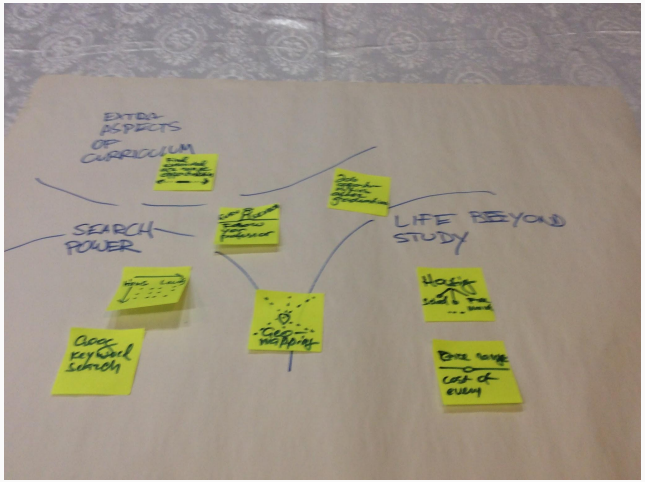
Design STEM
Second Workshop

Pireus, 29 May - 2 June 2017

Aims of workshop

- Injection of creativity, inspiration, knowledge
- Development of ideas for Intellectual Output (e-toolkit)
- Agenda



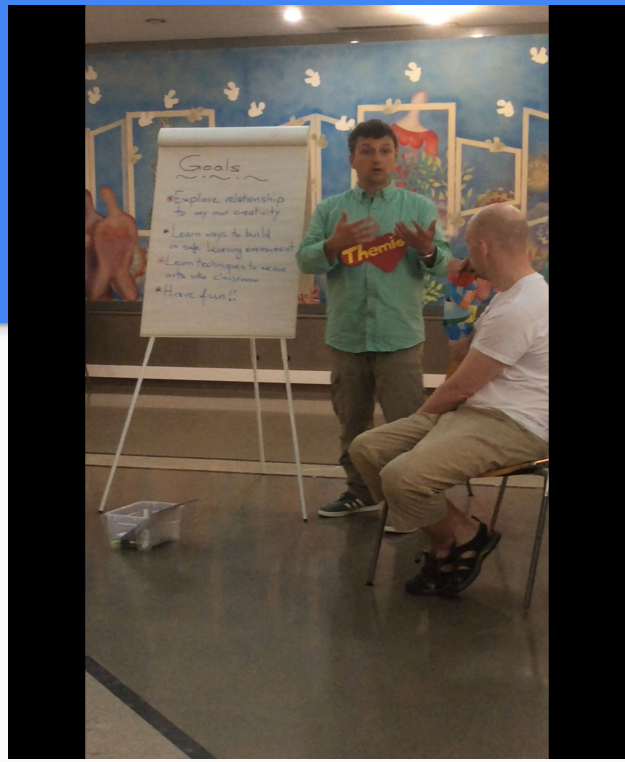
Injection of creativity, inspiration, knowledge

Team building activities

Team building

- Work group
- Convivial activities
- Creativity workshop
- Boat trip

Creativity classroom by *Themis Gkion*



PYE

Partners for **Y**outh **E**mpowerment

“Teachers are creative people….teaching is a big job”

Creative confidence

People with creative confidence have a greater impact on the world around them…..

http://www.flowathens.com/en

Connecting with your Creativity

Learning Objectives:

- Explore the source of your **CREATIVITY**
- Identify and overcome barriers to the **CREATIVE FLOW**
- Use images and metaphors to connect with your thoughts, feelings and imagination

