turn Editing on" and click "Select activities/resources"

#### LATEST NEWS

[Add a new topic](#)

welcome to the course  
30 Jan, 09:30 Maire Syrjäkäri  
[Older topics ...](#)

#### UPCOMING EVENTS

- Contact Session 1, Maari building  
Tomorrow, 9:00 AM
- Inbox: Return your make up assignment here  
Friday, 10 February, 12:00 AM
- Inbox: Return your make up assignment here  
Wednesday, 1 March, 12:00 AM
- Inbox: Return your make up assignment here  
Friday, 17 March, 12:00 AM
- Inbox: Return your make up assignment here  
Friday, 7 April, 12:00 AM

[Go to calendar](#)

[New event](#)

# Recognition of Prior Learning (RPL)

If you like to complete Aalto University pedagogical studies (25 cr) and you have some **earlier pedagogical studies** (e.g. a course):

You can **include** the earlier study/ies (e.g. as an elective course) or you can **replace** an entire course into the entity.

- Contact teachers
- At least 10 cr of the pedagogical studies (25 cr) should be completed at Aalto University.



## Application for recognition of prior learning in Aalto University Pedagogical Training I (25 credits) /

### Personal Information

Name
Student number
Finnish personal identity code or date of birth
Address
Telephone number
E-mail address

### Previously completed studies and a proposal for the recognition

List your earlier studies together with your own suggestion for recognition

Application for 25 cr training programme

Studies (course, studies etc.)	cr	The unit in which the study is conducted	Propose for recognition	
			I would like to include the earlier study/ies as such	I want to replace an entire course (the name of the course and the number of cr)

### Signature

Date	Signature of the applicant
------	----------------------------

#### Appendices

- PDP

- A certified copy of the certificate / s or transcript

- A course description or similar, showing the objectives and the contents of the study

Return the application with the appendices to Maija Lampinen PL 13000, 00076 AALTO

# After Aalto University (25 cr) entity you

- have acquainted yourself with different types of teaching and learning approaches and have formed your own approach to teaching and learning.
- are familiar with different teaching methods and know how to apply them in your teaching.
- are familiar with different phases of course design and you can evaluate their meaning in educational development.
- have developed your expertise in supervising students and you are able to activate students in their learning processes.
- are familiar with information and communication technology in teaching, also from the learner's perspective.
- are familiar with the teaching and teachers in different disciplines of Aalto University.
- recognize your own strengths and development needs as a teacher.
- have completed a guided teaching practice.

# Learning outcomes for the course

After the course, you

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





# Learning outcomes

## After the day you:

- Know other participants and you have familiarized yourself with the course and working methods
- are able to identify different learning theories
- aware of different aspects of learning
- have started to construct your own approach to teaching.



Photo: Maire Syrjäkari, 2014

# Timeline: Learning and Teaching in Higher Education (5 cr)



Pre-assignment  
DL  
26.1.2017



CS1: 2.2.2017  
University pedagogy and learning theories

Log 1  
DL 9.2.

Reading tasks (3)  
DL 14.2.

Essay:  
Approch to learning and teaching



CS2:15.2.2017  
Approach to teaching and expertise

Log 2  
DL 22.2.

Reading tasks (2)  
DL 6.3.

Essay:  
version 1.0  
DL 24.2.



CS3: 7.3.2017  
Reflection, expertise and development

Log 3  
DL .14.3.

Reading tasks (2)  
DL 27.3.

Essay:  
Peer feedback  
DL 6.3.



CS4: 28.3.2017  
Quality of teaching

Log 4  
DL 4.4.

Essay:  
version 2.0  
DL 13.3.

Essay:  
Facilitator feedback  
DL 27.3.

