

TEACHING METHODS IN HIGHER EDUCATION

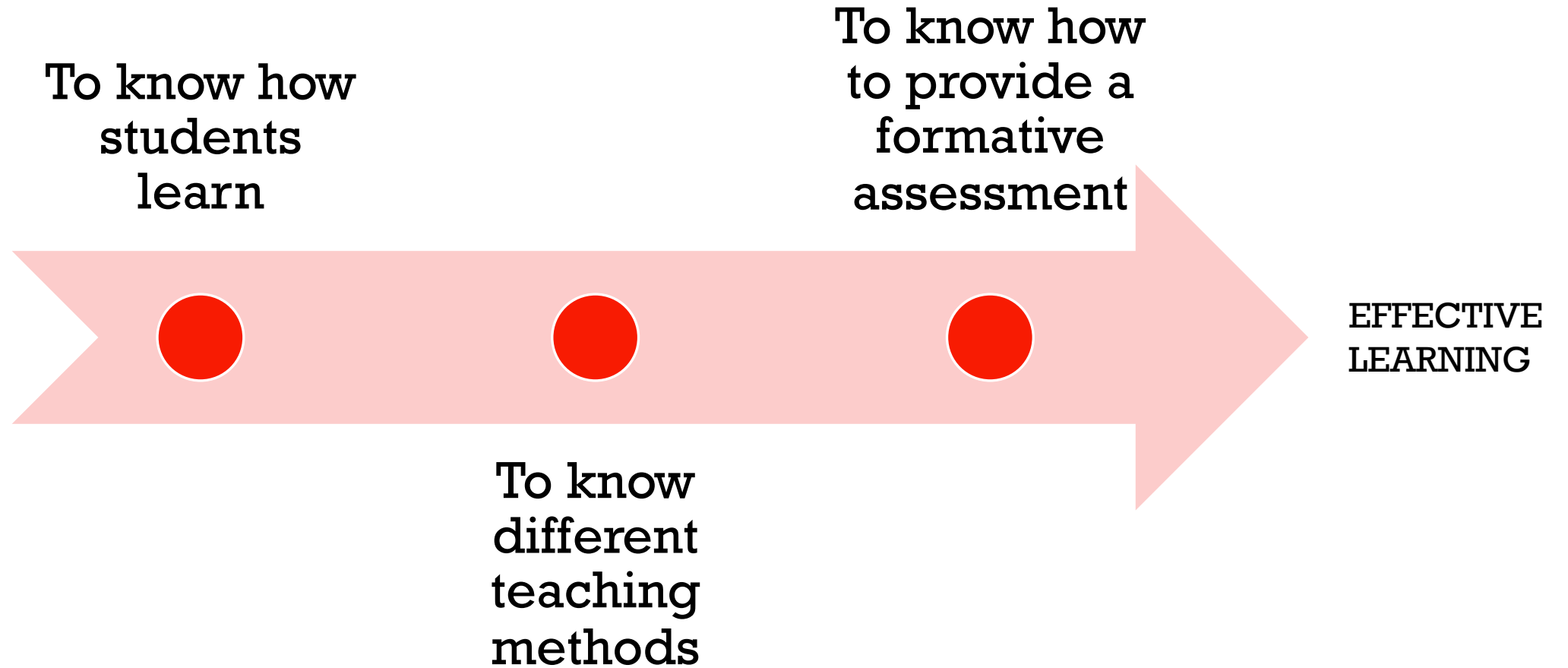
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**Strengthening Teaching Competences
in Higher Education
in Natural and Mathematical Sciences**



How do students learn?

- Whether or not a student retains what they have learnt depends upon how deeply they have processed it
- The greater the depth of information processing by learner during learning, the better it will be retained and remembered.
- The more techniques that the learner or teacher uses to stimulate deep learning, the better information students will retain.
- Processing will be automatic at a low level but professors should focus students' attention on a higher level.
- Being able to “just Google it” is not enough. Instruct students to consider the meaning of concepts and how they relate to other concepts, rather than considering an isolate definition of them.
- Learning is largely a question of what we pay attention to, so ensure students are paying attention to the right things.

