Working with Teaching Change Agents

Dr. Monika Rummler | TU Berlin, ZEWK | Workshop at University of Delft 18 April 2018
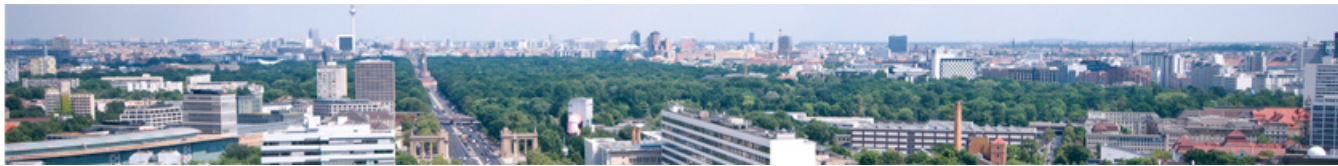
About the Workshop

In this interactive workshop I will share a challenge-based model of teaching and learning of staff with Teaching Change Agents (TCAs).

The model specifically focuses on the daily challenges teachers face in their work. Challenges that cannot be addressed immediately, but need addressing immediately, for whom no-one is available on the spot, but your peer next door, who is also swamped in his/her research activities. Working with TCAs offers a model, where teachers are supported with their daily problems. In this workshop you will be introduced to working with change agents, how to embed and train the change agents to have them work in an effective way in the department, what are the advantages of working with TCAs and which hurdles need to be overcome. The TCAs are supported in developing innovative teaching concepts for their lectures etc. (socalled teaching projects). They are also trained to be disseminators to support and consult their fellow teachers.

In the workshop, the participants discuss the model implications and its transfer possibilities.
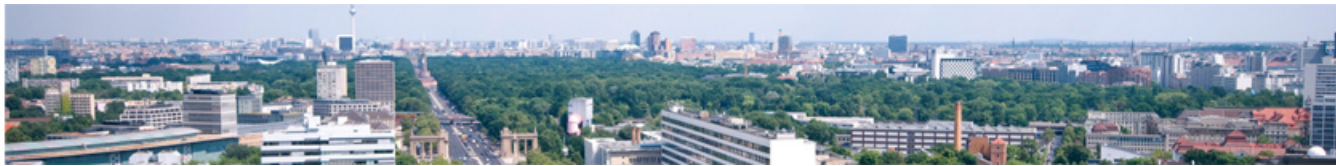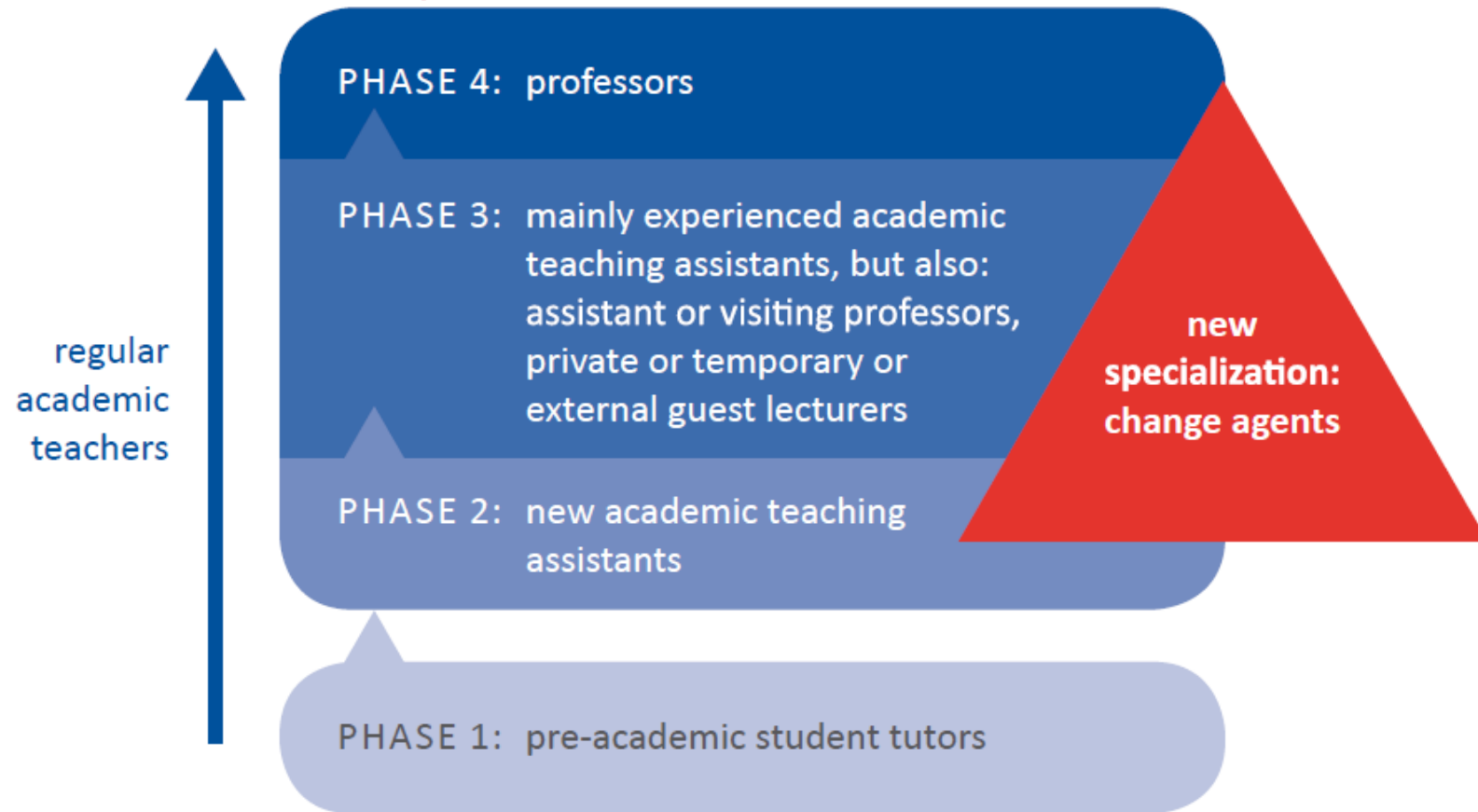
The Teaching and Learning Environment at TU Berlin