Essay:  
Final version  
DL 21.4.2017

# Contents



Learning  
Learning centred culture

Quality of learning  
Expertise (students)

Learning theories  
Approach to learning and teaching

Reflection  
Providing & receiving feedback

Quality of teaching  
Expertise (teacher)

# Coctail-Party

1. Name:
2. The best in my home country is..
3. What are my strenghts as a teacher?



# Break

# Cards: expectations

1. Take one card: a card that represents your expectations of the course.
2. Show your card representing your expectations to the course and tell your group about them (2 min/person).
3. Form common group expectations (10 min)
4. Present your group's common expectation to other groups. (2 min/group)



Photo: Maire Syrjäkari, 2016

# Lunch break 11-12

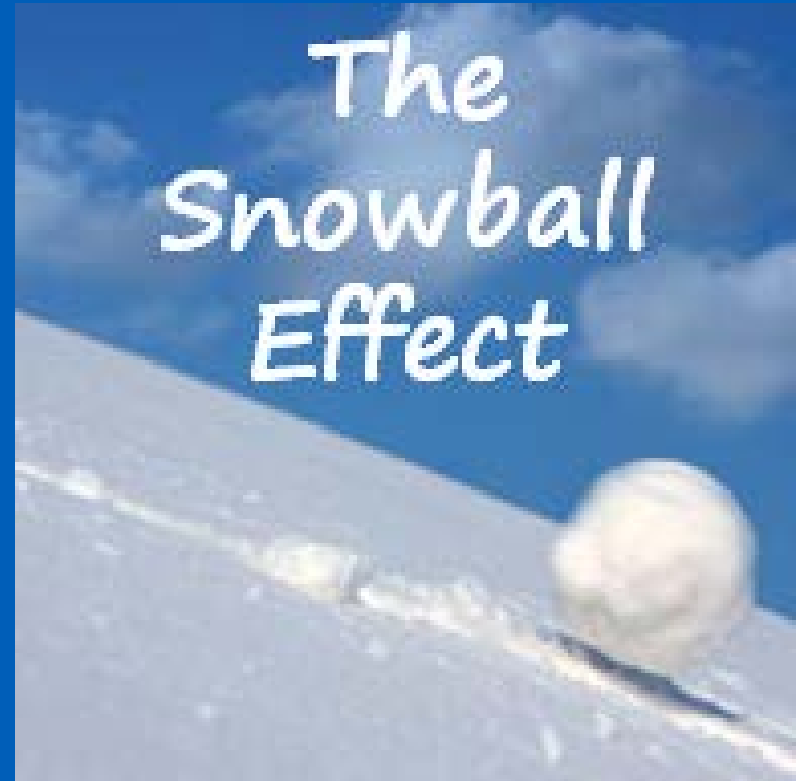
# Snow ball –method: What is learning?

Step 1: (working time 20 min)

Take a look at your pre-assignment. Tell your pair about your own approach to learning and teaching. How do you define learning? Discuss with your pair and consider together your conception of learning. Create common mindmap (or concept map) on learning by writing on sticky notes one concept per one sticky note related to your conception.

Step 2: (working time 15 min)

Two pairs combine their mindmaps to create together a new common one. You can also add new things to your map.





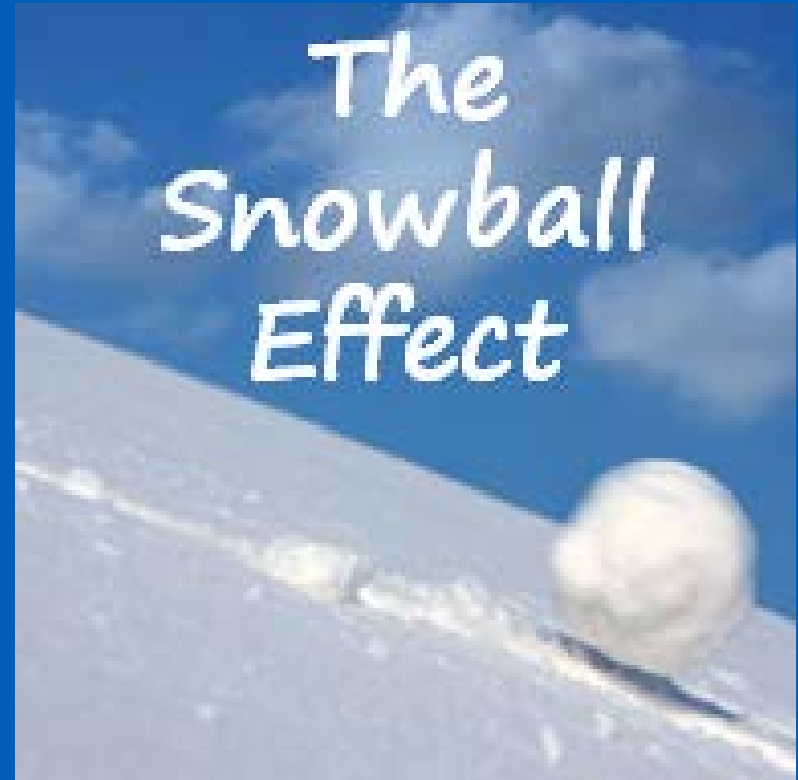
# Snow ball –method: What is learning?

