WP 5: Synthesis of the pedagogy orienteering and counseling activity developed in Up2U

How the pedagogy team oriented and supported design, implementation and piloting of the NGDLE

WP5 - Learning community management and skills trainings
Results and Lessons Learned: First Pedagogical Results from CPD

Wp5: How the pedagogy team oriented and supported design, implementation and piloting of the NGDLE

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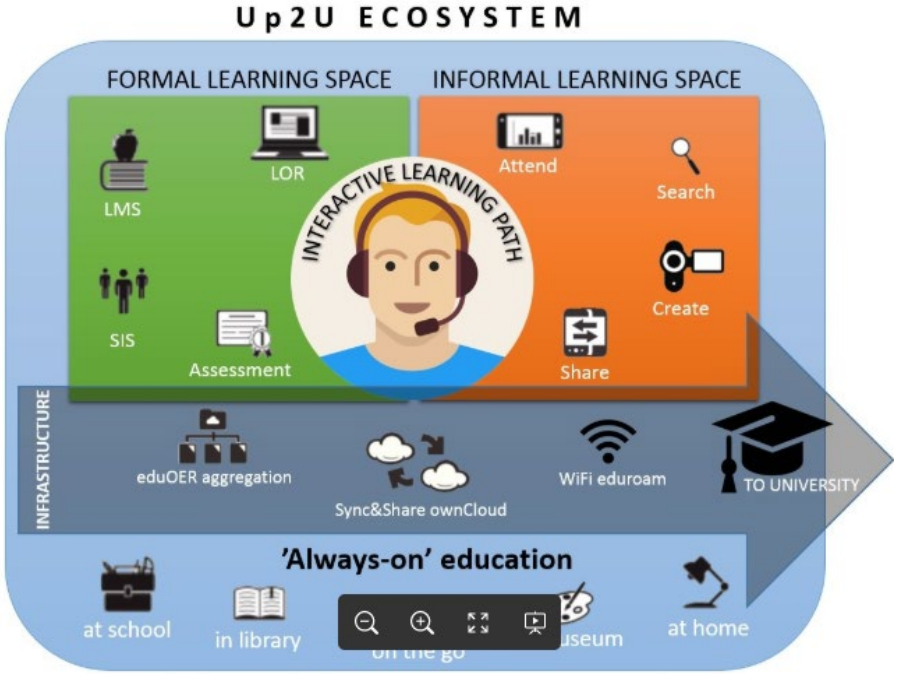
WP 5 role in the project 1

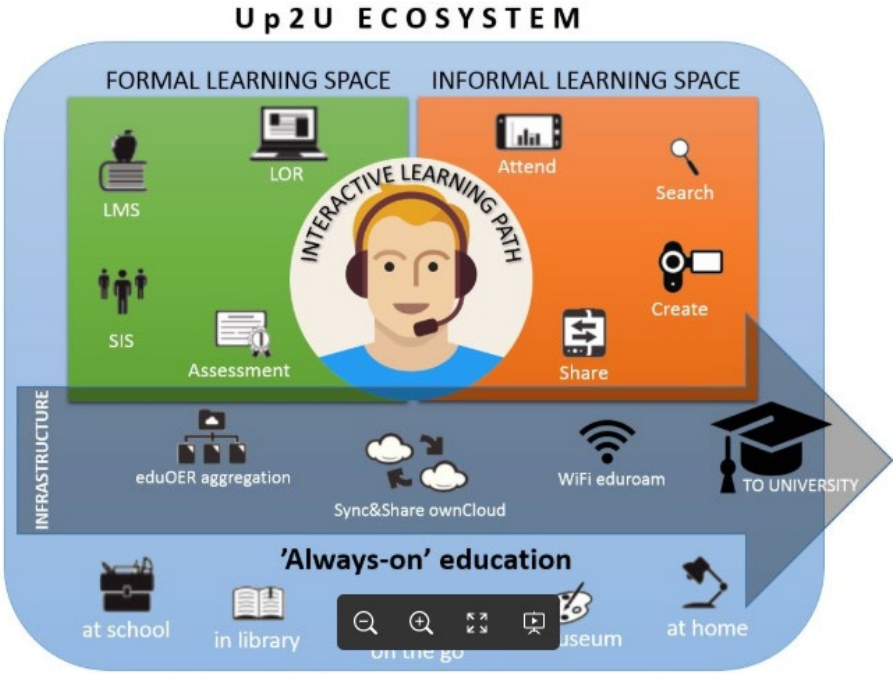
In a project as Up2U, where the technology plays a major role, the pedagogy side was recognized as a priority. It was clear since the beginning that developing a product as a merely technological offer wouldn't work.



WP 5 role in the project 2

It would have been of main importance:

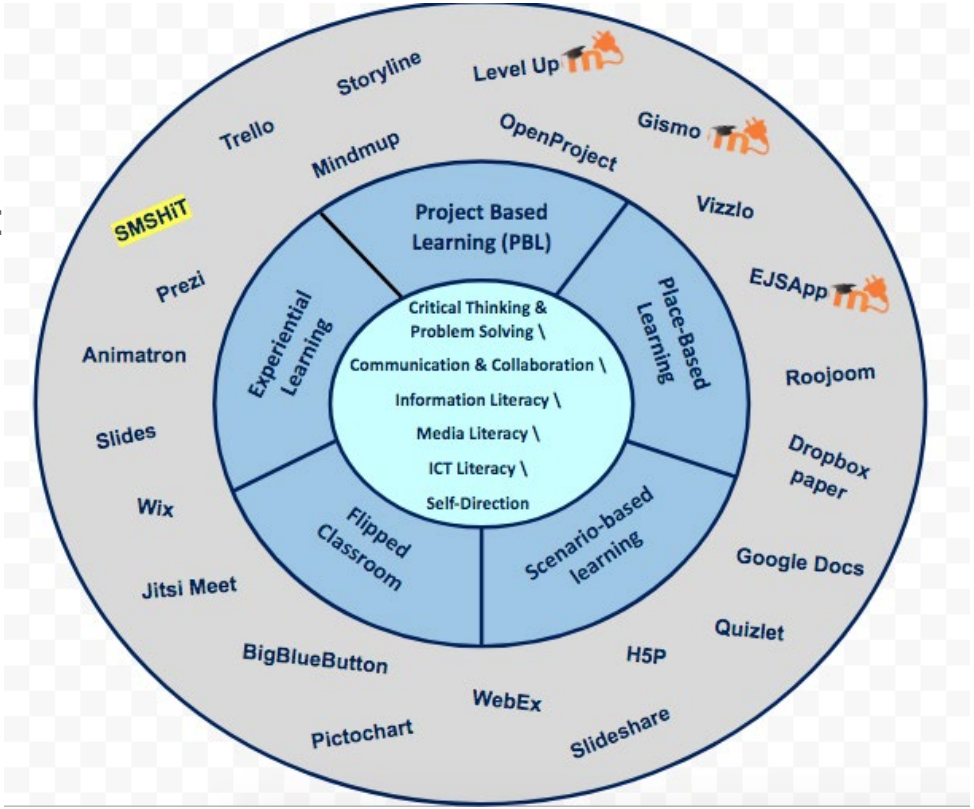
1. a good review of the offer already in the marketplace, a good survey of what stakeholders need and, finally
2. a deeper analysis of what stakeholders could practically accept



WP 5 role in the project 3

First challenge we faced was to decide:

1. A pedagogy for what? And what pedagogy?
2. How to cope with the increasing role of ***informal learning*** within formal education institutions?
3. What technology can support the approach chosen?



Selection of Soft Skills

As we described in deep in deliverable 5.2, WP5 selected 5 soft skills as targets of the pedagogical actions:

1. Critical Thinking,
2. Communication & Collaboration,
3. Information Literacy,
4. ICT Literacy,
5. Self-Direction

Consequently, to practically support teachers in planning activities to make learners achieve the soft skills above, we planned to adopt the **Moodle Competences Framework** (see in 5.4 IUCC contribution) as well as we implemented a **self paced online introductory course** to Up2U focusing on these key competences.

Pedagogical approaches and methodology

Then WP5 selected sound pedagogical approaches that are proven to be very supportive in the acquisition of the soft skills above:

1. Project Based Learning
2. Constructivist Knowledge building
3. furthermore, we proposed the "trialogical" approach (Cesareni, Sansone 2019) which, by integrating monological and dialogical vision of learning, places the emphasis on the **intentional processes of collaborative construction of knowledge** and innovation of related practices.

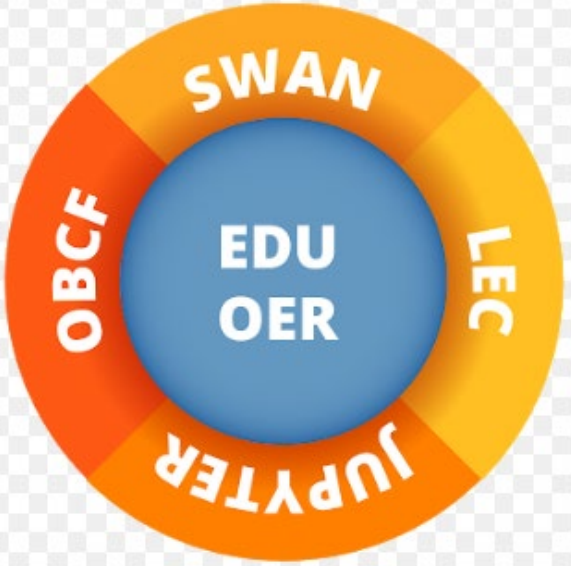
Paavola, Hakkareinen, 2005

Pedagogy and Technology 1

In collaboration with the other WPs, some technologies were selected as probably the most useful to boost those soft skills and support the learning process.

At the same time, it was decided that before its end the project itself would have produced a NGDLE, offering a choice of several platforms and tools, in an Ecosystem where **contents** would be **interchangeable** and **tools interoperable**.