Boat Trip

Visit Greek Islands

Experiment Digital Story Telling

(Digital) Storytelling

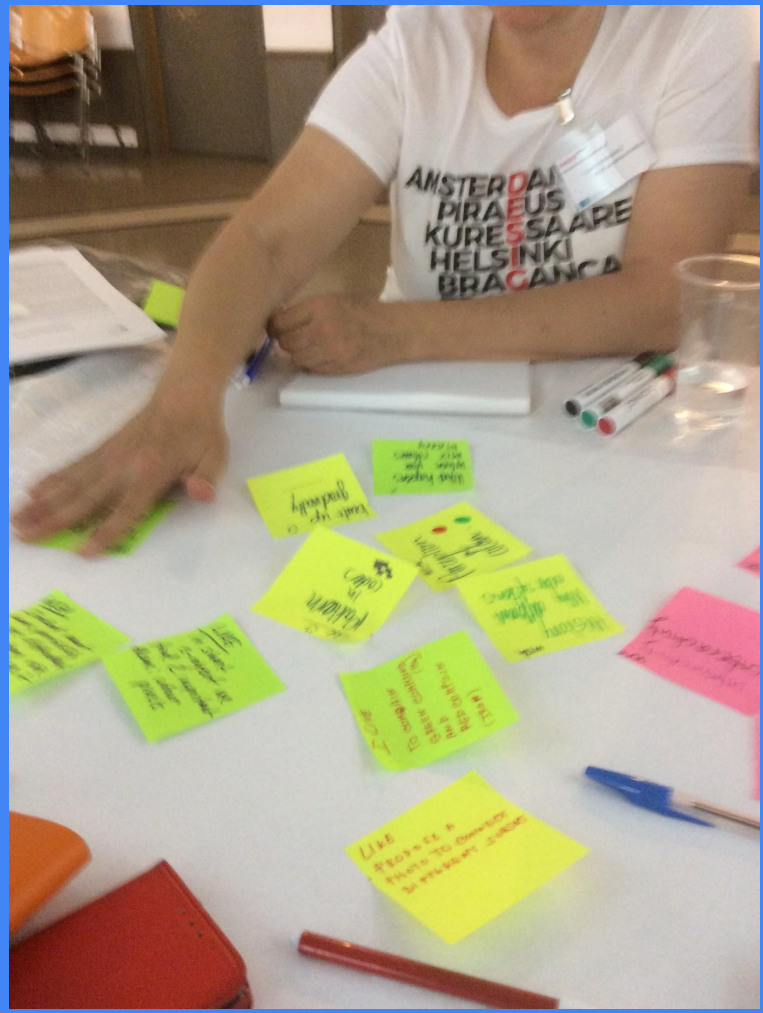
1. *Define STEM questions based on a short passage of Odissea;*
2. *Turn the questions into today world*
3. *Immagine a learning situation for our students.*

Our proposal:

1. Reflect about the power of medical herbs in ancient time;
2. Research on the effects of specific actual herbs and drugs;
3. Present the results

Development of ideas for Intellectual Output

E-toolkit creation



Ideas for Intellectual Output

- *Learning Workshops*
- *Developing Workshops (Crystian, Jakko, Sandra)*
- *Maker Space in Athens*
- *Visits to labs and schools*

Learning Workshops

Digital Story Telling

Technology for life long learning

Enquiry based learning

Technology for Life Long Learning (LLL)

Cleo Sgouropoulou, prof. Computer Science, Univ. Pireus
See the Presentation

CONCEPTS to refer to when building learning objects:

Metadata about learning objects

Quality assurance for OER: follow a process to create them

Learning outcome: what a learner knows, understands or is able to do at the end of the learning process (learner centered approach). It is the description of the competence, skill+knowledge

Evaluation measured by a scale of achievement (eCF= European e-competence framework 2.0)

(refer to http://www.learning-compass.eu - in progress)

Technology for Life Long Learning (LLL)

Cleo Sgouropoulou, prof. Computer Science, Univ. Pireus

Quality Education

use of taxonomies for common understanding. Educational taxonomies are educational standards, not a curriculum.

- Standard is WHAT students need to learn;
- Curriculum is HOW students will learn.

Benefit: create OER which refer to taxonomy

http://mooc-quality.eu

Technology for Life Long Learning (LLL)

Cleo Sgouropoulou, prof. Computer Science, Univ. Pireus

LOP - Learning Opportunities Pathways

Learning pathway: set of choices related to the education of one individual

Example: school, foreign courses, projects,… It is not related only to students.

