09:15-09:30

Introduction, motivations and aims – Quick participants' introduction

**Where are you from?**

**What do you teach (at the university)?**

**What is your experience in teaching?**

**How do you (mainly):**

**prepare a lesson**

**prepare a course**

**deliver a lesson**

**What are your course's materials?**

**Session 1 - How learning works and what teachers can do to facilitate it**

Traditional Lecturing is statistically the least effective method for content delivery. People lose interest or get distracted and ultimately retain less information. In this session we will discuss how learning works and how we can facilitate it using creative ways to make learning interactive with the learners driving the process.

**Ambrose, S.A., Bridges, M.W., DiPietro, M., Lovett, M.C., & Norman, M.K. (2010). How learning works: Seven research-based principles for smart teaching.**

This book translates the often dense jargon of brain research to language instructors in any field can read, understand, and apply.

It presents seven principles and instructional strategies addressing the seven principles.

**Principle P1**: Students’ prior knowledge can help or hinder learning

**Principle P2**: How students organize knowledge influences how they learn and apply what they know.

**Principle P3**: Students’ motivation determines, directs, and sustains what they do to learn.

**Principle P4**: To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned.

**Principle P5**: Goal-directed practice coupled with targeted feedback enhances the quality of students’ learning.

**Principle P6**: Students’ current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning.

**Principle P7**: To become self-directed learners, students must learn to assess the demands of the task, evaluate their own knowledge and skills, plan their approach, monitor their progress, and adjust their strategies as needed.

**Teaching approaches:**

* Peer instruction
* Flip classes
* When you lecture, do it following the answers of a diagnostic questionnaire

**Teaching techniques (to implement the approaches):**

* Techniques to maximise interactivity (e.g. sticky notes)
* Make students work in groups
* Pair students
* Ask questions
* Collect data about students (identify gaps and misconceptions)
* Multiple choice questions (MCQs) to measure what the students know

Each of the MQC incorrect answers is a *plausible distractor* with *diagnostic power*. “Plausible” means that it looks like it could be right; “Diagnostic power” means that each of the distractors helps the instructor figure out what to explain to that particular learner next.

* A good MCQ tests for conceptual misunderstanding rather than simple factual knowledge. If you are having a hard time coming up with diagnostic distractors, then either you need to think more about your learners’ mental models, or your question simply isn’t a good starting point for an MCQ.
* When you are trying to come up with distractors, think about questions that learners asked or problems they had the last time you taught this subject. If you haven’t taught it before, think about your own misconceptions or ask colleagues about their experiences.

**Other things you have to know:**

* **Course/lesson design&planning is essential and highly demanding**

- choose the materials

- prepare the questionnaires

- prepare challenging questions

- conceptual map

* **Five Things I Wish I Knew When I Flipped My Class** (<https://www.youtube.com/watch?v=4JPdGlyt6gg>)

1) It takes more time than you think – How hard can it be to pre-record a lecture you've given a hundred times? Very hard.

2) Use other people's stuff! There is lots of high-quality material available for educators to use and repurpose. Do it.

3) Expect push-back from students – Sitting through a lecture is easy. Learning is hard. Not every student is going to like the flipped classroom method of instruction.

4) Keep your options open! You don't have to flip every lesson. Pick a few lessons each year. Keep it simple.

5) Have a plan for your extra class time! Make sure you plan out how you will use your class time. That's the whole point, after all.

**Readings/To watch:**

<http://swcarpentry.github.io/instructor-training/>

Peer instruction: <https://www.youtube.com/watch?v=Rixx-Qtnt5I>

Peer instruction (SW/DC): <https://www.youtube.com/watch?t=1&v=2LbuoxAy56o>

<https://en.wikipedia.org/wiki/Peer_instruction>

Flip classes:

https://www.youtube.com/watch?v=ojiebVw8O0g

<https://www.youtube.com/watch?v=ZRvmjjeZ9CA>

09:30-09:50

**Allegra Via (IBBE, CNR, Bari, IT)**: Lessons from cognitive research, academic teaching and training experiences

09:50-10:10

**Vincenza Colonna (CNR, Naples, IT)**: Lessons from non-formal learning and teaching

10:10-10:40

**Work in groups** - The groups will discuss which techniques they would feel comfortable to implement in their courses and how

The techniques we presented in the two may be difficult to be applied in classes with many students or in poorly equipped classrooms (e.g. lack of computers and/or Internet connection).

Think to your course/lesson (or to courses you attended as participant) and discuss how you would implement each of the approaches described

**Session 2 - Using assessment for better teaching**

In this session we will discuss the difference between formative and summative assessment and how assessment can be effectively used as a great instrument to enhance the quality of your teaching and, as a consequence, the learning experience of your students. Course diagnostic assessment can make you aware of students' prior knowledge and mental models. Tests during the course can be used to verify whether learning is actually occurring and to direct your teaching accordingly. Post-course (feedback) questionnaires can help improve the quality of teaching and teaching materials for future editions of a course.

11:10-11:30

**Gabriella Rustici (University of Cambridge, Cambridge, UK)**: Lessons from the training programme at the university of Cambridge

11:30-11:50

**Sarah Morgan (EBI, Hinxton, UK)**: Lessons from training at the EBI

11:50-12:40

**Work in groups** - The groups will discuss which kind of tests and questionnaires they would feel comfortable to design and use in their courses and how

12:30-12:40

Quick discussion and recap

12:40-13:00

**Pedro Fernandes (Instituto Gulbenkian de Ciência, Oeiras, PT)**: Current needs in Europe for bioinformatics professionals: what should be taught in BSc and MSc courses

13:00-13:15

Wrap up