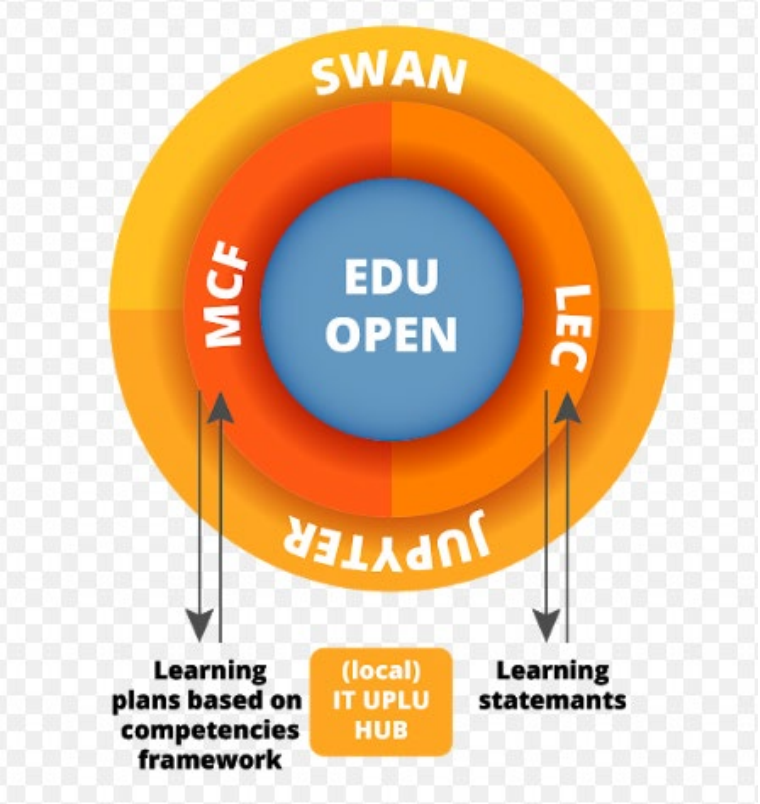
In del 5.2 we wrote about these points



Pedagogy and Technology 2

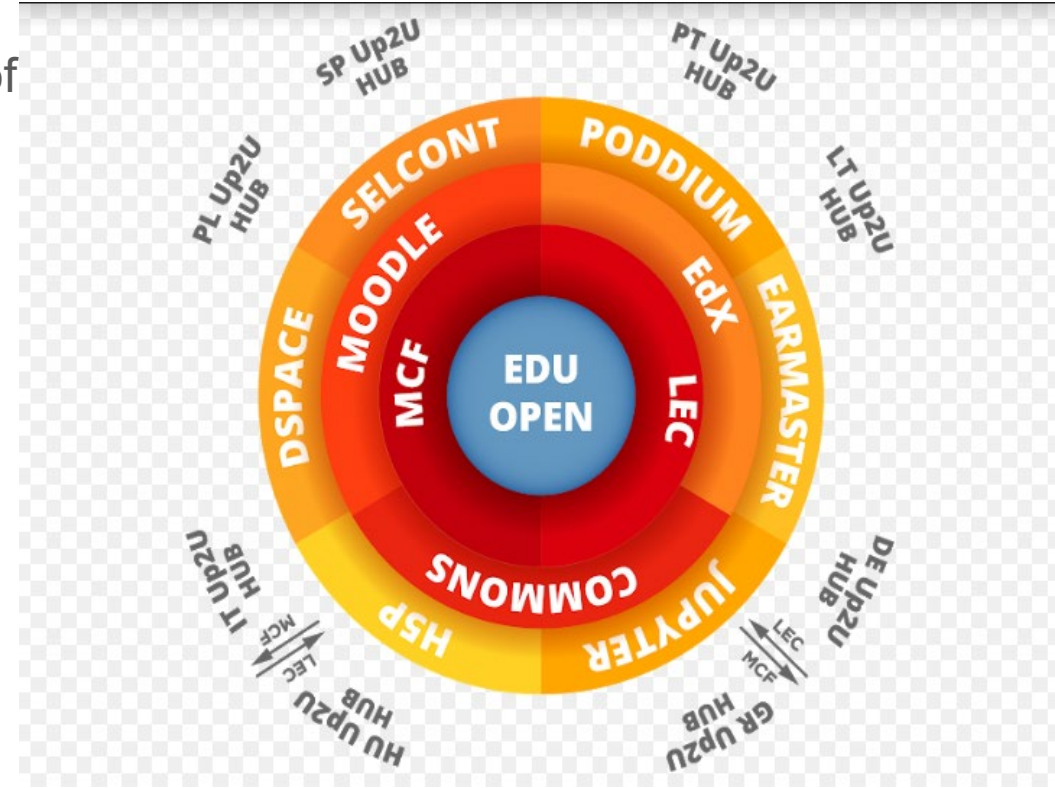
All partners agreed that, to allow the analysis and comparison of different technological and pedagogical approaches, an important outcome of the project would have been a shared environment to **aggregate** and **analyze Learning Statements**, i.e. traces of activities and achievements being generated by different platforms and tools in an interoperable way.

In del 5.4 we wrote about these points



Pedagogy and Technology 3

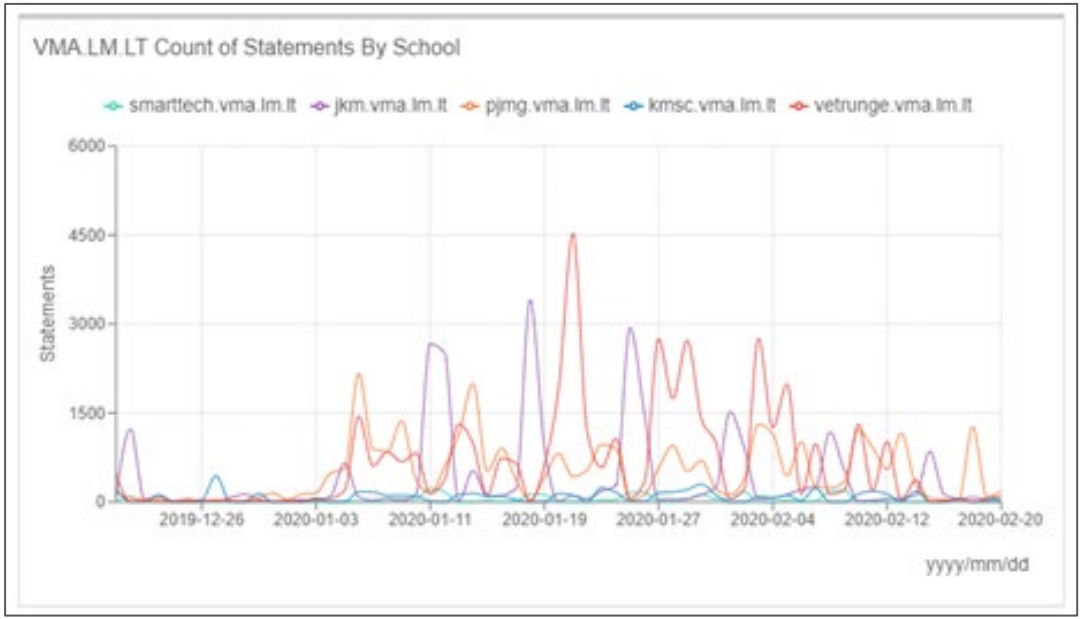
To make those platform and tools virtually **interoperable** from the point of view of learning assessment, that is to allow the comparison of different technological and pedagogical approaches exploiting the learning environment as a whole, we set up the **Learning Experience Centre** (**LEC**), aggregating tools such as Learning Locker and Jupyter, tutorial materials and a help service.