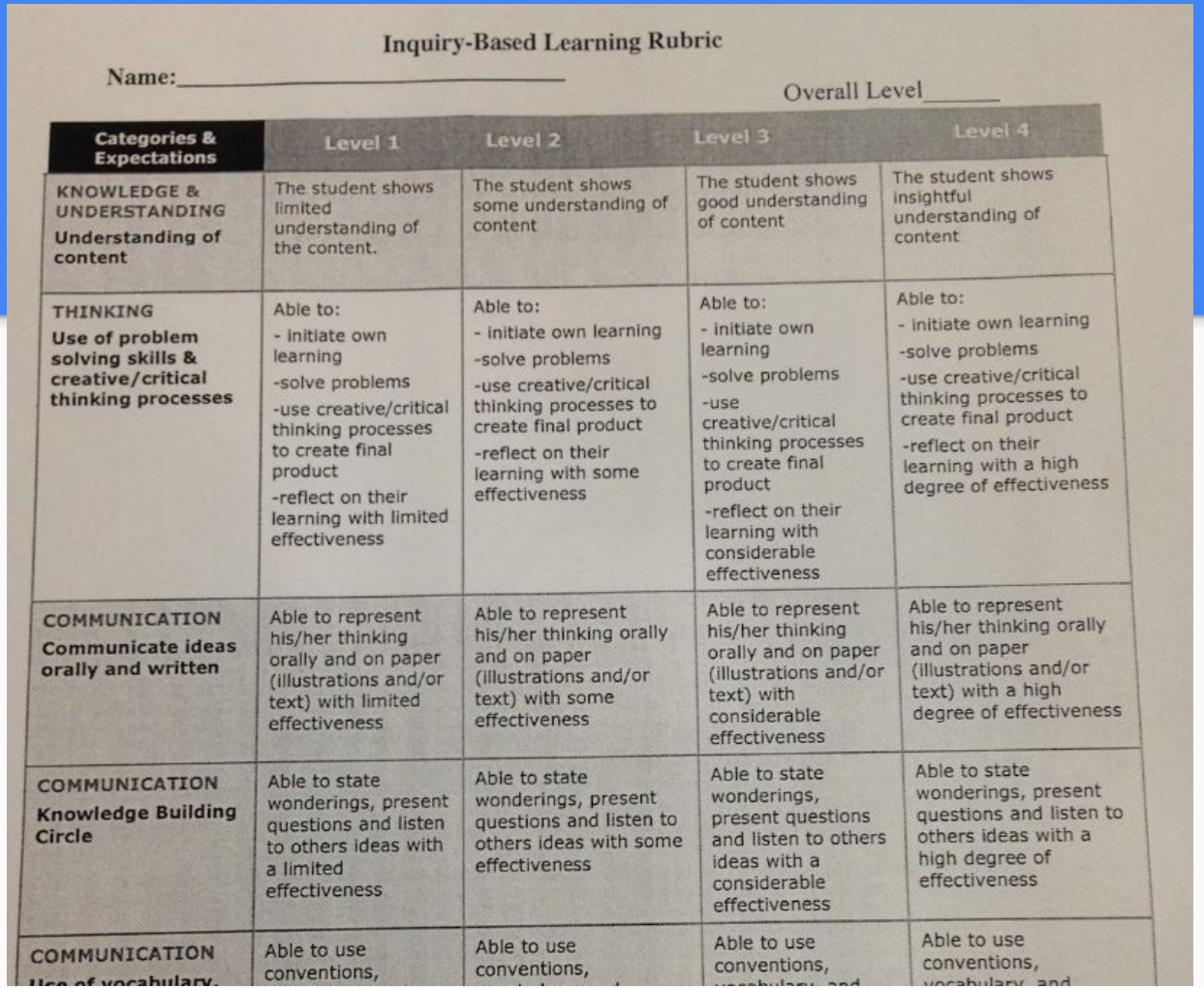
Ploteus: EU tool to find courses around Europe for undergraduate students

