

Strengthening Teaching Competences
in Higher Education
in Natural and Mathematical Sciences



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Learning to
Learn online

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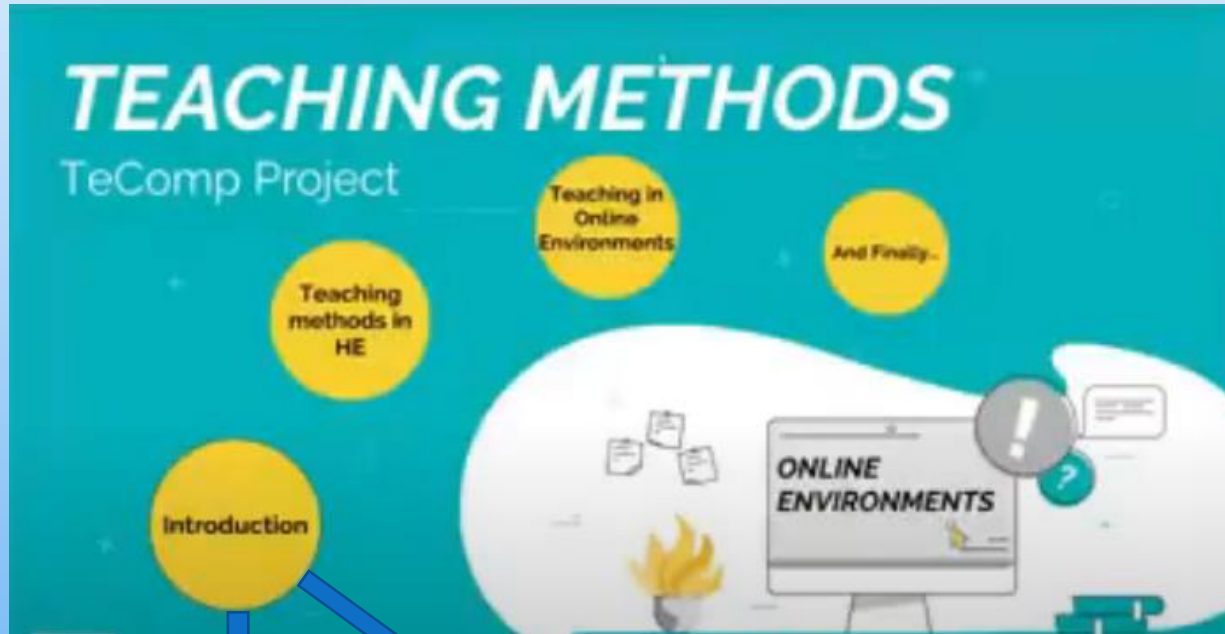


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Learning to teach and learn online



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INTRODUCTION
What will we learn
today?



WHO AM I

We will discuss about

- Modern teaching methods in HE
- Flexible pedagogy and electronic learning
- Training delivery methods
- Learning to learn
- Combined learning model

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Teaching methods - Introduction

The goal of TeComp trainings for higher education institutions in Serbia and Albania is

- ❖ to join the process of teaching and learning transformation
- ❖ to change competency-based education involving changes in planning, methodology, assessment systems
- ❖ to introduce to the trainees new tools that they will be able to implement and use for different courses at university level
- ❖ To demonstrate ways to improve the quality of higher education used on the European University scene



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From teaching to learning

Students-directed learning – student is central figure

Instructor – guide, using their knowledge and experience to direct them

Methods focused on students/learning

Applied knowledge

Professional skills

Autonomous work

Learning to learn

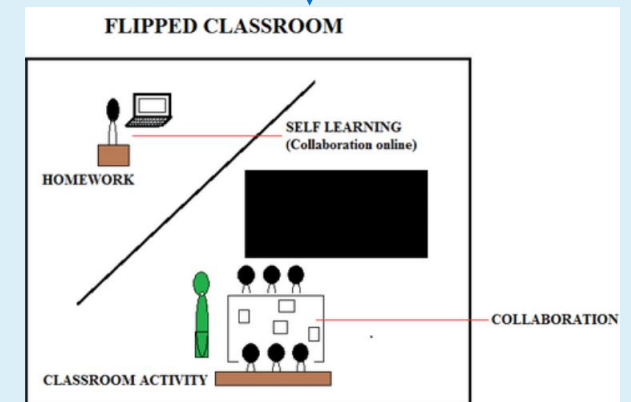
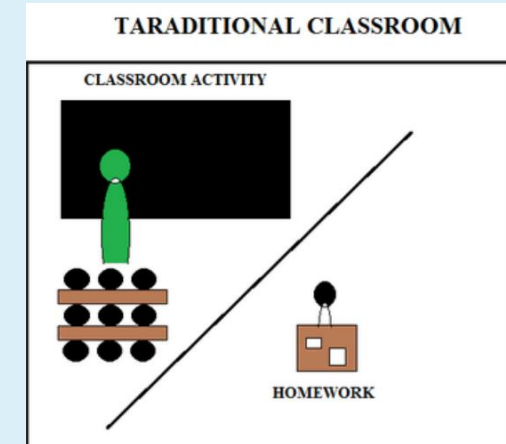
Teacher competences

Knowledge of discipline

Knowledge of learning and
development of student
diversity

Methods for facilitating
learning

Planning teaching



Flexible pedagogy and electronic learning



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How can e-learning support flexible pedagogy?