Step 3: (working time 20 min)

Next, we form two new groups by combining two previous groups together. Create new common mindmap.

Step 4: (working time 5 min/group)

Group presents its common mindmap of conception of learning.



# Break

# Learning theories

# Learning Theory, Theories of Learning, Conception of Learning, Approach to Learning...

- **Learning theory, Theories of Learning** – a scientific theory explaining learning, based on research
- **Conception of Learning, Approach to learning** - individual's Conception of learning

Terms are used differently in the literature

# Essential questions

How do person learn?

How do we define learning?

What is a teacher's role and task in learning process?

- How teacher's teaching activities support learning?
- How student's studying activities support learning?

What is a student's role and task in learning process?

What kind of learning environment supports learning?

# Learning theories



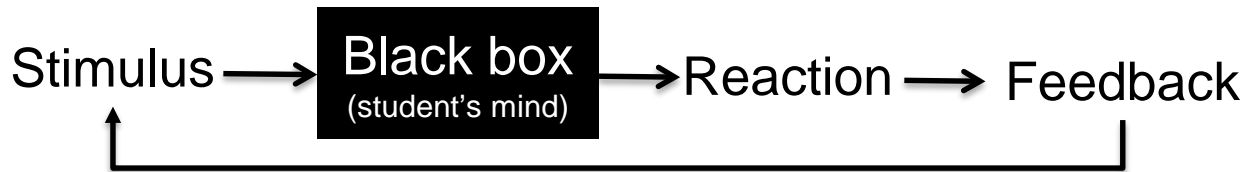
# Behaviorism

(1900 → 1950...1960)

**Key actor/role:** teacher

**Learner's role:** passive, responses to stimulus

**Learning** is seen as a change in external behaviour.



Learning process according to behavioristic learning theory

# Cognitive Psychology (1950→1960)

## Why?

Cognitive psychology replaced behaviorism as a dominant paradigm in 1950-60. They criticized the black box of human mind -> it should be opened and understood.

**Student's role:** an active data processor

**Learning** is an internal mental process, a change in schema (mental model)



# Constructivism (1960) 1990→

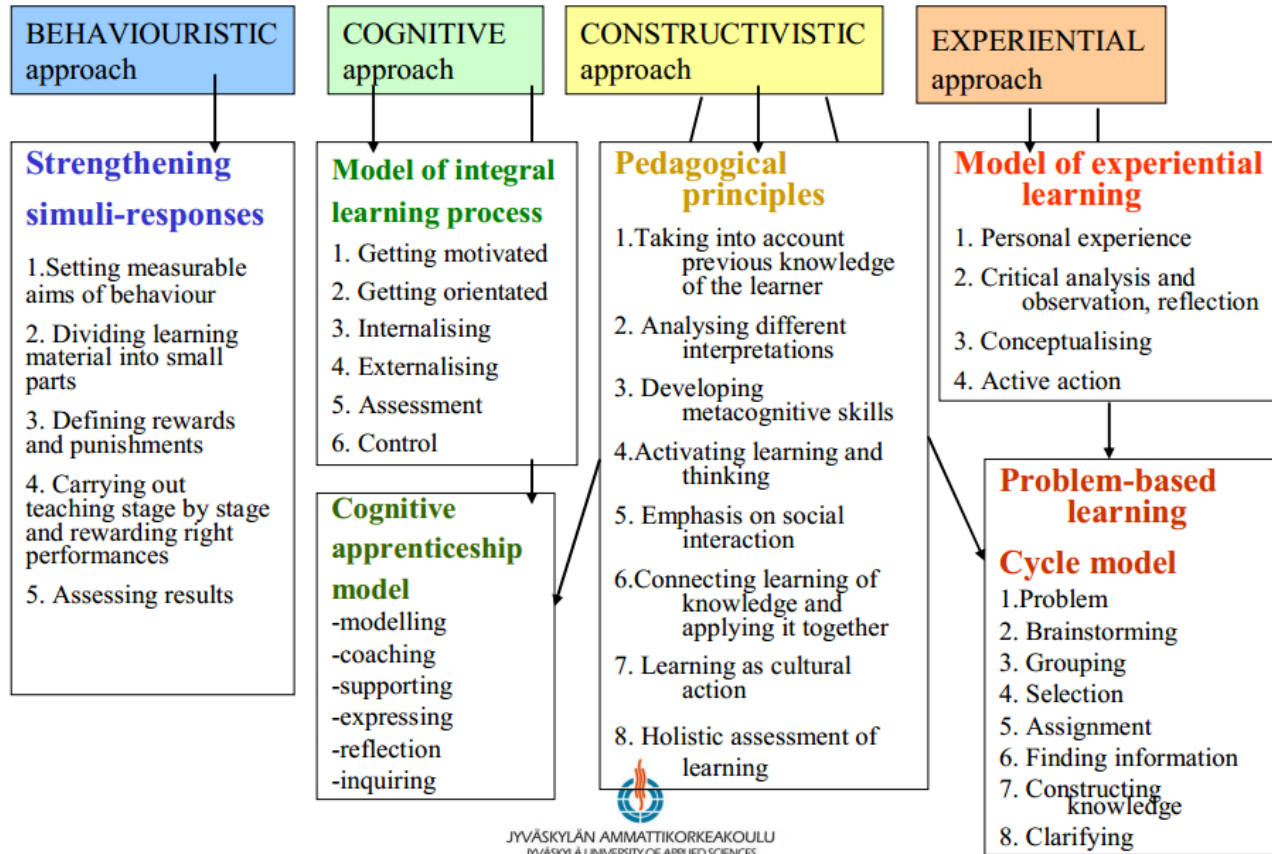
**Learner's role:** active, constructing knowledge

