

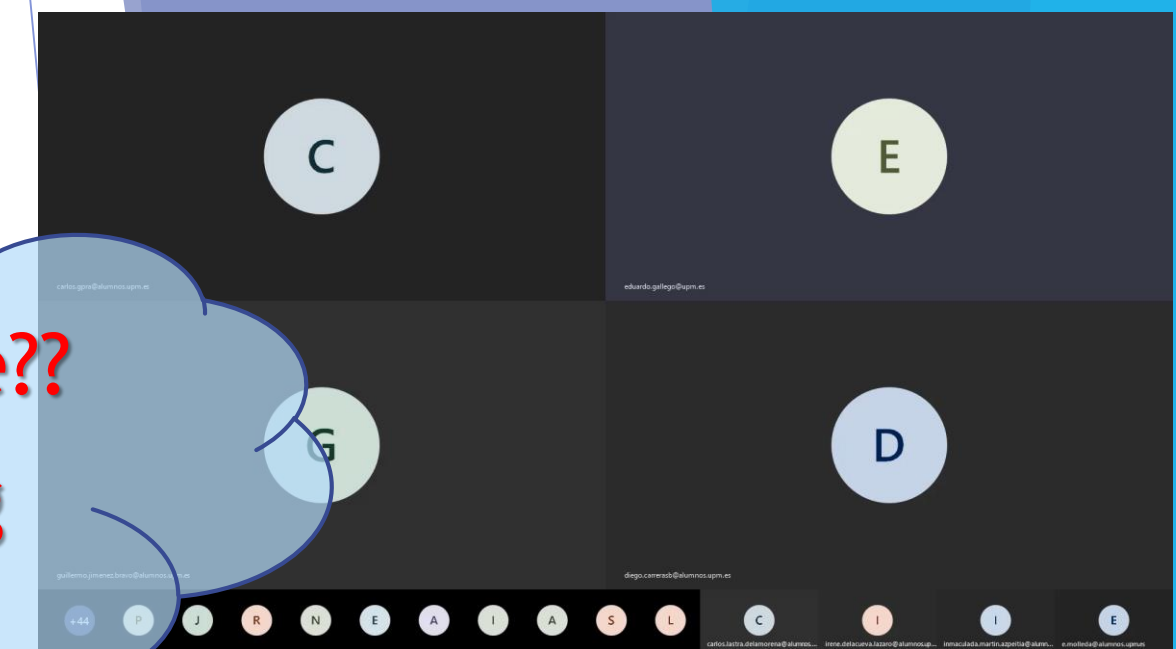
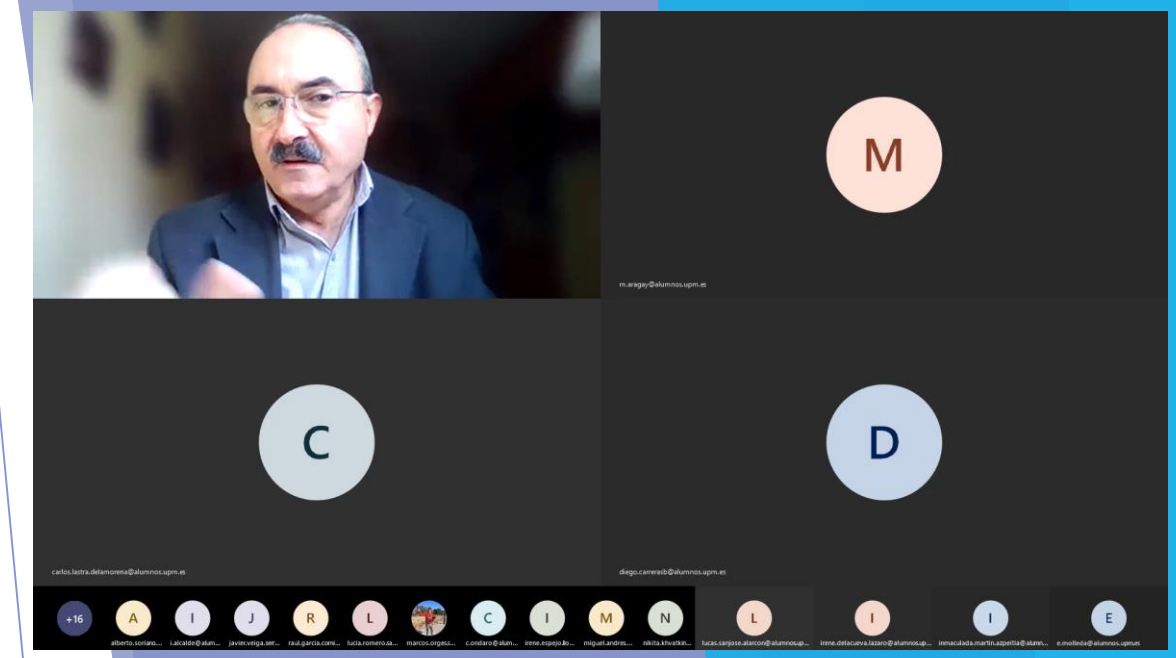