TEACHING IN HIGHER EDUCATION

Effective teaching and learning begins from the foundation of a good curriculum, where learning outcomes, assessment and feedback are all aligned.



EUROPA PRESS

**Master class and teaching
to solve problems**



**Opportunity for students
to reflect in class**

TEACHING METHODS

- Teaching large groups (lectures)
- Small Group Teaching
- Demonstrating in practical classes
- Flipped classroom
- Massive Open Online Courses (MOOCs)
- Active learning
- Problem based learning
- Work based learning
- Blended learning
- Student-led learning

Teaching Large Groups (Lectures)

- **The outstanding lecture**
- **Student Engagement**
- **Lecturing to a Varied Student Group**

This resource was developed from Chapter 5, Morton, A. Lecturing to Large groups (pp. 59 – 66) in Fry, H., Ketteridge, S. & Marshall, S. (2007) A Handbook for Teaching and Learning in Higher Education Enhancing Academic Practice 3rd edn. Routledge: New York and London

Teaching Large Groups (Lectures)

The outstanding lecture

- Lectures should be informative, interesting and engaging
- The content is well organised and easy to follow
- Students can understand the development of the argument
- Students feel involved
- Students are engaged through questioning
- Students leave knowing that they have learned something, and are often inspired to go off and find out more.

Do you believe your lectures have these attributes?

If you asked your students, what would they say?

Teaching Large Groups (Lectures)

Student Engagement

- Pose questions for students to discuss in small groups, then take feedback from a few groups to hear what they think.
- Get the students to tackle problems individually, and then compare their answers with one or two other students sitting close to them.
- Ask the students to vote on a multiple choice question (MCQ).
- Show a video clip, but do ask the students to look for something specific that you can ask them about afterwards.
- Use demonstrations that can involve the students directly.
- Ask the students to do a mini-test, for example, to check student progress.

Teaching Large Groups (Lectures)

Lecturing to a Varied Student Group

- Find out as much as possible about the student cohorts who will be attending the lecture.
- Acknowledge to the students at the start that you know they are a varied group and that the content, organisation and supporting materials for the lecture will reflect this.
- Use examples that are varied and reflect the subject disciplines of the group.
- Ask the students to work on different problems or consider different questions that are relevant to their knowledge base or subject discipline.
- Make explicit reference to specific additional resources each cohort can access for support after the lecture.

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Small Group Teaching

Key skills:

- Coping with the normal difficulties of interactions between human beings
- Working in teams
- Managing time and processes effectively
- Listening to others' ideas sympathetically and critically
- Thinking creatively and originally
- Building on others' existing work
- Collaborating on projects
- Seeing projects through to a conclusion

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Demonstrating in practical classes

The key learning aims in practical classes are:

- Consolidate subject knowledge
- Introduce disciplinary methods and procedures
- Develop technical skills
- Develop cognitive skills
- Promote teamwork skills
- Increase motivation