Learning and teaching should be designed in a way that builds on the students' background/previous knowledge.

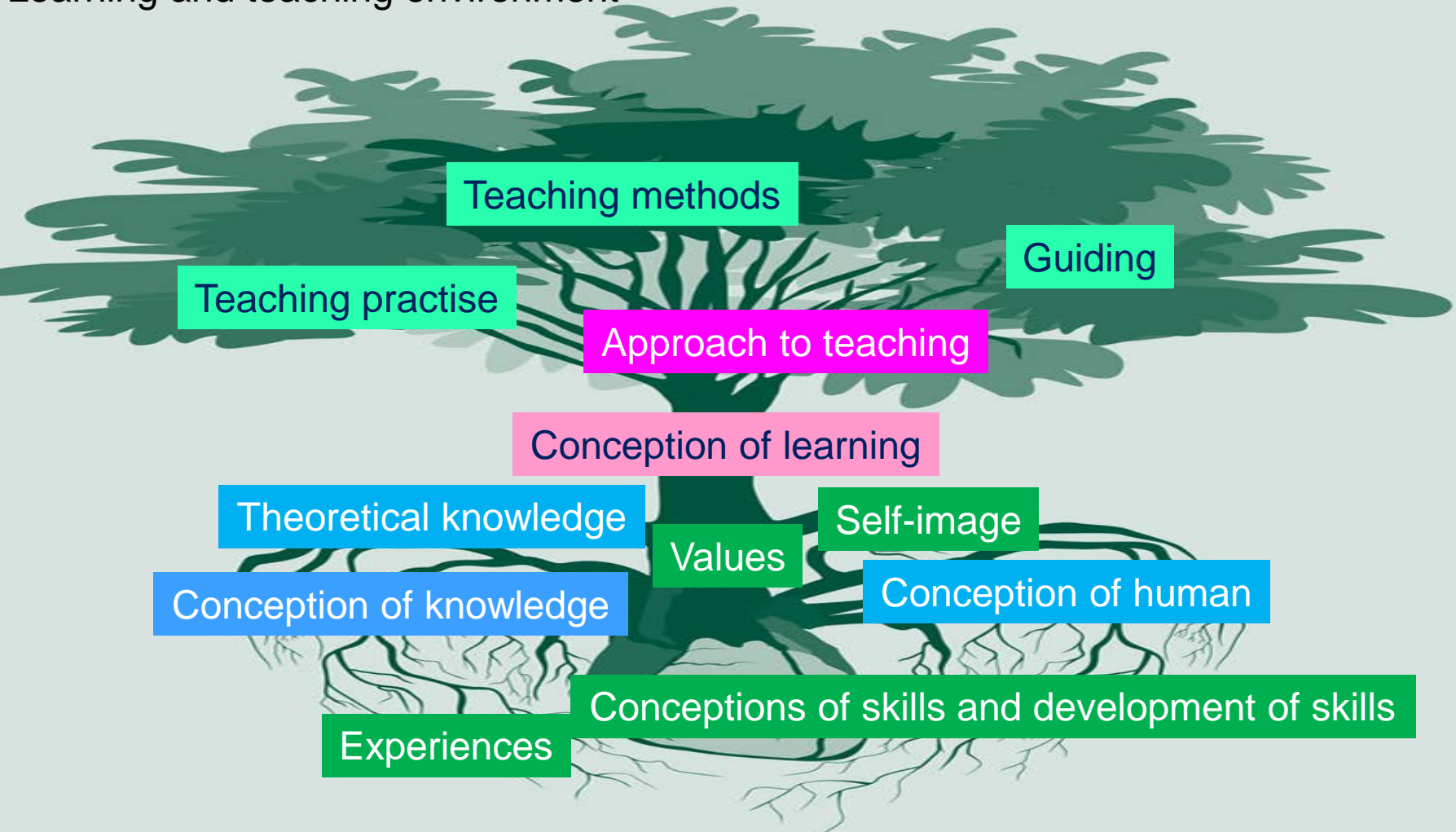
**Teacher's role:** a facilitator who encourages students to discover principles for themselves and to construct knowledge and meanings (as an individual or as a group).