In del 5.5 we wrote about these points

Learning analytics

A great effort has been dedicated to the integration and configuration of **data collection and analysis** tools, in the form of xAPI statements or other.



From a quantitative point of view, **Learning Analytics** has been a success, thanks in particular to the systematic use of standard and custom tools inside the **Lithuanian pilots**.

Over the course of just over a year, more than **4 million xAPI statements** were collected. Also, useful web analytics data were made available to everyone.

Learning analytics

From a qualitative viewpoint, we have had many experiences and learnt many lessons, although not always we were able to pass this on **to all** the ongoing pilots. Nevertheless we tested the **viability of a model**.

The main points we identified are:

- the difficulty of interpreting semantically the xAPI statements, more generally the traces of learning activities
- the absence of a public arena to discuss the use of xAPI and similar standards among educational institutions
- delays in public discussion of the connections between privacy, data sharing between educational institutions, user re-appropriation of data.

Interoperability through Learning Analytics, Model definition

Del. 5.5, which described how we planned the implementation of Learning Analytics, included a description of the data sources we expected to use.

The model foreseen:

1. usage of “**local intelligence**”
2. a centralised collection of statements into a **Learning Experience Centre**
3. eventually based on a **statement broker** which performs a standardization of data

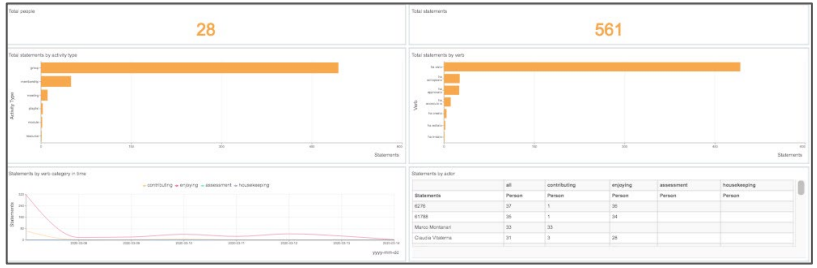
Learning Analytics in Practice

In the last semester of Up2U activity, we managed to conduct same experimental activity fully involving the concept of **interoperability of tools.**

Pandemia crisis delayed some activities (e.g. informal education about music) and made possible to have other experiences (e.g. an academic courses completely run online at Sapienza University of Rome).

Both of these two experiences are described in Del 5.5

L.A. about the acedmic online course from MOODLE and from COMMON SPACES

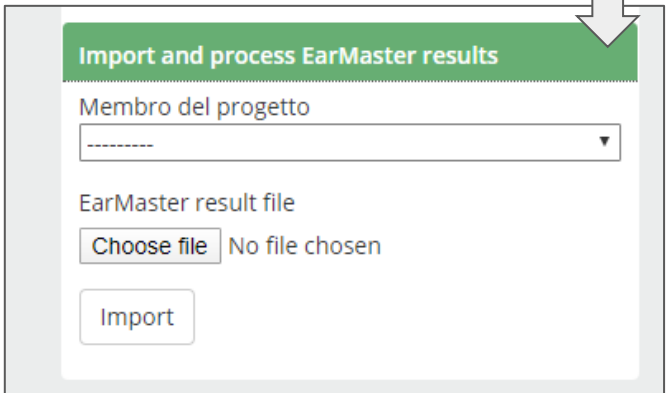


Learning Analytics, practical implementation in Music education

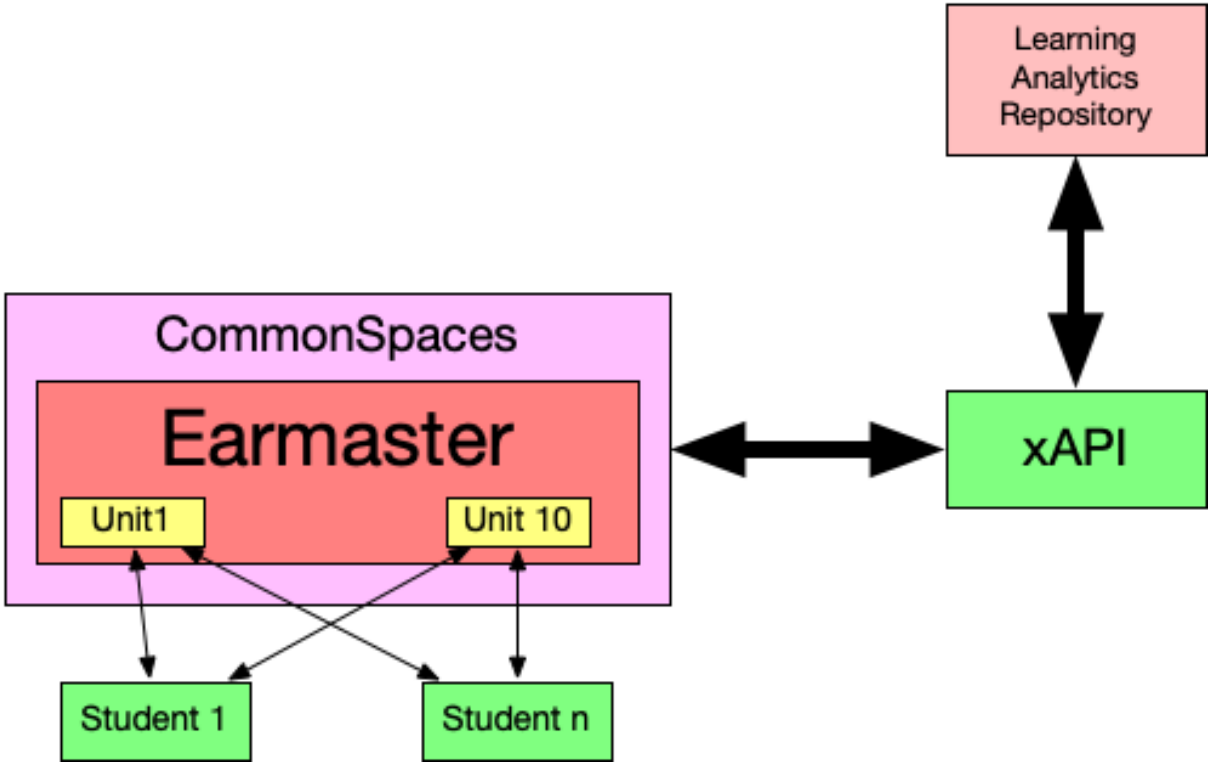
In Del. 5.5 we defined a sample of University as a Hub in Music Education domain. Conservatories and Musical high-schools are enrolled to use a “**local intelligent tool**”, an app called EarMaster, that transfer data to a broker (CommonSpaces) that finally feeds a Learning Experience Centre (Learning Locker). 1) usage of “**local intelligence**” 2) a centralised collection of statements into a **Learning Experience Centre** 3) eventually based on a **data broker** which performs a standardization of data