One of the biggest technical universities in Germany with about 33 000 students. Among the goals are sustainability, internationalization and high-level third party funding research projects, effective and satisfying teaching and learning, higher success rates in exams

- **First year students**: high numbers in introductory lectures, up to 1000 or more per lecture
- **Teaching staff**: 335 full-time professors in 7 faculties; 2500 scientific assistants (normally contracted for 3 to 5 years), env. 2700 student tutors (contracted for 4 semesters)
- Scientific **Continuing Education** Programme „Improving Teaching in Higher Education": accredited introductory course and 20 teaching modules, lunch lecture series, books, coaching, teaching portfolio, certificate
- **Project** „tu wimi^{plus}": one among eight „QPL"-projects to provide better study conditions and to improve the quality of teaching and learning
  Phase 1 2012-2016: 7 teaching assistants, 8 teaching projects, 5 years
  Phase 2 2017-2020: 10 teaching assistants, 10 teaching projects, 4 years

Who is Teaching?

regular academic teachers

PHASE 4: professors

PHASE 3: mainly experienced academic teaching assistants, but also: assistant or visiting professors, private or temporary or external guest lecturers

new specialization: change agents

PHASE 2: new academic teaching assistants

PHASE 1: pre-academic student tutors

Structure of Continuing Education and Projects
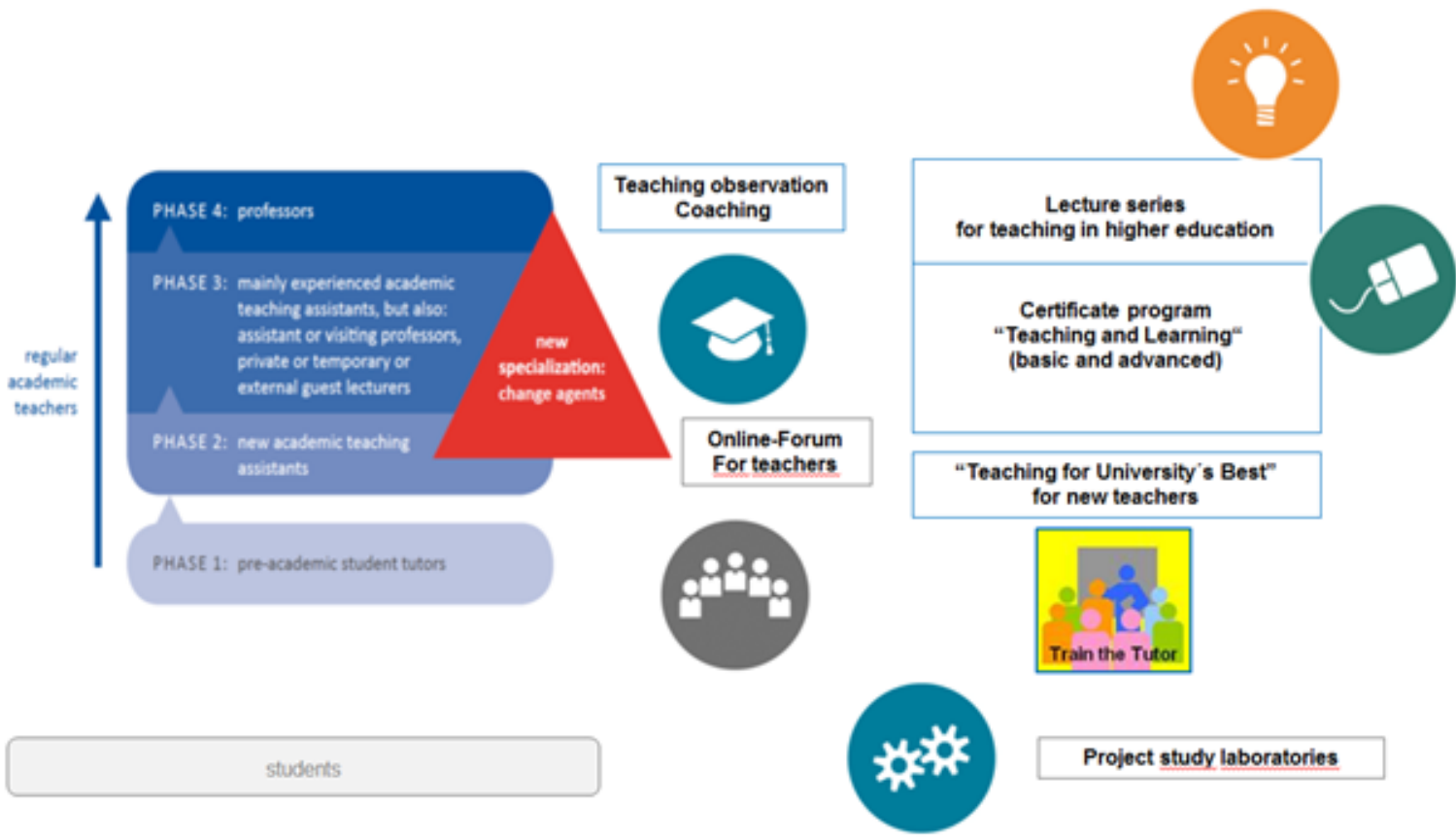
Tasks and Support for all Academic Career Levels

Teaching:
own profession-specific teaching in the engineering study subject

Training:
teaching in higher education and professional comprehensive counseling and supervision for the development of professional competences

regular academic teachers

PHASE 4: professors

PHASE 3: mainly experienced academic teaching assistants, but also: assistant or visiting professors, private or temporary or external guest lecturers

PHASE 2: new academic teaching assistants

new specialization: change agents

Project:
development of innovative teaching curricula

Dissemination:
good teaching practice in (didactical) training of peers within the faculty, preparation for examinations

Questions

- Who is teaching students?

- Who has changed his/her teaching to active learning?

- Who is working in teacher trainings?

- Who is working with a focus on changing the teaching and learning culture?