**Learning** is active, contextual and situational process

**FROM LEARNING APPROACHES TO TEACHING**



# Learning and teaching environment



Cultural and social environment

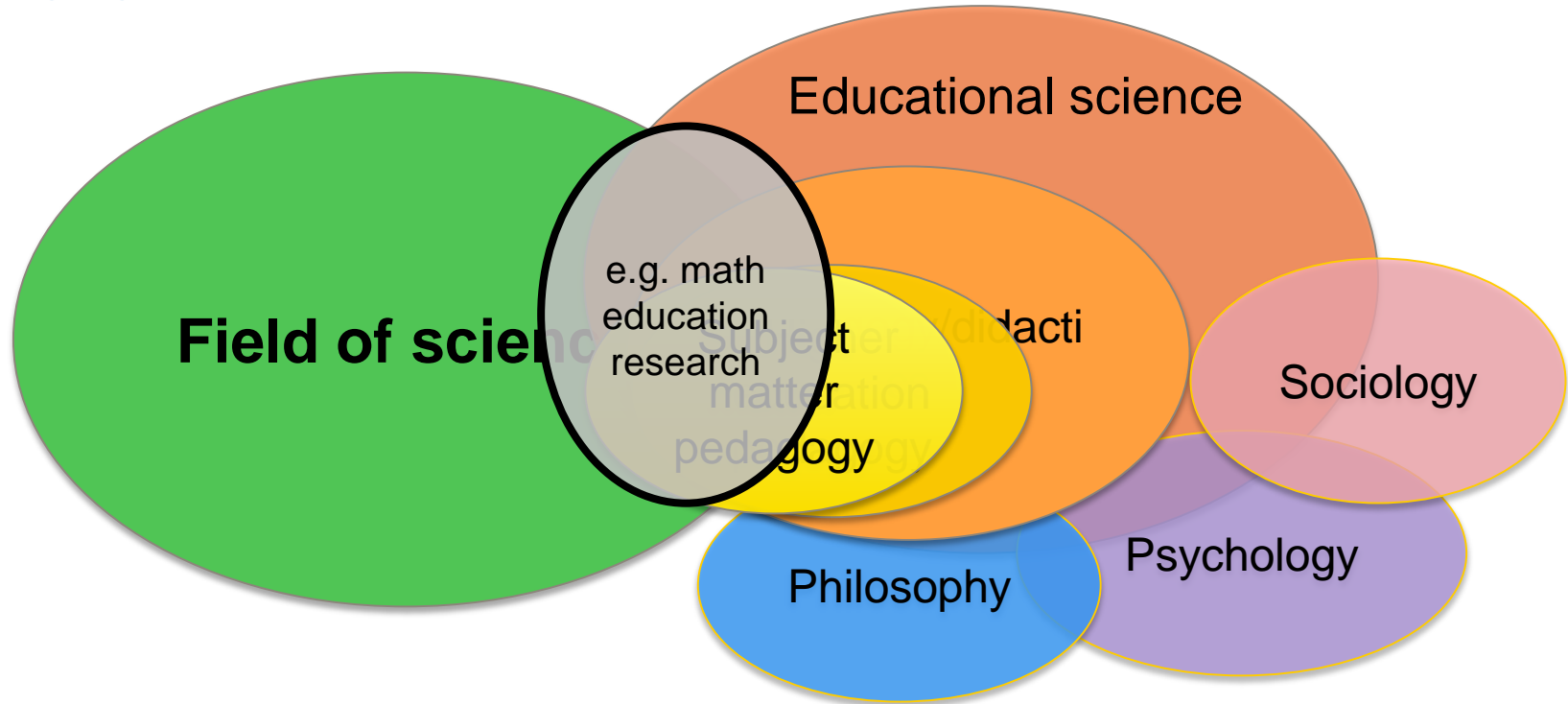
# Individual/pair task

1. Write down a teaching method you have used recently.
2. What is your conception of learning and how does a teaching method that you described in phase one support this kind of learning?
3. What are your values as a teacher?
4. How does a teaching method (phase 1) convey the values you have?
5. Share your thoughts with your pair.

# Break

# Education research in your own field of education

# What is educational research in your field?



# Examples of topics that have been researched in the fields of engineering education research and physics and chemistry education research

Much researched topics:

- Teachers' pedagogical actions (e.g., used teaching methods) and their effect on students' learning outcomes.
- Students' characteristics
- Goals and content of education, what is taught

Less studied topics:

- Teachers, e.g., teachers' characteristics, teachers' perceptions on students' learning process



# Why doing educational research in your subject field is worth while?

- You don't have to rely on gut feeling on what works and what doesn't work in teaching?
  - You may get information, e.g., on:
    - Who are your students: how do they think, what kinds of conceptions (or misconceptions) they have
    - How students study
    - What effect specific teaching method/assignment type ... had on students' learning/persistence/drop out rate/motivation/interest on the topic.
    - Why this teaching method works
- better understanding of learning process → you are better equipped to guide the learning process.

# What to pay attention to when starting to do educational research on multidisciplinary area

You need:

- Knowledge of theories used in different fields, e.g., prevailing theories of how people learn.
  - Understanding of (concurrent) research paradigms that have an effect on:
    - *what is regarded interesting to study (~what kind of research questions are regarded interesting)*