L.A. from Earmaster

L.A. transferred to CommonSpaces



Informal Education Learning Scenario: each experience is special



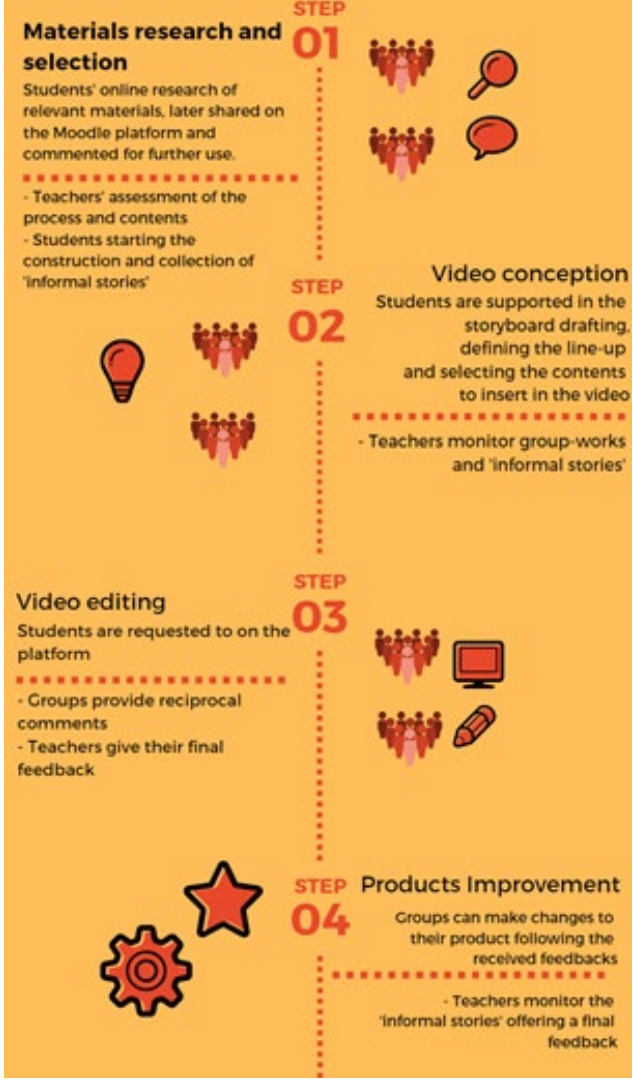
The Up2U Model of Pilot Learning Scenario

- a scenario that serves as a model for formal learning at school, developed by Sapienza and offered to partners as an adaptable example
  - changes were possible due to its granularity and modularity, whereas the similarity has allowed us to use a common framework of analysis to evaluate the project
- a prototypical learning scenario to facilitate the transfer of what they have learnt during Up2U's CPD path into their daily professional routine, and to ensure that CPD participants invested time and effort on knowledge and skills that are directly relevant to their daily classroom teaching.

The Up2U Model of Pilot Learning Scenario

Students' assignments:
the production of a learning-related object, that is any digital content, such as a video, a report, a multimedia presentation, a wiki text, etc.

General requirements:
• Using the Up2U ecosystem: one or more tools according to the needs
• Working in groups of between up of 3 to 7 students. Collaboration could be facilitated by assigning group members specific tasks
• Searching relevant information from the web, that is that for the final learning-related object to be built
• Revising and improving the group product via a peer-review to facilitate structured and useful reciprocal comments in order to revise and improve the object itself.



Outcomes and impacts of the Pilot activities to be considered in the evaluation

schools using the ecosystem, participating in CPD, having students effectively involved and monitored;

teachers' capability to promote crucial skills in a NGDLE, by innovating their practices, effectively using the ecosystem, gaining self-confidence, and also showing appreciation for the project;