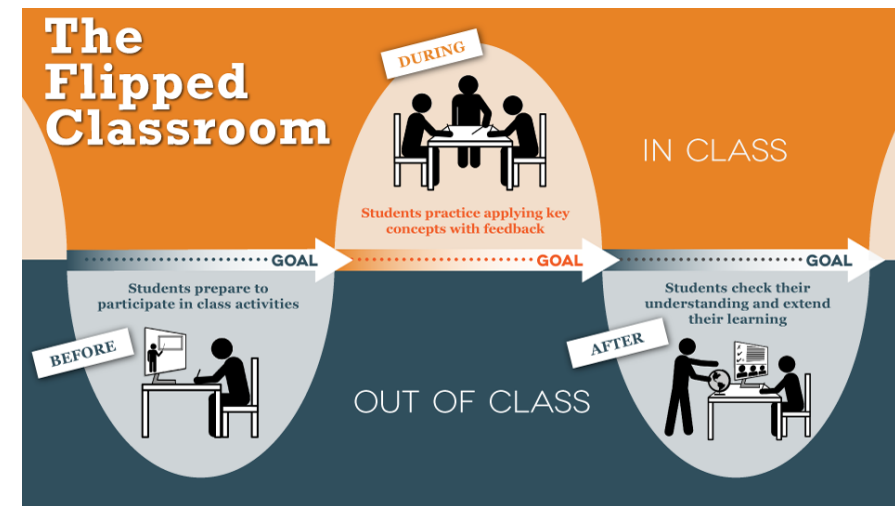
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Flipped classroom

The flipped classroom is a pedagogical model where:

- lecture and homework elements of a module are reversed
- video lectures are viewed by students at home before coming to the lecture
- lecture is devoted to discussion and activities



Fuente de la imagen: <https://facultyinnovate.utexas.edu/flipped-classroom>

Flipped classroom

Three points to consider regarding the flipped classroom:

Homework

Using the flipped classroom model students are required to do homework prior to the session. Not all students will do this.

Homework quality

No student will accept a very long and detailed video to watch online.

Production quality

You would like to produce or find out interesting and engaging videos that will hold your students' attention.

Remember: Not all students will find this approach engaging. Not all students will see this single strategy as meeting their learning needs.

Flipped classroom

- <https://www.youtube.com/watch?v=cXcCBuU3ytU>

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Massive Open Online Courses (MOOCs)

A MOOC is an online course with the option of free and open registration, a publicly-shared curriculum, and open-ended outcomes. MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. Most significantly, MOOCs build on the engagement of learners who self-organize their participation according to learning goals, prior knowledge and skills, and common interests.

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Active learning

Teaching-learning methods which put students in charge of their own learning through meaningful activities.

"The education literature commonly quotes studies showing that when material is delivered using a single method (i.e. students are passively listening) their concentration limit is between 10 and 20 minutes, a small fraction of a lecture. Passively listening to a lecture can be useful at promoting learning at the lower end of a taxonomy of learning such as – to 'remember' and 'understand' – but is not as good at promoting higher-level skills like 'apply', 'analyse' and 'evaluate'." Jess Gifkins

Active learning

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- Minute paper** Towards the end of a teaching session ask students to consider what is the most important thing they learnt today, and which thing is the least clear.
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- Chain notes** Write one question about the topic on the outside of an envelope. Ask students to pass it around the room and each write a response and put it in the envelope.
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- Directed paraphrasing** Ask students to write in layman's terms what they have just learnt.
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- Application cards** Ask students to write down at least one real-world implementation for a theory or principle they have just learned.
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- Polling** Either electronically or by a show of hands, ask students to vote on what they perceive to be the best answer to a question, or the best result of a scenario.
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Problem based learning

There are many advantages to students in using this approach, as it allows them to:

- Develop transferable and employability skills that will be useful in the workplace
- Improve communication and team working
- Practice research and information processing
- Develop debating and analytical skills

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Work based learning

This mode of delivery provides students with real-life work experiences to aid their learning and improve their employability

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Blended learning

Blended learning (also known as hybrid learning) is when traditional classroom teaching is combined with online learning and independent study, allowing the student to have more control over the time, pace and style of their learning

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Student-led learning

Student- or peer-led learning is where students themselves facilitate their learning, often by students in the year above guiding students in group activities to discuss materials with their peers and solve problems.

What will you
have to do in
this workshop?

You will incorporate a new teaching method into your lesson plan. For that:

- 1.- Choose a concept to teach in class**
- 2.- Design the elements or resources (questions, lectures, problems,...) for incorporating the new teaching method.**
- 3.- You will be presenting your lesson plan orally to the rest of the class the next day.**