Enquiry based learning

Symeon Retalis, Univ. Pireus

See the presentation

Opportunity to realize the first ‘E’: Engagement



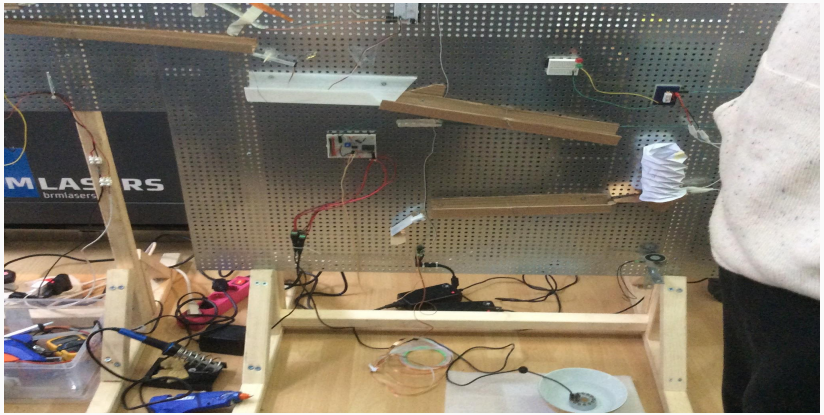
Inquiry-Based Learning Rubric

Name:_____ Overall Level_____

Categories & Expectations	Level 1	Level 2	Level 3	Level 4
KNOWLEDGE & UNDERSTANDING **Understanding of content**	The student shows limited understanding of the content.	The student shows some understanding of content	The student shows good understanding of content	The student shows insightful understanding of content
THINKING **Use of problem solving skills & creative/critical thinking processes**	Able to: - initiate own learning -solve problems -use creative/critical thinking processes to create final product -reflect on their learning with limited effectiveness	Able to: - initiate own learning -solve problems -use creative/critical thinking processes to create final product -reflect on their learning with some effectiveness	Able to: - initiate own learning -solve problems -use creative/critical thinking processes to create final product -reflect on their learning with considerable effectiveness	Able to: - initiate own learning -solve problems -use creative/critical thinking processes to create final product -reflect on their learning with a high degree of effectiveness
COMMUNICATION **Communicate ideas orally and written**	Able to represent his/her thinking orally and on paper (illustrations and/or text) with limited effectiveness	Able to represent his/her thinking orally and on paper (illustrations and/or text) with some effectiveness	Able to represent his/her thinking orally and on paper (illustrations and/or text) with considerable effectiveness	Able to represent his/her thinking orally and on paper (illustrations and/or text) with a high degree of effectiveness
COMMUNICATION **Knowledge Building Circle**	Able to state wonderings, present questions and listen to others ideas with a limited effectiveness	Able to state wonderings, present questions and listen to others ideas with some effectiveness	Able to state wonderings, present questions and listen to others ideas with a considerable effectiveness	Able to state wonderings, present questions and listen to others ideas with a high degree of effectiveness
COMMUNICATION **Use of vocabulary-**	Able to use conventions,	Able to use conventions,	Able to use conventions,	Able to use conventions,

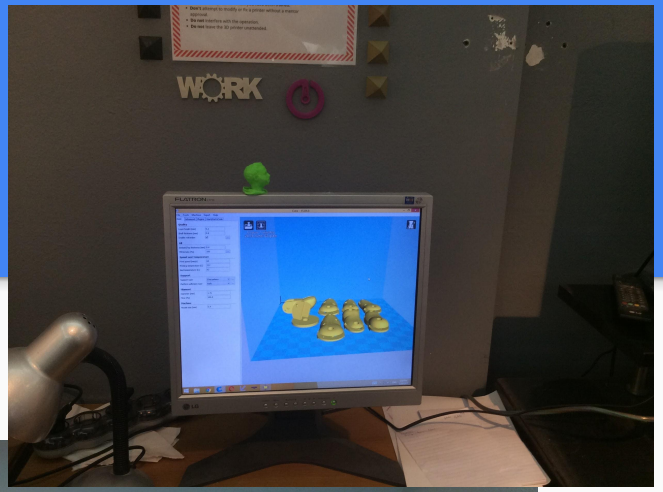
Athens Makerspace

- learn
- play
- create



a collaborative fabrication workspace
electronic
3d digital printing
metal working
wood working
and more
a possible good idea to use in Applicated Science and Technology