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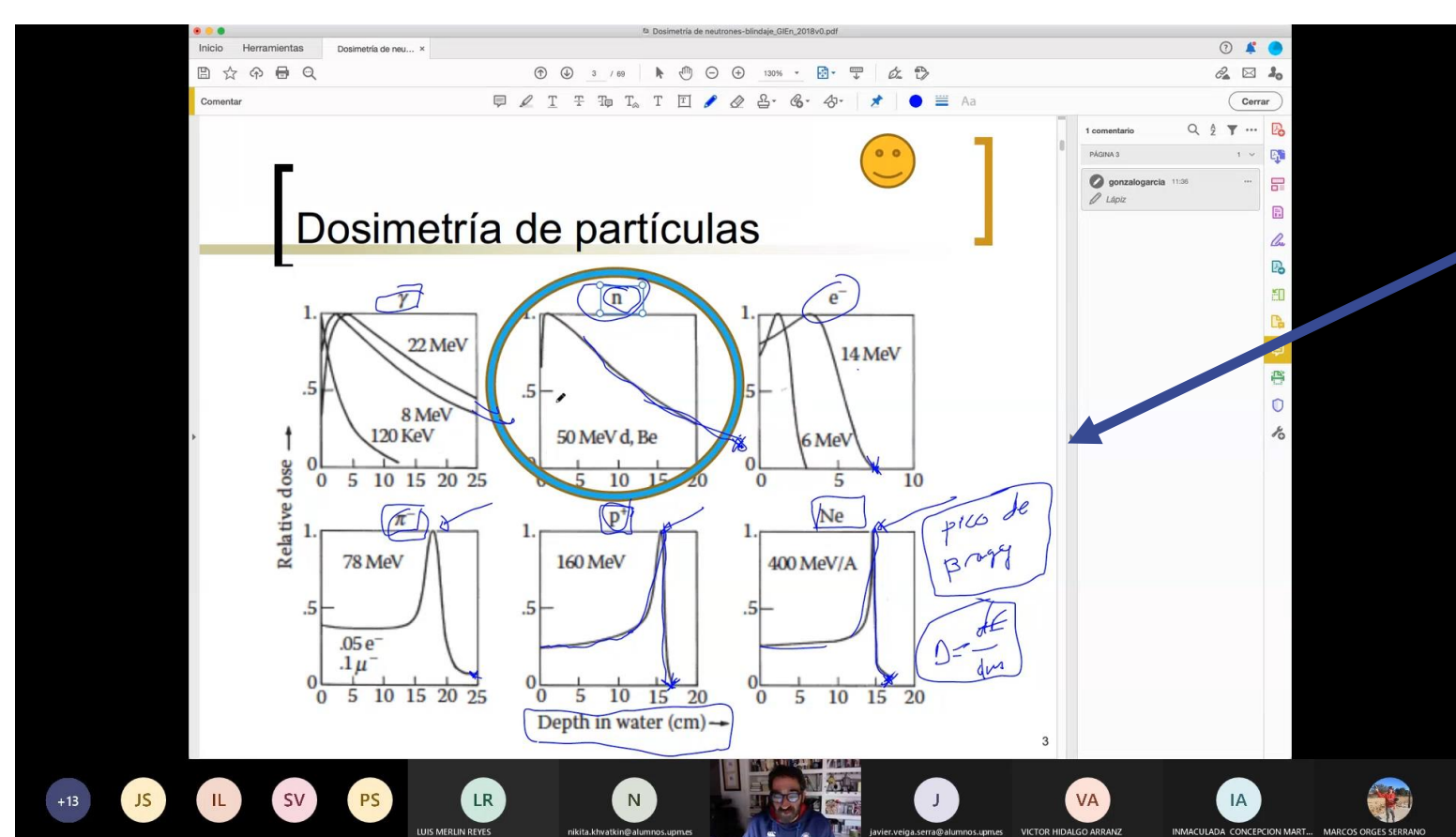