    - *what kind of research methods are used and the type of results that research produces.*
  - To find out how to present and disseminate your results. How to write a research paper in another field; what you should elaborate in the paper and what is taken for granted in the field, writing style ....
- Interdisciplinary collaboration is useful: you most likely don't have enough expertise in both fields.

# Examples of research paradigms in engineering education research

	<b>Positivism</b>	<b>Constructivism</b>	<b>Critical inquiry</b>
<b>Aim of the research</b>	Establish facts and laws	Develop useful interpretations	Achieve social change
<b>Research is guided by</b>	Testable hypotheses	Research questions	Social problems
<b>Role of researcher</b>	Objective observer	Constructor of interpretations	Change agent
<b>Example RQ</b>	What factors influence study success in engineering education?	How do students use lectures and tutorials in their learning?	Does the institutional culture result in different groups of students feeling at home or alienated ?

Jawitz, J. & Case, J. 2009. Communicating your findings in engineering education: the value of making your theoretical perspective explicit. *European Journal of Engineering Education*. 34(2), 149-154. (Table from p. 151)

# From developing education towards research in education

# Developing teaching

1. What worked/didn't work last time I gave this course? Define what you want to develop in the course
2. What information/skill you need to obtain in order to make the needed changes?
3. Make a concrete plan what changes you'll make in a course
4. Put the plan in action
5. Collect data/evidence on what kind of effects the changes have had.
6. Conclude which changes you'll keep next time
7. Distribute good practices

# Doing research

1. Define research question(s)
2. Do literature review/ what do we already know about the topic
3. Construct hypothesis based on the background work.
4. Empirical part: collect data
5. Analyze data
6. Interpret results, make conclusions
7. Distribute the results