Some Outlines of Innovative Studies

- A combination of different forms of electronic learning with traditional learning and continuing education methods and direct practical application

- International studies with high foreign language parts

- A link of practical and theoretical education

- Sensitivity for problems, articulation of problems, own problem solving capacities at the basis of teaching and learning processes

- Workshops, seminars, projects and phases of self study to transfer the contents of lectures at a high level

- Distance learning, individual study schedules

Buzz Group

Question: What is your definition of „good teaching"?

Time: 2 minutes

Share your definition with all of us!

What is „Good Teaching"?

4 out of almost 400 Students' Voices

Leidenschaft   **P**assion
Ehrgeiz   **A**mbition
Herausforderung   **C**hallenge
Resilienz   **R**esilient Personality
Erfolg   **S**uccess

„Good teaching is to perform contents with enthusiasm and thus creates appetite to deliberate the idea. Good teaching must surprise and be able to impart the significance of the taught. Good teaching in the 21 century is not necessarily ex-cathedra-teaching, but interactive transfer of knowledge, adopted to individual learning paces and learning interests."

„Good Teaching is reduction of subject matters, practical projects, variety of methods, involving students, evaluation, idea of the subject."

„Good Teaching is to learn something for someone's life, no matter which mark in the written test will be reached."

What is „Good Teaching"?

The first answer is: motivation, motivation, motivation ...

Motivation of learners and motivation of teachers

- to their subject(s)
- to students' (further) development
- to perform their teaching and their learning in the best possible way
- to improve themselves
- to learn from and with (other) students

The second answer is: awareness and activity and change ...

- awareness of learning goals, diversity and outcomes
- activity during the learning process
- change of behaviour and attitude

The third answer is: *transfer ...*

- by teachers as role models
- by practical relevance
- by practical application and professional relevance
- experience students in the professional habitus of engineers

(How) Can we teach and learn «good teaching»?

Curriculum Characteristics

- supply-side - demand-driven
- voluntary individually - project context with a constant group
- consulting - coaching
- self-supporter - disseminator
- ready made - tailormade
- general - specific
- one-way - double direction

Quality Assurance

during continuing education

- by coaching (feedback and demands) and evaluation (progress and demands) of teaching staff with adapting continuing education measures
- by integration of students' feedback on lectures
- and scientific research results on effects of teaching and management of the learning process

TIT for TAT: Training (for) **I**mproving **T**eaching **for T**eaching (with) **A**ctivating **T**ools

Successful Training Methods for new Teachers

Methods are…

- active learning in learning groups
- peer observation of teaching and interdisciplinary exchange of teaching experience
- video-supported feedback to individual teaching performance
- oral and written reflection of own teaching
- application of scientific research findings for teaching purposes
- comparison of different teaching approaches/philosophies

Trainings

- focus on content transfer into daily teaching by exercising every new method in class
- provide a reflection of experiences and provision of support for successful transfer or application
- implement important means of transfer: learning contracts

Training Concept for Academic Teaching Staff

- is oriented towards activation and motivation,
- fosters exemplary learning and reduction of learning materials,
- is oriented towards problems and holistic concepts,
- includes special teaching methods for engineering subjects,
- is interdisciplinary and intercultural,
- supports the change of perspectives and follows the sandwich principle,
- includes video-supported feedback.

In General:

All active methods and general principles we introduce, we test and practice in the continuing education courses. Also, we reflect all possibilities and needs of the teaching staff, how to teach with active methods and general principles, and how to transfer them into learning processes successfully.

