Eco/logical Learning and Simulation Environments in Higher Education – ELSE

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Christos Mettouris[1]
Evangelia Vanezi[1]
Alexandos Yeratziotis[1]
Alba Graziano[2]
George A. Papadopoulos[1]

[1]Dept. of Computer Science, University of Cyprus
[2]Tuscia University

mettour@cs.ucy.ac.cy
ELSE Project www.elseproject.eu/else

Summary of the project

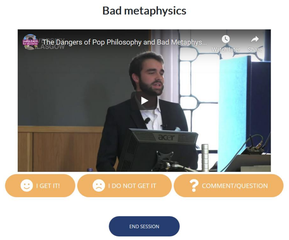
- Two fundamental principles of Bologna remain unrealised:
  1. Students continue to be peripheral to the process of knowledge co-construction.
  2. The potential for true pedagogical innovation through new technologies that can enhance the learning experience is underexplored.
- The ELSE project will design and disseminate a strategy and appropriate ICT tools to achieve the fundamental European goal of redesigning Higher Education, facilitating the application of Bologna principles across Europe.

- The ELSE project aims to:
  - Design an innovative (ELSE) e-learning environment based on learner-centred pedagogies which can activate students' learning process through problem-solving, learning-by-doing, gamification, and digital in-formation research.
  - Use the Flipped Classroom paradigm where homework activities are moved from after the class to before the class, students have a first touch with the subject at home, and practice, extra material and questions are conducted later during the class.
  - Demonstrate to teachers that these opportunities can be realised through the application of Higher Order Thinking ICTs.

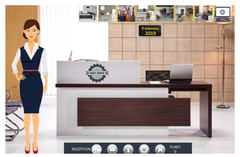
Current project results

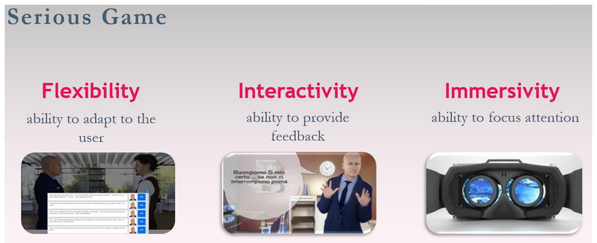
The ELSE learning environment offers three novel tools:

- EVOLI (https://evoli.altervista.org/): a video-tagging tool enables teachers to upload their own videos that students can access before class. Students can tag specific time points of the video to demonstrate their comprehension, which teachers may access and review.



- E-Core: With E-Core teachers create their own game scenarios based on the course they teach. By their performance in playing the game, students demonstrate their comprehension of the specific subject.

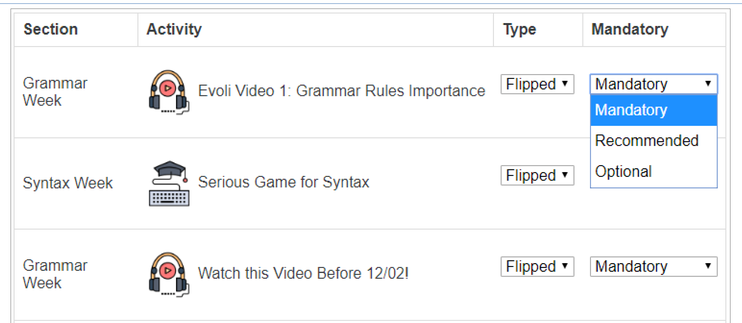




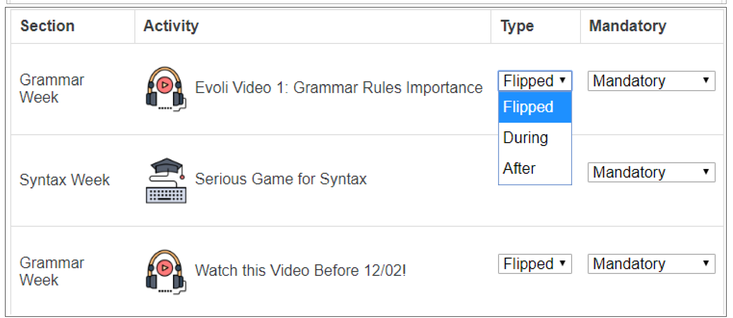
E-Dash:

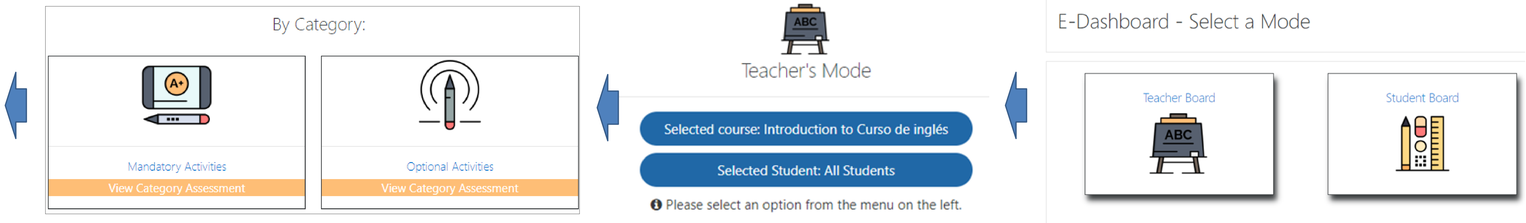
- Need to accommodate on Moodle innovative activities assigned to students for studying at home prior to the class.
- This requires the integration of the new flipped classroom tools (E-Core, EVOLI) with Moodle (via Moodle's LTI).
- Teachers can provide students with links within each course's content to enable them to use these tools.
- Teacher: may combine the tools within a course/section.
- Students' learning data - grades, progress, comments - need to be retrieved from the external tools and stored in the Moodle course: teacher has a complete image of students' performance and needs.
- **The E-Dash tool** thus offers combined and mixed learning data, including grades, comments and questions for each student.
- These data:
  - Assist teachers to observe whether the students have attempted the various activities.
  - One board combines the data of all students of a course, and a separate personalized board for each student.
  - Learning data for each student for each enrolled course are presented separately.
- All learning activities are categorized based on:
  - (i) whether the activity is "mandatory", "optional" or "recommended".
  - (ii) whether the activity is used as "flipping", "during" (the class), or "after" (the class).
  - By selecting an activity, teachers and students have access to a visual aggregated overview of the accomplishments, in different formats depending on the data produced by each activity/tool.

For each course the teacher categorizes assigned activities within the course as mandatory, recommended, or optional for students.

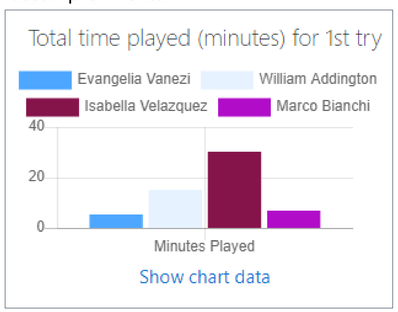


For each course the teacher categorizes assigned activities within the course as "flipped", "during", or "after" for students.





The teacher has access to a visual aggregate overview of students' accomplishments.



Testing

- The ELSE e-learning environment was presented to teachers across Europe through a workshop.
- Aim: to collect initial feedback on design, functionality and usefulness of the tools.
- A focus group session and a user survey (a questionnaire) was conducted on the E-Dash tool.
- Responses to the user survey (70 participants): the usefulness of the tool is evident.
- Qualitative and quantitative feedback illustrate the tool's overall influence.
  - "Improve visualisation", "need of an achievement bar for students", "data shown by the tool is not exhaustive".
  - Quantitative results: 93% prefer mixed data (e.g. rubrics mixing quantitative and qualitative data) to better understand a student's progress in a course.
  - 78.6% prefer a combination of text and charts to view student data.

The results and improvements on visualisation aspects will lead to contributions to the research, scholar and student communities in terms of designing more effective, useful and pleasing data visualisation for student self-monitoring and teacher monitoring of student progresses' within e-learning platforms.