Flexible learning focuses on giving students a choice in the pace, place, and mode of their learning

E-learning deals with the use of computer technologies to support learning

A wide range of technological applications - give teachers and students many choices

The material considers a wide range of issues:

- ❖ **an adoption of combined learning;**
- ❖ **the ability to personalise the learning experience;**
- ❖ **support for a wide range of devices and systems, so the students may choose any platform they wish.**

Flexible pedagogy and electronic learning



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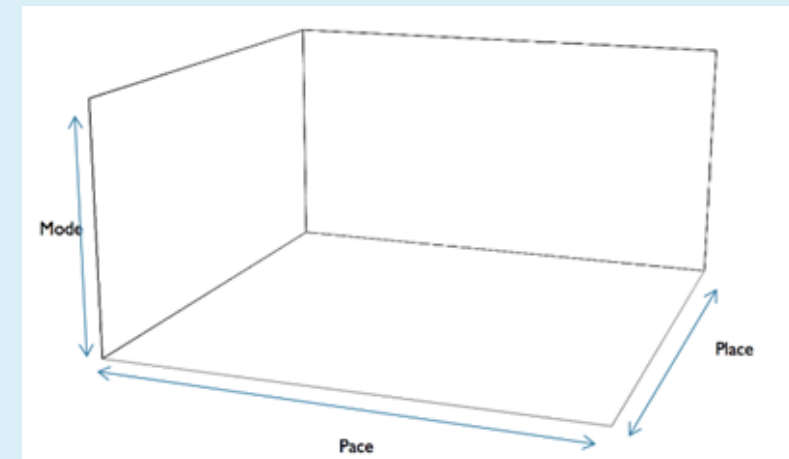


Flexible learning deals with the pace, place and mode of learning:

- ❖ the pace usually focuses on different knowledge delivery schedules;
- ❖ the place entails a physical location (at work, at home, on a road);
- ❖ the regime encompasses learning technologies in combined or distance learning.

The pace, place and way of working are variables -- allow the pedagogical approach to be placed in a three-dimensional space

- ❖ Presentation of some forms of modern methods of teaching and learning:
- ❖ team projects and group work;
- ❖ adaptive/flexible assessment through various online tests;
- ❖ providing information and changes in timely feedback using IT.
- ❖ use of technology to enhance learning and teaching,



Opportunities and challenges



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New technology offers potential flexibility in

- ❖ what is learned;
- ❖ how it is learned;
- ❖ where it is learned.

Potential confusion:



Flexible pedagogy and electronic learning



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Teachers have opportunity to provide a wide range of materials adapted to different learning styles and contexts, using different tools and new media and ways of interaction and communication the pace usually focuses on different knowledge delivery schedules;

- ❖ plan work with different students (individualization of teaching);
- ❖ provide a wide range of materials;
- ❖ use different tools and new media and ways of interaction and communication pace.



CHALLENGES FOR THE MODERN TEACHER

- Personalization
- Data Quantity & Forms
- Classroom Management
- Content
- Content Delivery
- Lesson Planning
- Students
- Privacy
- Invisible Technology



Flexible pedagogy and blended learning



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Participation Formal Lecturing

- Goal- knowledge transmission and activation of cognitive processes
- Method based on exposition/students ask questions
- Active participation of students
- Advantage: presentation of difficult themes in organised ways

Move up communication

- Move up **interaction** between teacher and student
- Effective **communication** strategies
- **Structured** and **clear** delivering information
- Using **examples**
- Emphasize **similarities** and **differences**
- Make **questions**, activities, games
- Awake the **curiosity**
- Use **technological** support
- **Finish** with conclusions, questions, resolution and evaluation

Flexible pedagogy and blended learning



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Case study

- **Goal-** learning through real or simulated cases analysis
- Learning through **detection**
- **Analysis of facts, problems, real situations**
- **Specific case presentation**
- **Real Examples**
- **Taking care**
- **Experience in group dynamics and organizing work**
- **Individual, small and big group discussion**
- **Time limits**

Exercises on problem resolution

- **Goal-** learning through real or simulated cases analysis
- Learning through **detection**
- **Analysis of facts, problems, real situations**
- **Specific case presentation**
- **Real Examples**
- **Taking care**
- **Experience in group dynamics and organizing work**
- **Individual, small and big group discussion**
- **Time limits**