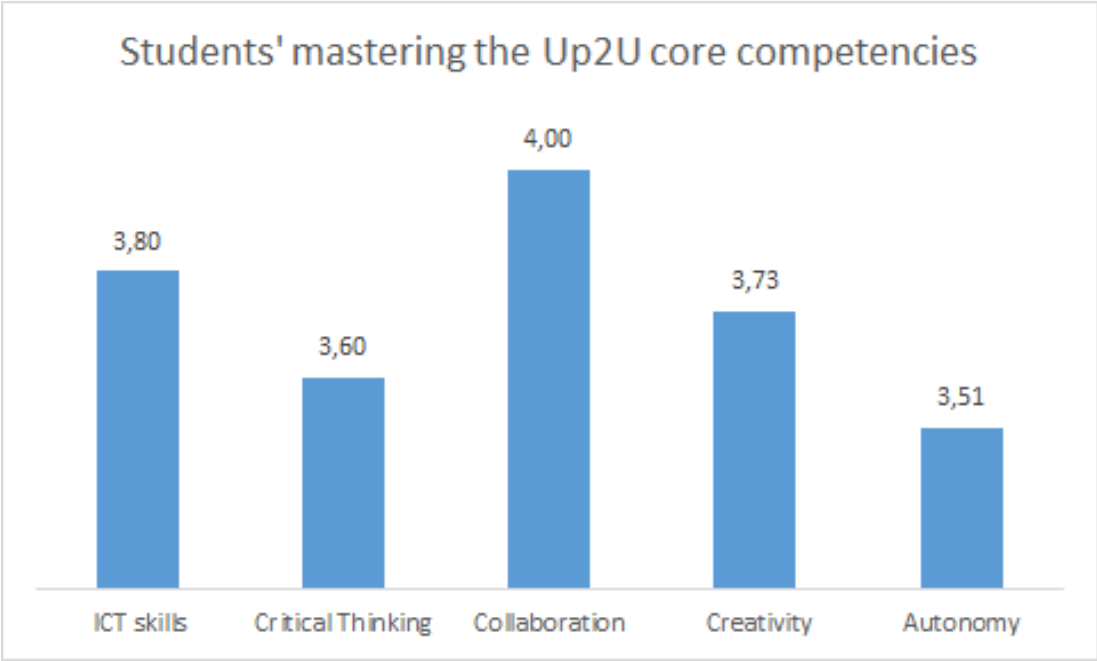
students' reaching high scores in the Up2U-related tasks, regarding their perceptions of the knowledge, skills and self-confidence they acquired from Up2U as well as their appreciation for the project.

Evaluation Methods of the Pilot Activities

Two types of assessment methods, direct and indirect, have been used

WHAT	*WHEN*
Teachers' pre-survey	At CPD beginning
Teachers' post-survey	Immediately after CPD
Students' pre-survey	At the the beginning of the Pilot Activities with Students
Students' assignments and evaluation	During Pilot Activities with Students
Students' post-survey	Immediately After Pilot Activities with Students