- ▶▶ The COVID-19 pandemic suddenly moved us to “*online life*” including teaching of Radiation Protection.
- ▶▶ During 2020, teaching at UPM has been developed mainly online, without losing contents of the curriculum

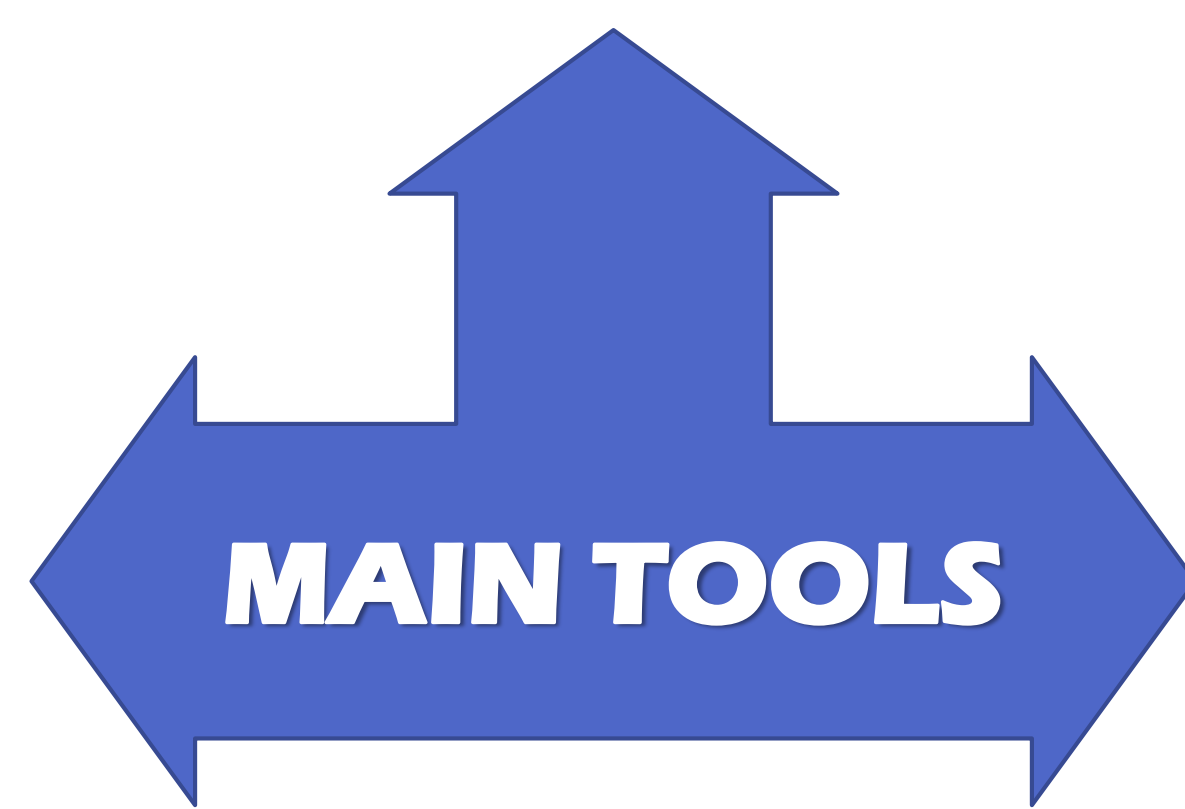
- ▶▶ However, undoubtedly, the quality of the student-teacher relationship has been affected:
 - ▶▶ Students in general tend to not be very active during online classes
 - ▶▶ When groups are large, visual communication is largely lost: students usually keep their cameras turned off
 - ▶▶ They also turn off the microphones so as not to introduce noise interference during classes.
- ▶▶ For the teacher, it is very difficult to check if the students are paying due attention during the classes.



Is anybody there?
Are you paying attention??



Digital tablets allow a better explanation of complex concepts!



