

Teaching in the XXI century

Shaping the Future, 5th September 2023

Alexandra Antunes, Beatriz Silva and Nuno Roma



Literacy Skills



information



media



technology

- Information – understanding facts, figures, statistics, and data
- Media – understanding the methods and outlets in which information is published
- Technology – understanding the machines that make the Information Age possible

Learning Skills



critical thinking



creativity



collaboration



communication

- Critical thinking – finding solutions to problems
- Creativity – thinking outside the box
- Collaboration – working with others
- Communication – talking with others

Life Skills



- Flexibility – deviating from plan as needed
- Leadership – motivating a team to accomplish a goal
- Initiative – starting projects, strategies, and plans on one’s own
- Productivity – maintaining efficiency in the age of distractions
- Social skills – meeting and networking with others for mutual benefit

**How to motivate students to
participate in classes?**

Think – Pair - Share

- **Think** - participants a response to a question
- **Pair** - participants pair up and share their responses.
- **Share** - reconvene the class and ask pairs to report back on their conversations.

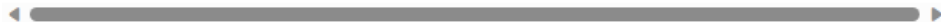
Think

05:00

mins: secs:
type: ▾

 Breaktime for PowerPoint by Flow Simulation Ltd.

Pin controls when stopped



Pair

05:00

mins: secs:

type:

 Breaktime for PowerPoint by Flow Simulation Ltd.

Pin controls when stopped



Share

- **Think** - participants a response to a question
- **Pair** - participants pair up and share their responses
- **Share** - reconvene the class and ask pairs to report back on their conversations.

Think – Pair - Square

- **Think** - participants write a response to a question.
- **Pair** - participants pair up and share their responses.
- **Square** – each pair “square” with another pair to discuss their ideas, making a group of 4.

What is Flipped Classroom?

How to implement it?

Which are the advantages and challenges?

The Flipped Classroom

DURING



Students practice applying key concepts with feedback

IN CLASS

GOAL

GOAL

GOAL

Students prepare to participate in class activities

BEFORE



OUT OF CLASS

AFTER

Students check their understanding and extend their learning



Flipped Classroom

Advantages

- ✓ Engages students in the learning process
- ✓ Unlimited access to content
- ✓ Fosters independent learning
- ✓ Gives students control over the learning pace
- ✓ Promotes peer interaction and collaboration skills (cooperative learning)
- ✓ Promotes teacher-student interaction (fosters informal feedback, guiding the learning process)

Major Challenge

It relies on preparation and trust



DEEC

**DEPARTAMENTO DE ENGENHARIA
ELETROTÉCNICA E DE COMPUTADORES**

TÉCNICO LISBOA

**What skills do students develop in
Project Based Learning?**

Go to

www.menti.com

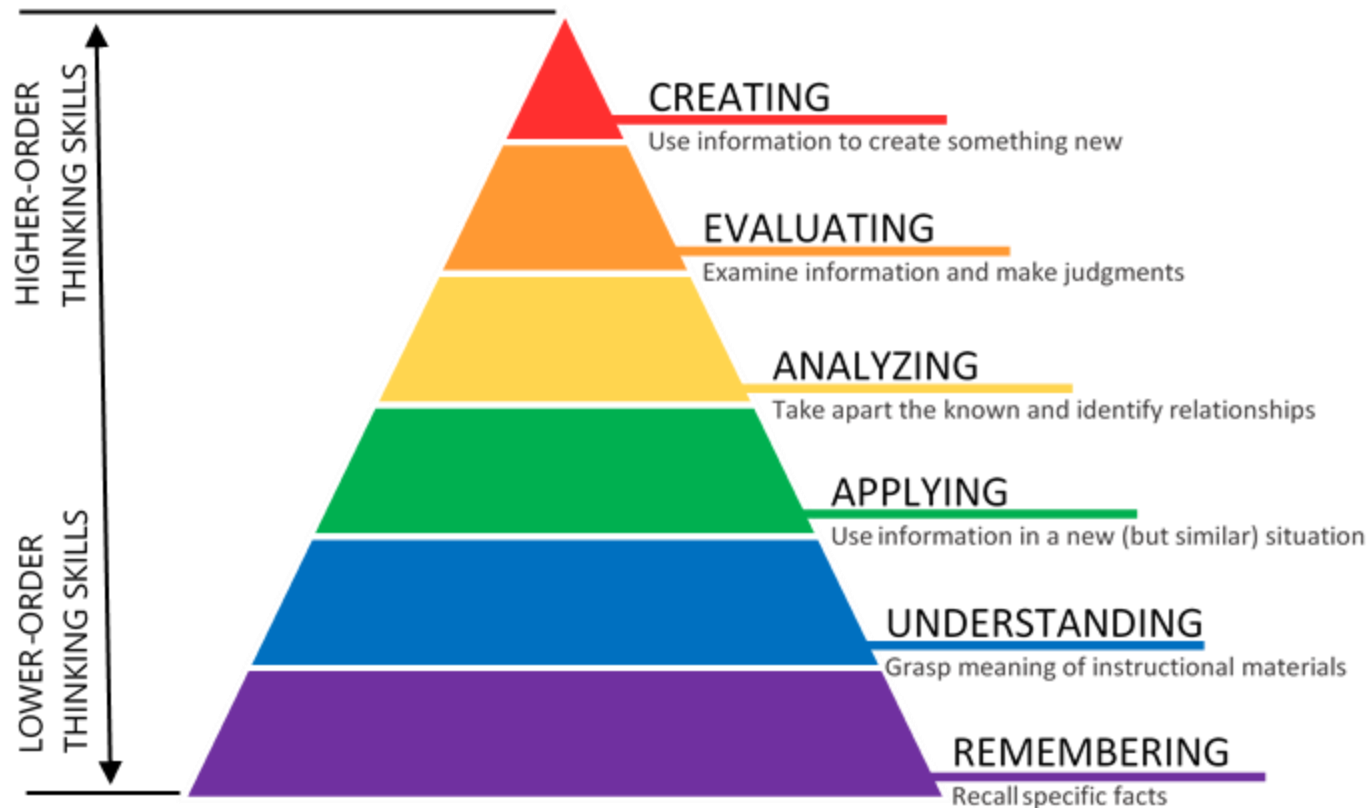
Enter the code

5711 6204



Or use QR code

BLOOM'S TAXONOMY – COGNITIVE DOMAIN (2001)



Example

Manufacturing Processes I

3rd year, 1^o semester - P2, LEMec

>200 students

T – 3 h x 7 weeks

PB – 2 x 1.5 h x 7 weeks

L – 1 h x 7 weeks

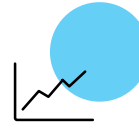
Project



*Students
select a
part to
analyse*



*Weekly aim
and feedback*

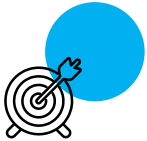


*Final report
and
presentation*



*Peer
assessment of
one project per
group*

Classes



*Weekly aim
on a topic
of the
project*



*Students
present their
ideas/proposals
on the topic*



*Feedback on
students
performance*

Final Recommendations

- **Theoretical classes**
- **Office hours**
- **Clear communication of assessment**
- **Supervision of students**
- **Fear of failure**

Obrigado!

alexandra.antunes@tecnico.ulisboa.pt

beatriz.silva@tecnico.ulisboa.pt

nuno.roma@tecnico.ulisboa.pt