# Different options to make educational research in your field part of your professional development

- Read recent educational publications in your field. E.g., math education research has long history already so there is a lot to read.
- Approach developing your own teaching with the same systematic mindset as you do when doing research in your field.
- Attend workshops and national/international conferences on educational research in your field
  - Get to know other teachers/researchers in your field
  - Publish conference & journal papers

One of your homework is about finding & reading a research paper in your field – so you get to take the first step now 😊

# Journals

- Journal of Engineering Education
- European Journal of Engineering Education
- Computer Science Education
- ACM Transactions of Computing Education
- IEEE Transactions on Education
- IEEE Transactions of Learning Technologies
- Computers & Education
- British Journal of Educational Technology
- Journal of Chemical Education
- Chemistry Education Research and Practice
- Journal of Management Education
- International Journal of Art & Design Education

# Some engineering education research and computer science education conferences

- Frontiers in Education (FIE)
- Annual SEFI conference
- American Society for Engineering Education conference (ASEE)
- Research in Engineering Education Symposium (REES)
- Innovation and Technology in Computer Science Education (ITiCSE)
- International Computing Education Research conference (ICER)
- Koli Calling – International conference in computing education
- research



# Assignments for the next session 15.2.2017

1. Learning log, DL 9.2.2017
2. Reading tasks, DL 14.2.2017 (2 reading, 1 find and read and write)
3. Start to write your essay, first version DL 24.2.2017

# 1. Learning logs, DL 9.2.2017

- 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 contact sessions. It is a unique record of your thinking and learning during the course.
- The learning log has to be completed within a week after the contact session. The length of the reflection is around 0,5-1 page.
- Instructions and submission in MyCourses under each contact session materials

In the learning log you can think for example:

- What were your thoughts after the teaching session?
- What supported your learning in the teaching session?
- What kind of thoughts and ideas arouse to you concerning the themes presented?
- How can you apply these ideas to your own teaching?
- Where would you like to focus in the future? etc.
- The logs are visible only for the teachers.

## 2a. Reading tasks, DL 14.2.2017

1. Read and familiarize yourself with Chapter 3 **Discipline-based teaching** from the book *University teaching in focus: a learning-centred approach* / edited by Lynne Hunt and Denise Chalmers. Abingdon, Oxon; New York: Routledge, 2013.
2. Browse through following reports. They will give you an idea about the future work skills.
  - How do they differ?
  - How should you take into account them in your teaching/minor/major/program or should you?
  - Consider your own field/discipline has it changed in past 10 yrs? What kind of skills/knowledge/competence are needed in the future in your field?
    1. Future Work Skills 2020. Institute for the Future for the University of Phoenix Research Institute. Pdf is found in MyCourses.
    2. What are the 21st-century skills every student needs? World economic forum.  
<http://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students>

## 2b. Education research of your own field of science; Find and read and write -task, DL 14.2.2017

- Goal: Get some view of publications in your own field of education
- Task: Choose one of the journals and browse papers published in 2014-2016
- Select one or two different types of papers, which you find interesting
- Write a short (500-1000 words) of the papers where you discuss
  - Goals / research questions of the paper
  - Motivation for the work. What is the problem addressed?
  - What data is collected and how it is analysed, if there is an empirical part in the work?
  - Are there any learning theories / models in the background?
  - What are the central results and conclusions?
  - How can the results be applied in teaching practice?
- Return your writing to MyCourses –environment ->Contact Session 2, Education Research – discussion forum.
- Be prepared for discussing the paper with your peers on this course.

# 3. Start writing an essay: My approach to teaching and learning

- The aim of this essay is to begin to formulate your approach to teaching and learning. 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.
  - Utilize for example, your pre-assignment, discussions of learning concept (mindmap) and "tree task"
  - The essay is written in a form of an essay.
  - The length is around 5-7 pages (wordcount .
  - Instructions for the essays is found on MyCourses.
  - Deadline for the first version is 24.2.2017.
  - You can use your pre-assignment as a starting point for your essay.
  - For the next version concern the learning theories or some teaching methods or models based on the theories. How are they shown in your teaching or in your thinking? Could you use some ideas in your teaching?
-

**Closing the day:  
please describe the  
session with 2-3 words.**

<http://presemu.aalto.fi/ts1>

**Thank you!**