Athens Makerspace

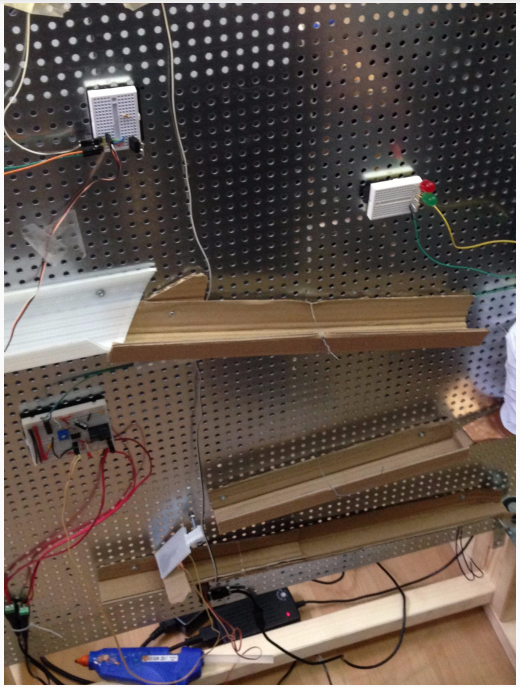


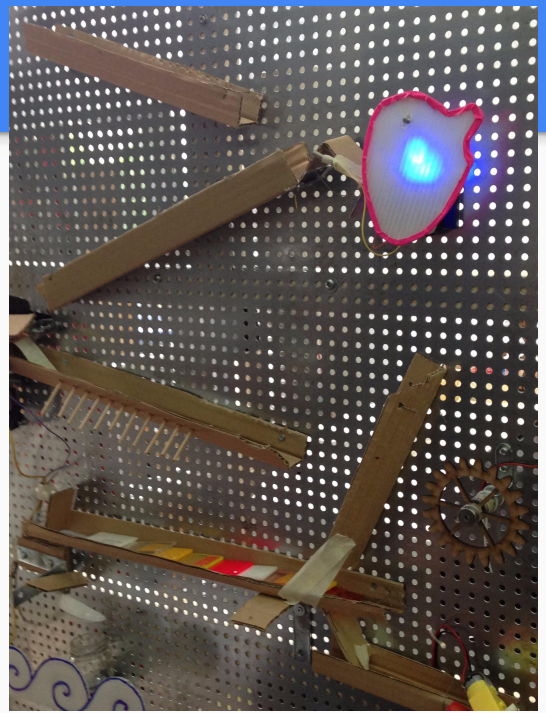
Learning through experimentation and failure, as it is the way to success

- 3D PRINTING
- LASER CUTTING
- ELECTRONICS
- WOOD WORKING
- VINYL CUTTING
- SEWING

http://artemispapageorgiou.com/filter/teaching/About

Athens Makerspace





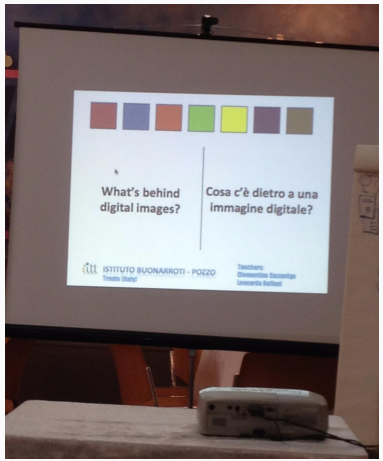
Prototype, experiment, get feedbacks, improve - CICLE (1)

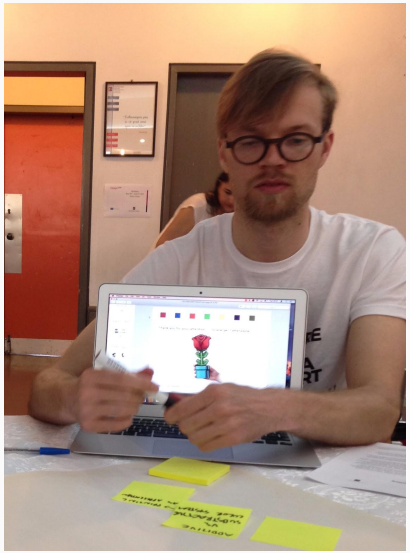
1st Developing Workshop

Groupwork activity based on Italian didactic unit (Colors and Maths and IT).

Each group analyzes the Italian presentation and:

- Points what they would like to add
- Points what it already has that they like
- Write in post-it the main ideas
- Share the ideas with all groups