Direct Assessment Methods: Students' assignment rubrics*

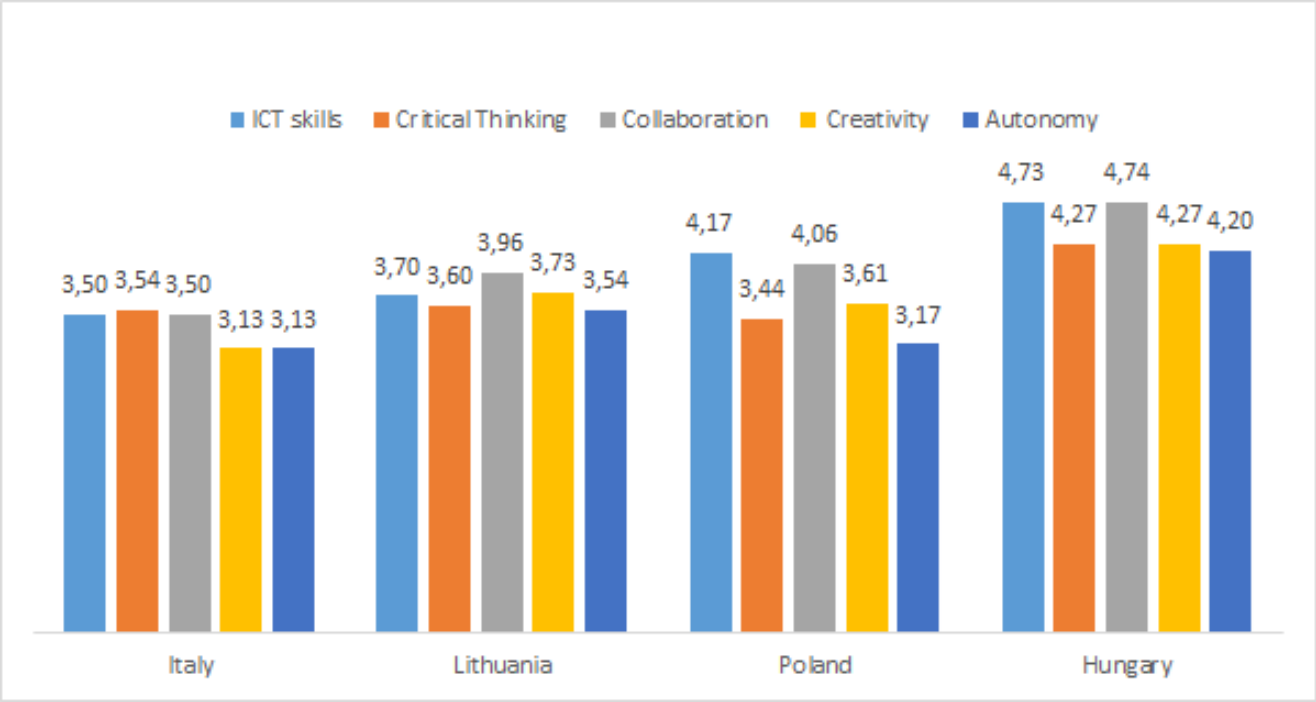


*2.454 students from Hungary, Italy, Lithuania, Poland

Likert scale 1-5

Direct Assessment Methods: Students' assignment rubrics*

Students' score in the mastery of the Up2U core competencies – View per country

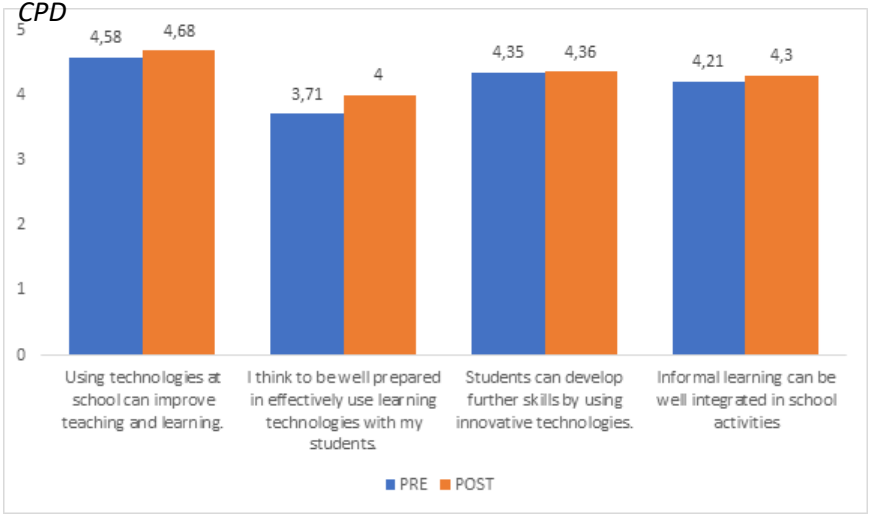


*2.454 students from Hungary, Italy, Lithuania, Poland

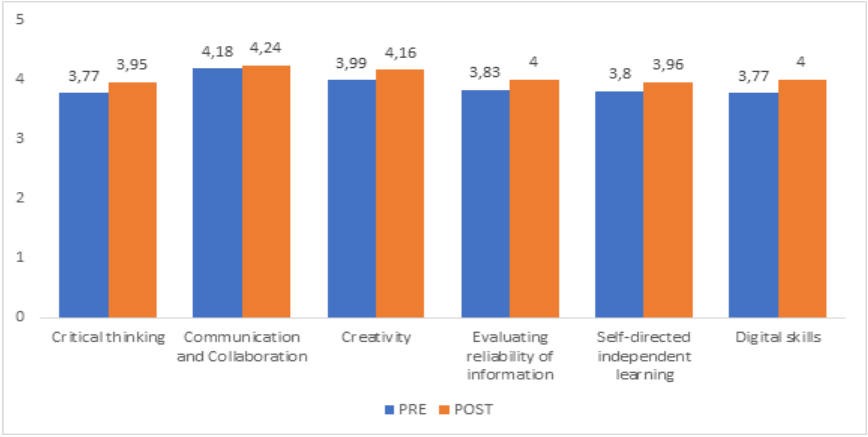
Likert scale 1-5

Indirect Assessment Methods: teachers' survey*

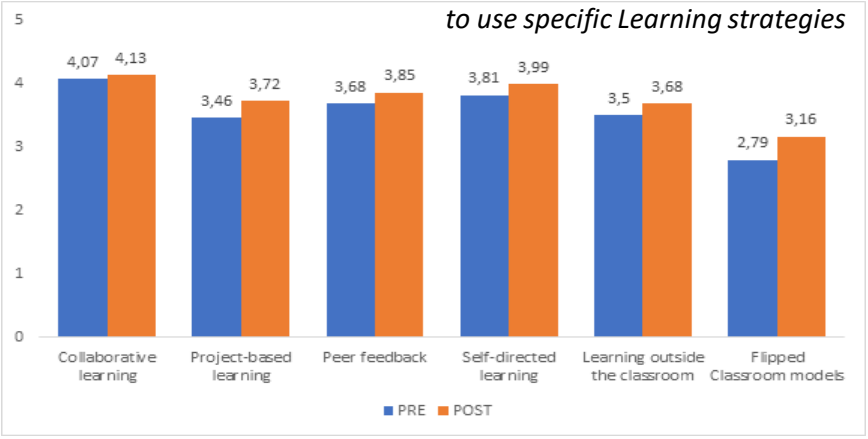
Teachers' attitudes before and after CPD



Teachers' self-perception about their ability to promote Up2U core-competencies

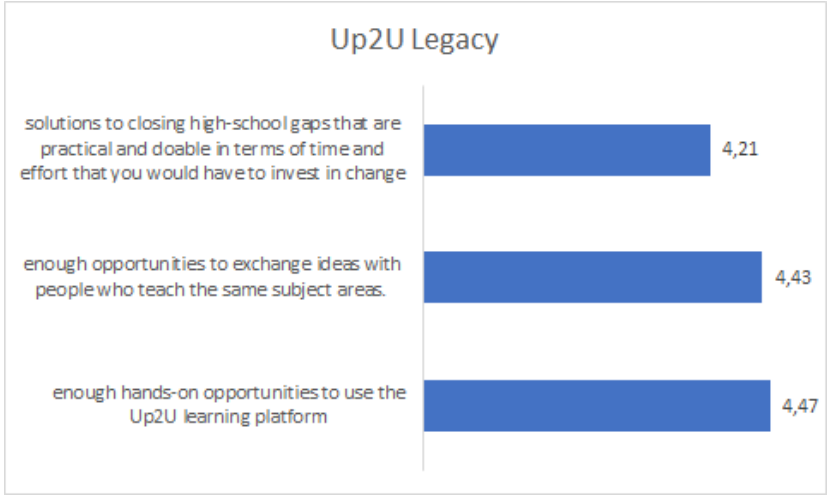


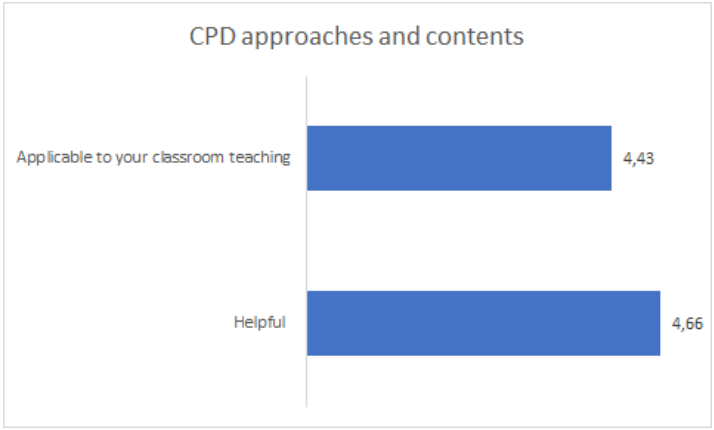
Teachers' self-perception about their ability to use specific Learning strategies