Problem based learning

- **Goal-** develop active learning through problem resolution
- Problem presented before acquiring knowledge
- **Discovering required knowledge**
- **Searching information to understand and solve the problem (small groups)**
- Supervising the process by teachers
- **Features** of inductive approach
- **Interesting and attractive problems**

Project Oriented Learning

- **Goal-** elaboration of a project in which they apply skills and acquired knowledge
- They are **autonomous** in planning the actions
- Subject is the **center** of the project elaboration
- **The project arise from the students' interest**
- **Design** is systematic, needs detailed **implementation** and **organizing** work
- **Focus on key principles** of a discipline



Features of Project Oriented Learning

- Present the real situations in which students learn to **solve unsolved problems** using meaningful knowledge
- They are **focused on exploring** and working practical problems
- Subject is from one or from several **disciplines**
- **Interdisciplinary knowledge** is demanded
- **Open solutions** – opportunities to generate new knowledge

Plan-monitor-evaluate model for assessing your learning progress

What is metacognition?

What the most successful students do differently from other students?

Students who have developed effective ways of learning have mastered a skill called **metacognition**.

Metacognition -- understanding their own thinking and learning processes -- “thinking about your thinking”.



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https://youtu.be/vmaneqx2_3Q

Content structure and area creation (levels)

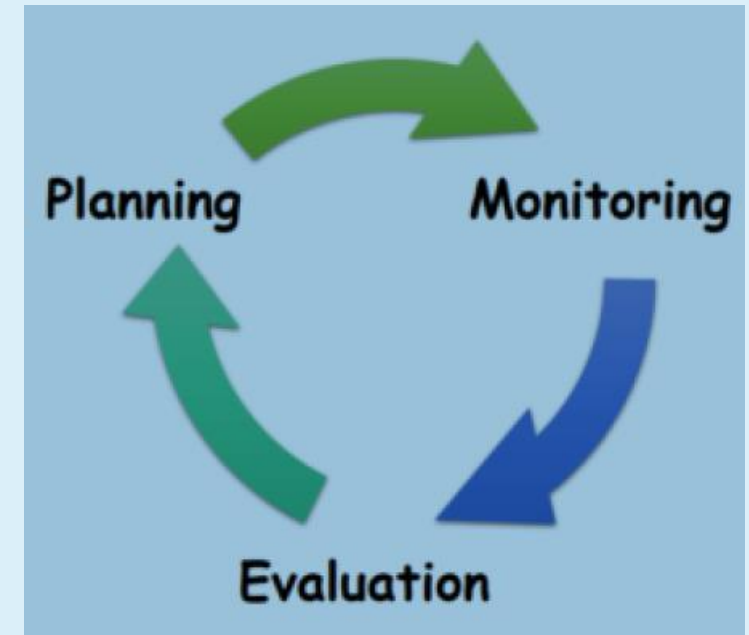
Students gain the skill of metacognition by planning, monitoring, and evaluating their learning.

Planning involves two key tasks:

- ❖ deciding *what* students need to learn;
- ❖ deciding *how* they are going to learn that material.

Monitoring – required student to ask,
“how am I doing at learning this?”

Evaluation involves reflection on
how well a student met his Learning objectives
after completing a unit of study or receiving feedback (such as a test or assignment).



Key Questions to Improve Learning

At each stage in the learning cycle, there are key questions that will support a learning process

Key question

What is needed to be learned?
(Planning)

Other questions

- What are the Learning Objectives for this class?
- What do they already know about this topic?
- What are the concepts they need to master before the next test?
- What do they want to learn about this topic?
- How do they distinguish important information from the details?

Key Questions to Improve Learning

Key question

How are they going to learn this material? (Planning)

Other questions

- How can they integrate textbook reading with lecture notes?
- What active learning strategies will support their learning?
- Will they study alone or with a study group?
- What charts or visuals will help them reorganize or process this material?
- What memory strategies can they use to remember key words and concepts?
- How can they connect with instructor?

Key Questions to Improve Learning

Key question

How are they doing at learning this material? (Monitoring)

Other questions

- What concepts do they understand well?
- What concepts are still confusing for them?
- Can they explain the material to someone else without referring to notes?
- Can they create and answer self-testing questions about these concepts?
- What other strategies could we use to learn this material?
- Am I using the supports available to them (e.g. office hours, tutors)?
- How can I make this material more personally relevant to them?

Key Questions to Improve Learning

Key question

Did they learn this material effectively?
(Evaluation)

Other questions

- To what extent did they meet the Learning Objectives for this unit?
- What in their exam preparation worked well?
- What in their exam preparation did not go well? What do I want to change?
- How did their exam answer compare with the suggested answer?
- What key components did they miss?
- How will what they have learned help them in their next courses?



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**THANK YOU FOR YOUR
ATTENCION!**

QUESTIONS?