Approach of the Continuing Education Programme

Training for Improving Teaching
- to see themselves in a learning process
- to change perspectives and become learner
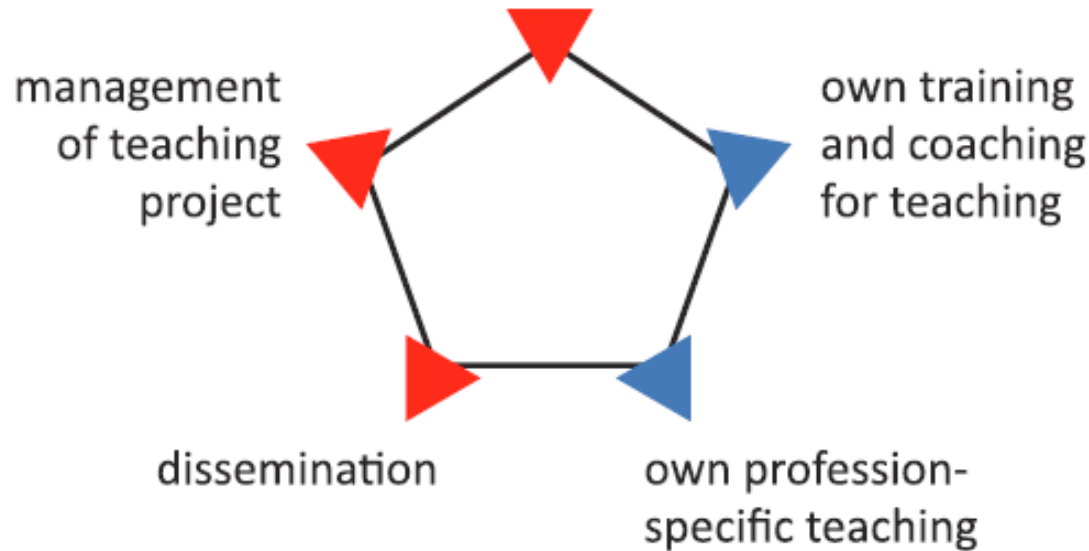- to share, judge and create (new) teaching experiences with methods

9 Competence Areas
- Planning and Performance
- Learning
- Classic and New Media
- Quality
- Communication
- Diversity Culture
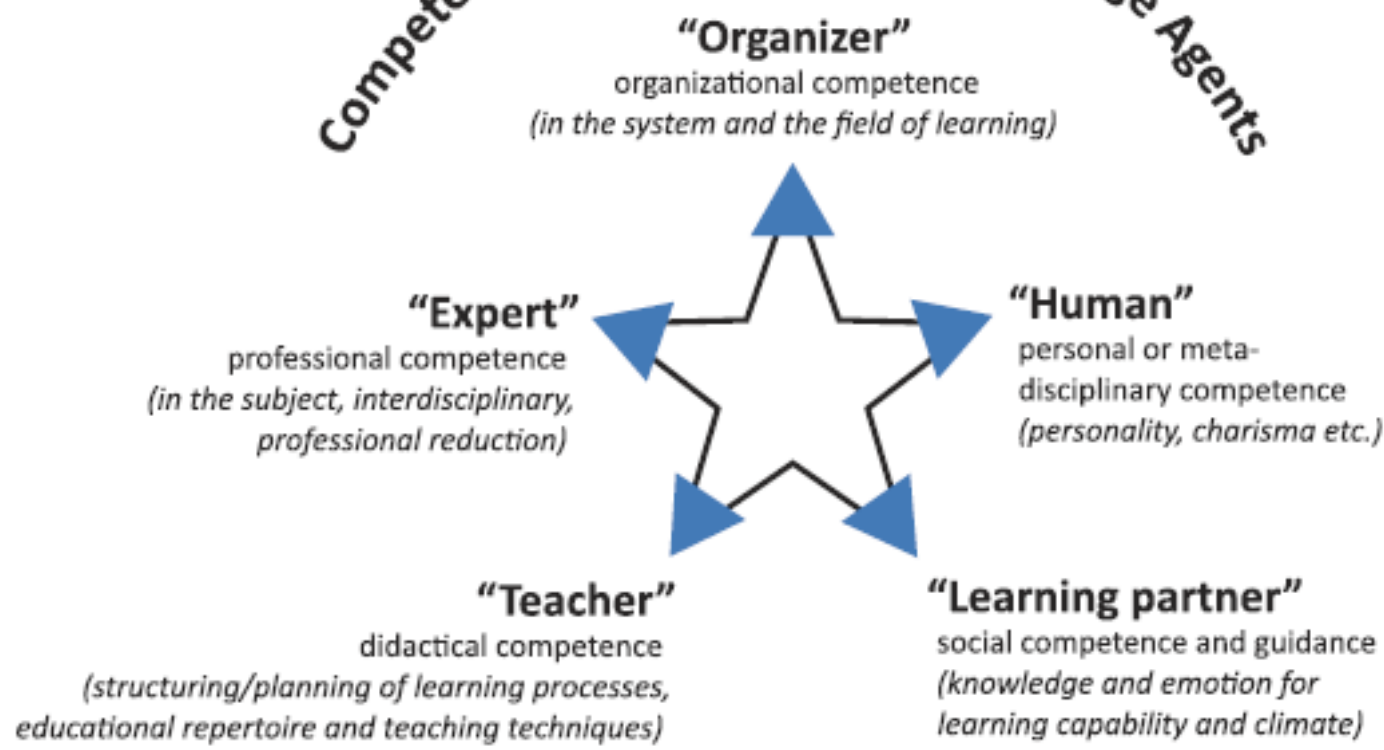- Methods
- Subject-related Didactics
- Background