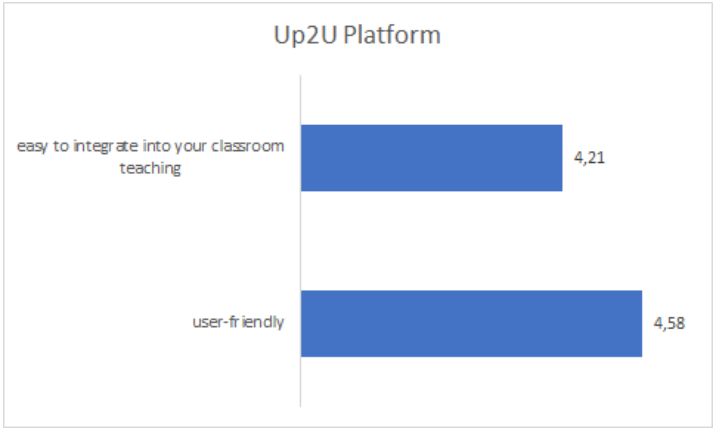


*880 teachers from Greece, Hungary, Italy, Lithuania, Poland

Indirect Assessment Methods: teachers' survey*





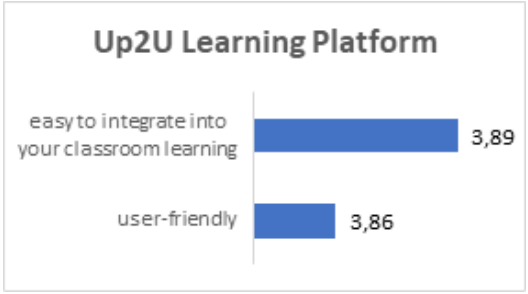


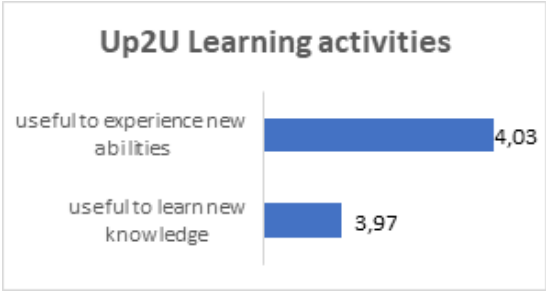
*880 teachers from Greece, Hungary, Italy, Lithuania, Poland

Indirect Assessment Methods: students' survey*

Students' self-perceptions of their skills before and after the Pilot activities

Skills	PRE	POST
to evaluate the development of a shared product.	3,78	4,03
to use various digital applications and use them together whenever needed.	3,88	4,02
to coordinate the development of products (e.g., plans, reports, models) together with others.	3,59	3,92
to work on the shared products by improving them iteratively.	3,90	4,05
to take responsibility for the shared group work.	3,85	4,03
to understand the benefits of working in collaboration.	4,18	4,28
to understand the possibilities of digital technology better than before	3,92	4,00
to develop products collaboratively by using technology.	3,78	4,03
to receive feedback on my products (e.g., plans, reports, models) for developing them further	3,82	4,05
to accomplish challenging tasks in collaboration with others.	3,70	3,90
to comment on the work of others.	3,60	3,87
to have patience when finalizing products.	3,64	3,79
to assess the reliability of information and to identify misinformation and bias.	3,58	3,81
to understand how information is generated and can be distorted	3,67	3,97
to evaluate my own learning even when it comes outside the school	3,80	4,00
to manage time	3,45	3,57
to copy with failure and disappointments	3,72	3,90





Conclusions on the Evaluation of the Pilot Activities

- The overall picture that emerges from the data is positive.
- After participating in Up2U CPD, teachers feel more able to promote each of the Up2U core competencies and to use innovative learning strategies. They also perceive technology as capable of improving teaching and learning processes, as well as able to promote students' skills.
- Students tend to evaluate themselves as more competent, in particular with reference to skills in the area of Collaboration, Critical Thinking and Information Literacy. Students' general appreciation of the Up2U activities is very high, as they considered the project as useful to support real learning of knowledge and abilities, thanks to a platform that can easily be integrated into their classroom activities and is quite user-friendly.
- The approximately 2,500 students who were rated by their teachers reported excellent ratings in all the skills identified as crucial for a smooth transition to the level of subsequent studies
- In conclusion we claim an overall positive impact of the pilot activities, with reference to the 6 countries who participated in the data collection: Greece, Hungary, Italy, Lithuania, Poland, Spain.

(canceled) Experimental Path versus Ordinary Path

The very lack of homogeneity in the partners' situations as to schools' openness to this kind of projects (German case) or technological maturity (Italian case), led to the decision of experimenting innovative approaches, mixing pedagogy and technology, in some local situations, in parallel with the main flow of pilot activities.

Relevant elements of said approaches were:

1. Using Learning Analytics to help students' evaluation
2. Using different platforms inside the same course

This choice was due by the technical delays at the beginning.of the project.

It was described in Del 5.3 and Del. 5.4