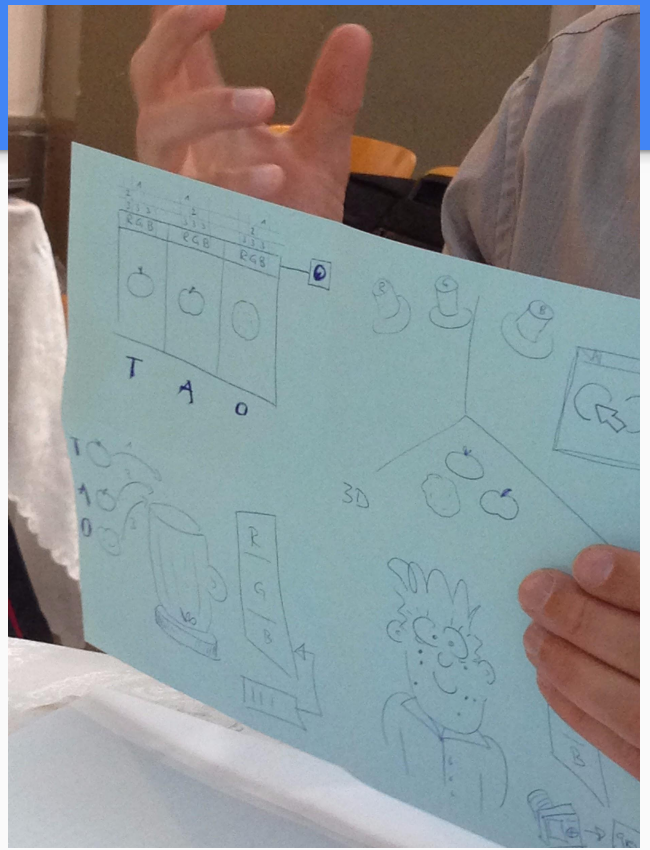




Prototype, experiment, get feedbacks, improve - CICLE (2)

Resulting hints:

- Creation of a web page to experiment “bits vs colors” (Javascript)
- Gamification (slot machine of colors)
- Bring chemistry/science into the units



STEM Concepts

2nd Developing Workshop

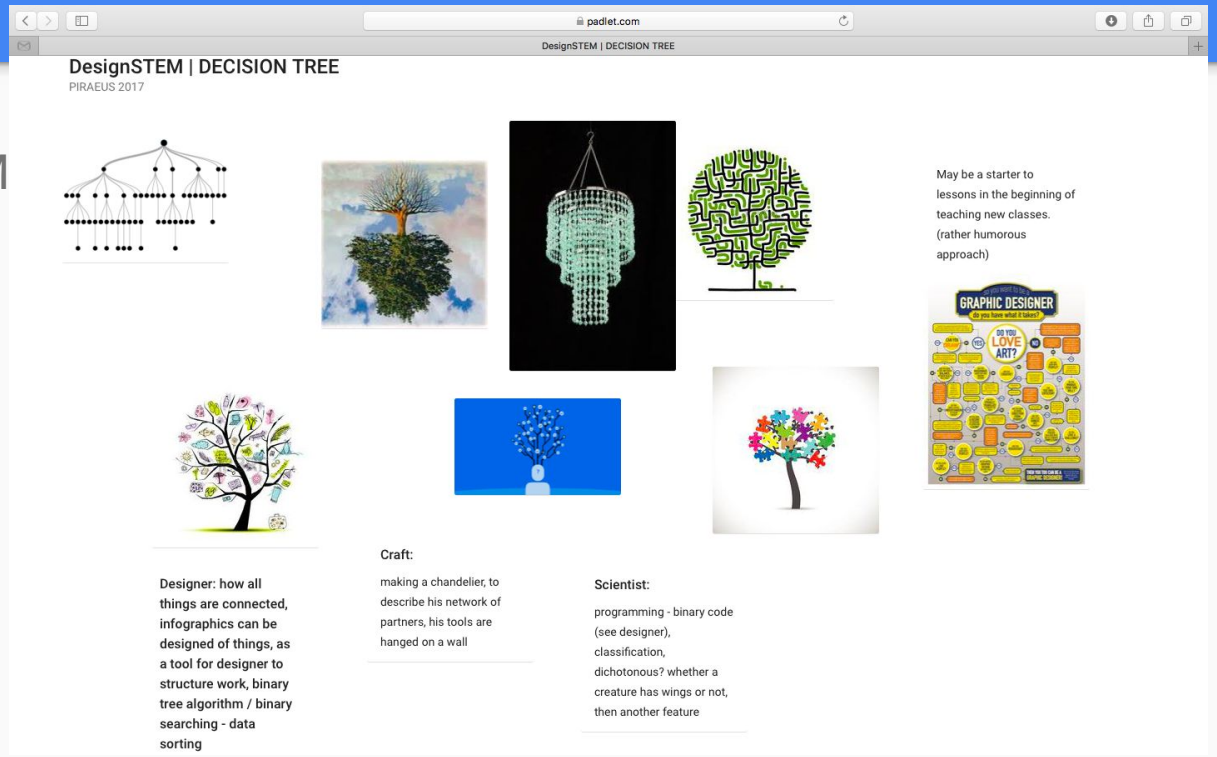
SEE THE MATERIAL

Aim:

- Reflection about the STEM concepts identified in Helsinky
- Integration with Design concepts

Methodology:

- Padlets
- Group work



Learning Object

3rd Developing Workshop

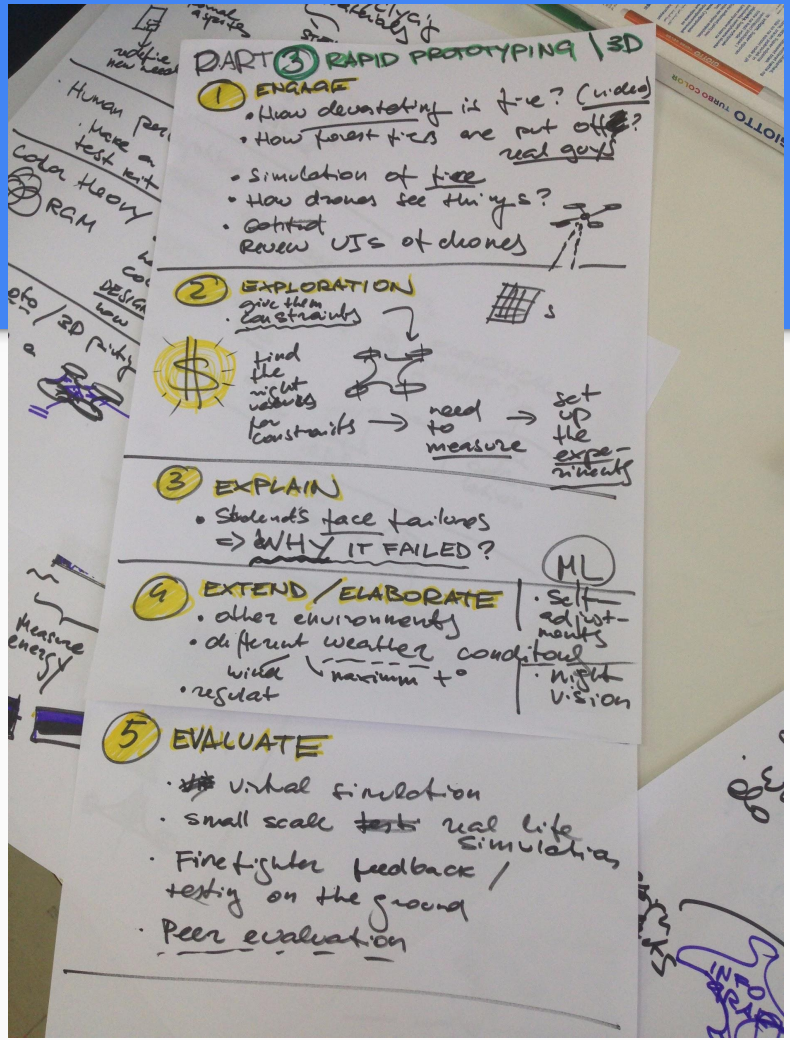
SEE THE PRESENTATION

Aim:

- Development of a learning object

Methodology:

- Jigsaw
- 5Es



Visits to labs and schools

- Dept of Industrial Management and Technology - Environmental Chemistry Lab; 3D Lab:
  - shortage of money;
  - home made apparatus;
  - students attend University for free
- Drapetsona Laboratory Center:
  - vocational school in a difficult area
  - very well maintained and sustained by principal and teachers

D-Project next steps

1. **UK, Middlesbrough 30/10/17 - 3/11/17 (travel 29/10 and 4/11)**
   - prepare 3 scenarios for an exercise/learning object:
     - Containing design + STEM concepts
     - Remember the 5E-s (Jakko)
     - Use the template
     - Use STEM concepts from Finland or new ones
2. **Slovenia, Novo Mesto 19-23 march 2018 (travel 18 and 24)**
3. **The Netherlands, Amsterdam: 28/5/2018 - 1/6/2018 (travel 27/5 and 2/6)**

Finally

Watch the VIDEO (2:46 min)

Thank you for your attention

The Italian team in Pireus,

Assunta Iannone
Leonarda Raffoni