Enriched Roles of (Teaching) Change Agents

Change agents' tasks are ...

management
of teaching
project

own training
and coaching
for teaching

dissemination

own profession-
specific teaching

Competence Profile of (Teaching) Change Agents

"Organizer"
organizational competence
(in the system and the field of learning)

"Expert"
professional competence
*(in the subject, interdisciplinary,
professional reduction)*

"Human"
personal or meta-
disciplinary competence
(personality, charisma etc.)

"Teacher"
didactical competence
*(structuring/planning of learning processes,
educational repertoire and teaching techniques)*

"Learning partner"
social competence and guidance
*(knowledge and emotion for
learning capability and climate)*

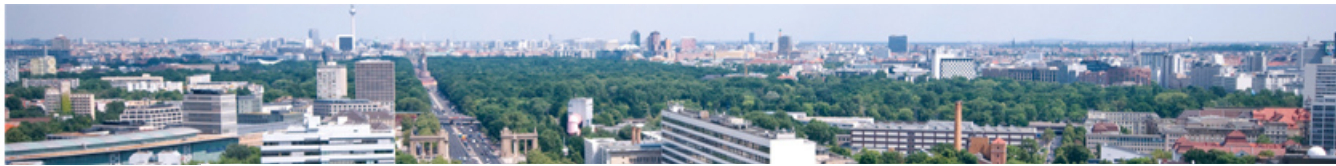# Curriculum for (Teaching) Change Agents' Development

The existing accredited programme "teaching and learning"

- general teaching methods and basic concepts
- activating teaching methods and problem-based learning
- teacher-oriented methods
- teaching media
- examinations and evaluation

Tailor-made offers

- permanent offers
- project-related requirements
- participants' individual concerns
- supporting programme

Quality assurance: by evaluation of all didactic measures and certification

Model Curriculum for (Teaching) Change Agents

SEMESTER	CONTINUING EDUCATION	TAILOR-MADE OFFERS	SUPPORT PROGRAM
1st	introductory course	kick-off	coaching, peer observation, project jour fixe
2nd	brain-friendly learning, activating teaching methods, project work and problem-based learning	planning for teaching projects	writing reports
	imparting knowledge and presentation techniques in lectures	development of a dissemination	attractive advertising of innovative course offers
	classical and digital media in the teaching process	digital media: participatory tools	online forum for exchange of experiences and self-study
	assessment and grading	grading papers and tests	lectures on examination techniques
3rd	moderation of learning groups	reflecting dissemination work	students today: goals and possibilities
	managing difficult teaching and learning situations	active methods for diverse classrooms	lecture on learners' diversity
	feedback and quality management	activity-oriented evaluation	self-evaluation and reflection: teaching portfolio
	research based teaching and learning	inverted classroom techniques	fund-raising for teaching projects
4th	development of key competences	results of teaching projects and dissemination activities	networking for lecturers
	studying technique and work organization	planning of future strategies	knowledge management: handing over the baton

