



Application of Innovative ICT Based Teaching Methods & Electronic Environments (related to **WP3**)

Erasmus+ Project “PHYSICS”

*November 30th, December 1st 2017,
Riga Technical University*

Renaat De Craemer, Joan Peuteman, Anik Janssens



Main goal

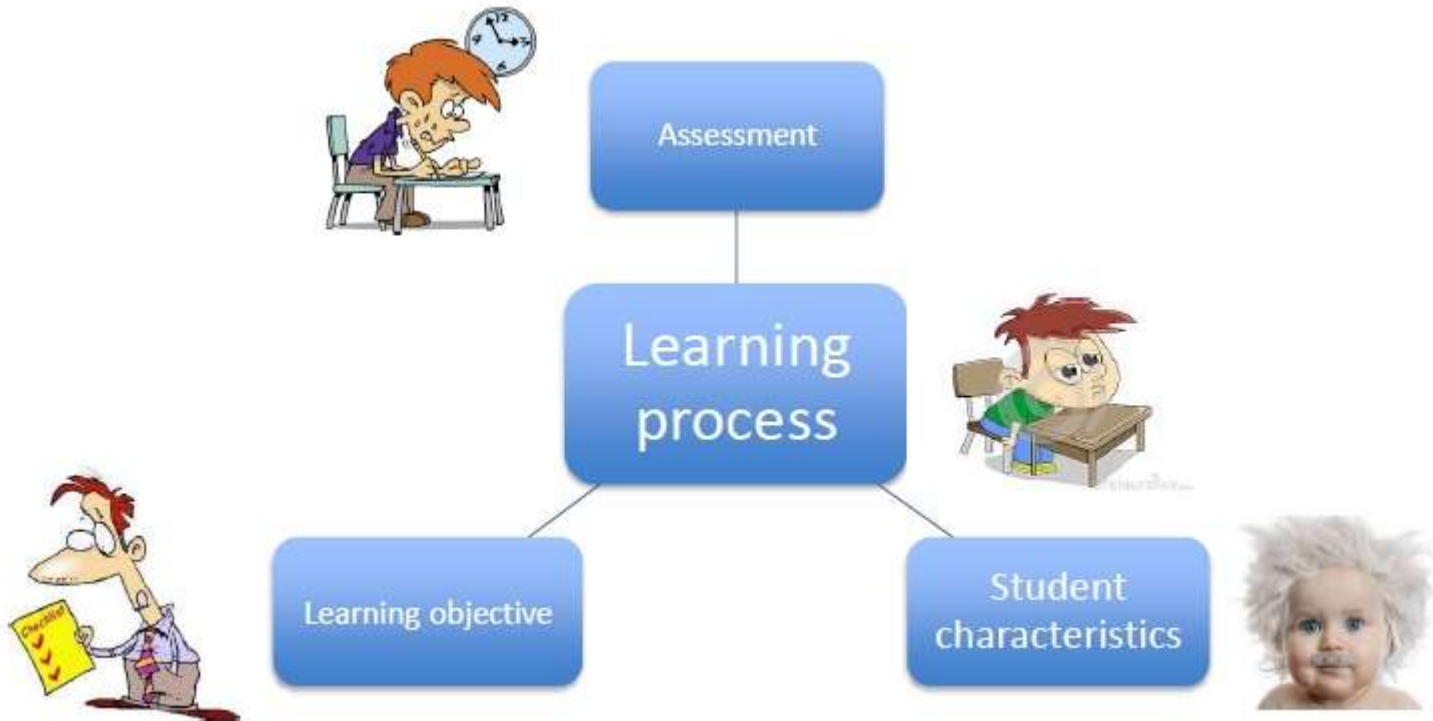
- Teaching and preparing students:
 - ✓ *To think and act as an academic skilled person*
 - ✓ *Preparing students, both for:*
 - *An academic and **research oriented** career*
 - *An **industry oriented** career*
 - ✓ *Preparing students and teaching staff to gain (ICT)-**communication skills***



Main goal

Realizing a **learning process**:

→ Model:



Main goal

- The **learning objectives** for each course need to be formulated:
 - ✓ knowledge, attitudes, skills, ... to be reached
 - the teacher as well as the student need a clear objective, a clear reference
- The **student characteristics** are important:
 - ✓ prior knowledge, learning level, motivation, interests, age, ...
 - the teacher as well as the student need to know where to start from...
- The student needs to be **evaluated (assessment)**:
 - ✓ formative and summative, ... when, what, how,...
 - The assessment needs to be representative in relation to the learning objectives

Practical realization

- Traditional ‘ex cathedra’ teaching will not disappear:
 - It is an efficient way to transmit **knowledge** and academic insights.
 - **Learning objectives** can be formulated in a clear way.
 - Traditional **written and oral exams** evaluate a number of important learning outcomes (academic and technical knowledge, insight by making exercises, ...).

But there are number of important **restrictions**:

- It is very hard to deal with **different student characteristics** (differences in prior knowledge, learning level, interests, motivation, ...)
- A number of learning outcomes (skills and attitudes) and the learning process itself are difficult to evaluate (communication skills, ...)



Practical realization

Traditional 'ex cathedra' courses will not disappear.



But, technological evolutions allow **new opportunities**.

Digitizing the content of courses is useful. Using a **Digital Learning Platform** like **Blackboard** or **Moodle** is an important option.

Digital Learning Platform

Digitizing the content of courses ***makes it possible*** to apply a digital learning platform, such as Moodle, in a dynamic way, i.e. to:

- ✓ Frequently re-use the digital content
- ✓ Adjust and elaborate the course content
- ✓ Structure and re-structure the content, while adapting to
 - The learning outcomes
 - The students needs
 - The students' learning process

On the other hand, a learning platform remains only a tool,
... to be used by the student... and the teacher/tutor.



Digital Learning Platform

- A **Digital Learning Environment** allows to:
 - provide students with study material of different types (for example e-books, downloadable video recordings)
 - follow the evolution of the learning process
 - observe the performance of a student in specific tasks
 - give (individual) feedback to the students



Digital Learning Platform

- A Digital Learning Environment is known to be useful when teaching '**science**' and '**physics**'.
- Objects of many kinds can be used:
 - Text documents
 - Videos & Images
 - Links to websites
 - Animations
 - Simulations
 - ...



The use of Moodle

- In **the Moodle system**, an online course “Applied Physics” has been made.
- Other courses of the Physics project are available.
- Let’s have a look... :
 - MOODLE: See <http://dl.bsu.by/>
 - Hands-on “presentation”



The Moodle course “applied physics” contains several **downloadable video recordings**.

Conclusion

- **The Moodle system** has been used to realise a scientific/technical course on “applied physics”.
- During the Teacher Training in Riga Technical University (February 5th to February 9th 2018) a basic course on the use of Moodle has been planned.

Application of Innovative ICT Based Teaching methods & Electronic Environments (related to WP3)

Questions?

Erasmus+ Project “PHYSICS”

Renaat De Craemer, Joan Peuteman, Anik Janssens

KU LEUVEN