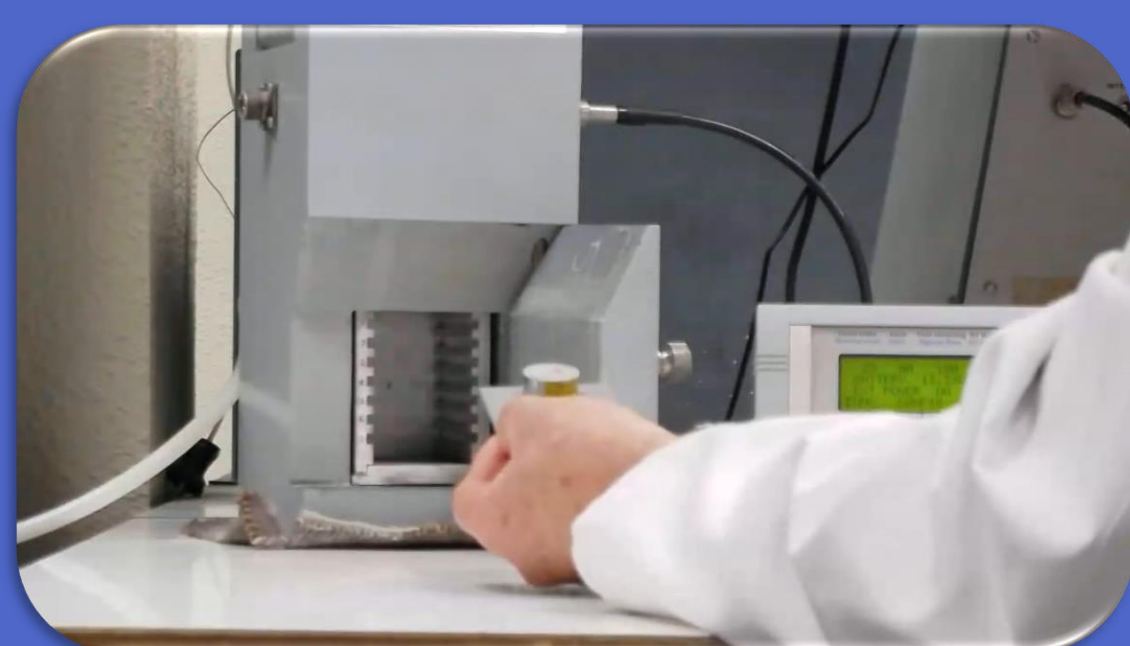
MS-Teams advantages:

- Organization by **teams & channels**:
 - Each **team** is a class group
 - A **channel** represents a given course for that **team**. **Virtual classroom**
- Easy planning of classes
- Easy sharing of contents. Archives repository in each **channel**
- Video recording of classes
- Chat communication and recording



Moodle advantages:

- General forum and distribution of announcements of general interest (by email)
- Organized repository of all relevant material:
 - Presentations of each lesson
 - Written texts of the lessons
 - Collections of solved practical problems
 - Practical laboratory session scripts
 - Direct links to videos and websites of interest
 - Links to video recordings of the lectures
- Exercises proposed for personal work as part of continuous assessment and uploading by students



Practical activities:



- **Online by MS-Teams**: radiation dose calculation & shielding models.
- **Online by Moodle**: A first practice on gaseous ionization detectors was recorded in video in the laboratory and assessed with individual online questionnaires for the students.
- **Practical laboratory session**: aiming to the students not to lose their first contact with ionizing radiation detection and measurement systems.
- Focused on **radiation protection instruments**: different types of radiation monitors, contamination monitors, monitors for identifying radioactive sources and neutron dosimeters.
- The students visited the laboratory in small teams, where the instructors made a live demonstration for them.
- Preventive measures against COVID-19 imposed limitations but nonetheless it has been possible for students to see the instruments' operation and main properties.
- This practice also served to establish personal, albeit limited, contact.



Assessment activities:

- The university decided that the final evaluations were to be done through written exams carried out in person.
- The assessment of each student was complemented by: attendance record to the online classes, individual personal work (problems) and performance during the practical activities, evaluated by short questionnaires and written reports.



Conclusion

Online teaching was necessary, making use of tools that have been very practical.

Several of these tools and methods could be maintained in future courses as a useful complement to teaching in traditional mode.