ZEWK

Technische Universität Berlin

Interactive Teaching Methods

Student-centred approaches for requirements in basic STEM-courses

1. Problem-based (problem-oriented) learning:

- real world situations as an incentive to start the learning process
- student teams discuss problems, identify learning gaps and offer viable solutions
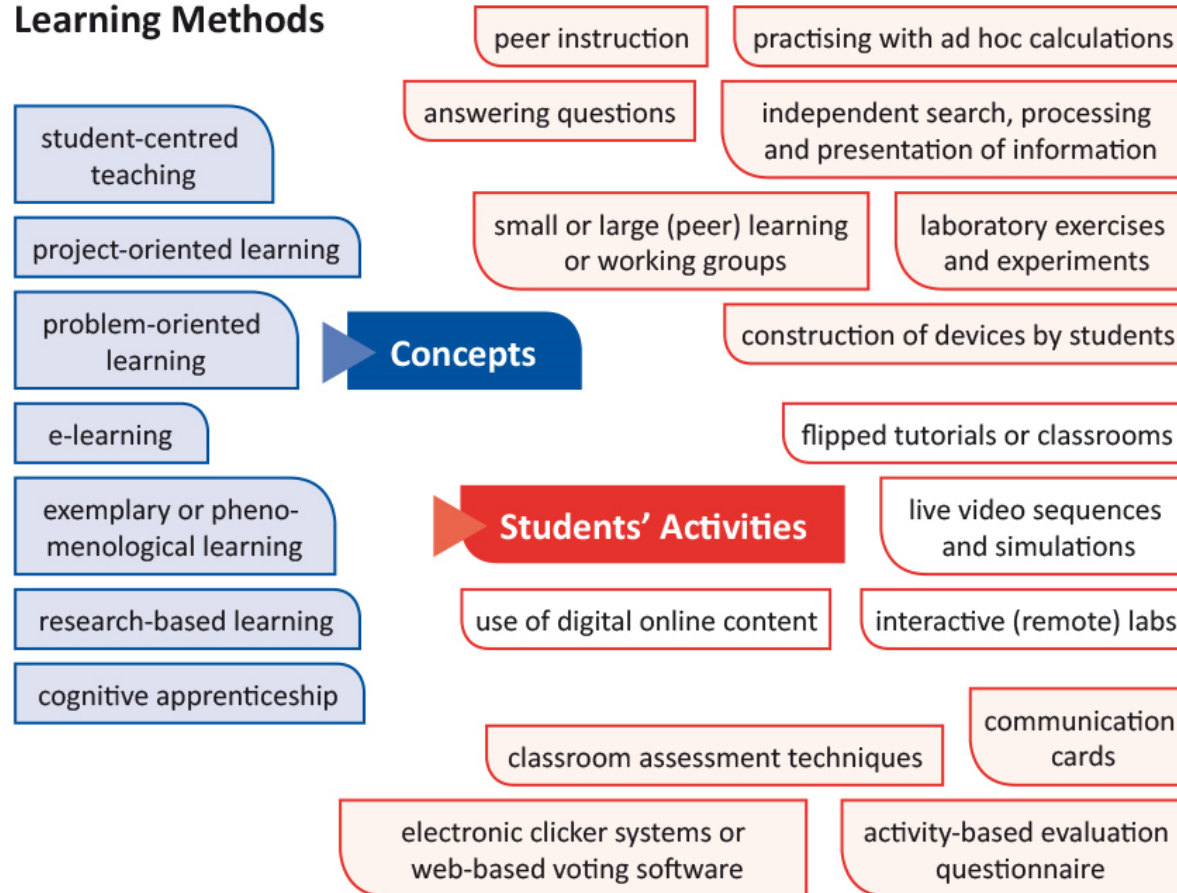
2. Digital learning:

- technical means to foster the learning process
- to create a rich learning environment

3. Activating teaching:

- didactic tools help to raise the activity level of the students

Activating Teaching and Learning Methods

Concepts:
- student-centred teaching
- project-oriented learning
- problem-oriented learning
- e-learning
- exemplary or pheno-menological learning
- research-based learning
- cognitive apprenticeship

Students' Activities:
- peer instruction
- practising with ad hoc calculations
- answering questions
- independent search, processing and presentation of information
- small or large (peer) learning or working groups
- laboratory exercises and experiments
- construction of devices by students
- flipped tutorials or classrooms
- live video sequences and simulations
- use of digital online content
- interactive (remote) labs
- classroom assessment techniques
- communication cards
- electronic clicker systems or web-based voting software
- activity-based evaluation questionnaire

Good Practice Example: Electrical Engineering

Concept
- a multi-level analysis is provided, similar to the principles of a construction kit,
- every natural, electrical phenomenon, such as lightning, is named, explained and
- illustrated by the conduction of an appropriate experiment.

