• Títol: Thermal and thermochemical energy storage: Bridging the gap between the virtual classroom and the face-to-face attendance

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• Resum: Thermal and thermochemical energy storage is a course offered within the Master’s degree in Energy Engineering and the KIC Innoenergy RenE Master. This course is not only targeted to face-to-face attendees but also to students which might be attending from other European Universities. The virtual classroom (VCR) is an environment which provides a convenient communication between distance learners and lecturers, just as traditional face-to-face attendance does. Different techniques and tools have been implemented in order to accomplish the main goals of the course: online quizzes, virtual labs, oral presentations. In this poster, the different tools used in the course as well as the techniques envisaged to bridge the gap between both kind of students will be presented.

Paraules clau: virtual classroom, face-to-face attendance, virtual tools
The Virtual Classroom (VCR) provides a convenient communication environment similar to the traditional face-to-face classroom. In a VCR learners can attend a class from anywhere.

Challenge:
- Provide virtual learners with an experience similar to a real classroom.
- Promote the interaction between both virtual and face-to-face attendance.

*source: http://www.freedigitalphotos.net
The virtual room environment allows the lecturer the direct contact students attending remotely.

Resources can be easily shared.
Conduct polls/ Give response to polls.
Features and tools aimed at promote learning and bridge the gap between attendance and lecturers

**Share screen & resources:** promotes interactivity, approach the lecturer to the virtual attendance when necessary

**Raise hand:** both virtual and face-to-face attendance can participate in discussions, ask questions, etc.

**Chat and polls:** facilitate the integration of students attending remotely

**Live video & audio**

**Virtual blackboard:** Mimics the behaviour of the physical one.

Students attending face-to-face participate of all activities through the projection of the virtual room into a projection screen.

Images source: http://www.freedigitalphotos.net
Atenea platform allows the monitoring of the course:

- Schedule activities
- Open forum
- Deliver assessment exercises, reports, etc.
- Access to course documentation:
  - Slides, extra-material (web links, articles, videos, etc.), homework, preparation for the next lecture, etc.
Assessment activities:

**Online questionnaires**

**Online and face-to-face presentations**

**Assessment exercises with 1-2 w. frequency**

**Virtual and face-to-face labs:**
- Material and documentation for the lab.
- Online video of the activities mimicking face-to-face attendance
- Data files with measurements
- Assessment: report on results and discussion
Conclusions and outlook for improvements

- So far, assessment scores show no difference between both face-to-face and virtual attendance.
- Course planning has to be carefully prepared.
- Lecturers should provide quick response to unexpected situations and foreseen further complications.
- This kind of courses promote the enrolment of students from other EU universities within KIC Innoenergy RenE and SELECT Masters.
- Further activities and supplementary material are currently being prepared.