Implementation in lectures
- integrating realistic examples, movie clips, live-experiments and 3D-animations
- ad hoc exercises for calculations in the new script, done during the lecture,
- continuous improvement: expansion of the topics explicable by experiments,
- subsequent adaption of the work-sheets,
- integration of simulation tools,
- recordings of the lecture for self-study,
- **tutorials (up to 30 students)** divided into sub-groups (max. 6),
- exercises for the tutorial are provided.

Pilot: Impact Evaluation of Engineering Study Projects

mv=2,1 n=132
mv=2,2 n=661
mv= 2,4 n=8
mv=2,6 n=21
mv=2,8 n=18
mv=2,9 n=16
mv=3,1 n=7
mv=3,5 n=4
Weighted Mean = 2,7

How difficult is
the subject matter of this
course compared to others?

mv=2,8 n= 18
mv=3,2 n=129
mv=3,9 n=16
mv=3,6 n=20
mv=3,3 n=658
mv=4,0 n=7
mv=4,3 n=8
mv=4,4 n=5
Weighted Mean = 3,7

How do you rate the **quality of
your learning process** in this course,
compared to others?

mv= 3,1 n=18
mv=3,5 n=130
mv=3,7 n=666
mv=3,8 n=21
mv= 4,1 n=8
mv=4,2 n=5
mv=4,3 n=7
mv=4,4 n=16
Weighted Mean = 3,9

How do you **rate the
overall course?**

Finite Element Method
Simulation Tools and their Applications
Foundations of Electrical Engineering
Construction informatics II
Analysis for Engineers
Selected Chapters of Aircraft
Sensor and Actuator Systems
Practical laboratory training
Weighted Mean

Implementation for Teaching Change Agents

1. Training for interactive teaching in higher education and professional counselling
- to ensure quality enhancement in teaching
- to act as disseminators within their faculties and departments
- to provide counselling and workshops about best practices to teaching colleagues

2. Developing innovative teaching projects
- to apply them directly in their subject-specific teaching
- to promote a study reform
- to close the gap between staff and organizational development
- to make them work hand in hand

Adaptability to other Schools

Some elements of implementation are…

- task-oriented description for TCAs' profile in the profession-specific area
- development and evaluation of teaching projects in engineering studies
- permanent support and assessment of TCA's by tailor-made and general didactic continuing education
- development of professional networks with other TCA's
- integration of this position into departmental structures

The model curriculum for TCAs can provide orientation for engineering education projects.
Depending on the existing continuing education offers for teacher training at other universities, adaptation might be necessary.

Literature

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Discussion

In the workshop, now you as participants can discuss
the model implications and its transfer possibilities.

Suggestion: partner or group work
Time: 30 minutes

Presentation: visualized results
Time: each 5-10 minutes

Conclusion/summary of findings

Thank you!

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Roles, tasks and training for Teaching Change Agents

Roles and tasks	Corresponding training
Teaching: own profession-specific teaching in the engineering study subject	courses in the regular continuing education program
Training: teaching in higher education and professional comprehensive counseling and supervision for the development of professional competences	ensured by: workshop on counseling competences, single and group coaching, regular topical meetings, including subject-specific teaching, lecture series on teaching in higher education
Project: development of innovative teaching curricula	a team-building kick off-event and a training module for project management skills and didactic concepts of curricula for teaching projects
Dissemination: good teaching practice in (didactical) training at least twice each year (most frequent example: teaching staff conference). These activities aim at training peers within the faculty, preparation of the whole team for examinations, colleagues within the project.	continuous training, workshops and coaching for disseminators on teaching in higher education, for knowledge sharing and self-study, a maintained interactive internal online forum on teaching in higher education is available.