Go-Lab

Global Online Science Labs for Inquiry Learning at School

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GO-LAB

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Report on the Participatory Engagement Activities

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The Go-Lab Consortium

Beneficiary Number	Beneficiary name	Beneficiary short name	Country
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2	Ellinogermaniki Agogi Scholi Panagea Savva AE	EA	Greece
3	Ecole Polytechnique Fédérale de Lausanne	EPFL	Switzerland
4	EUN Partnership AISBL	EUN	Belgium
5	IMC AG	IMC	Germany
6	Reseau Menon E.E.I.G.	MENON	Belgium
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Executive Summary

This deliverable D6.4 describes the Participatory Engagement Activities (Task 6.2) that took place in the 2nd year of the project and consists of three major parts. Part 1 describes the Go-Lab contest "Teaching Through Inquiry", which constitutes an online participation engagement activity. The contest was launched to engage teachers in Go-Lab activities and familiarise them with the Go-Lab system. Teachers were asked to create a lesson plan following the Go-Lab inquiry cycle which would include the use of at least one Go-Lab online lab. After National Coordinators' evaluation, teachers with the two winning entries from each country invited to attend the Go-Lab summer School in Marathon, Greece between the 13th and 18th of July.

Part 2 describes the 2nd Go-Lab summer school and the activities performed. During the Summer school the courses included lectures and workshops focusing on the introduction to the concepts and the idea of the Go-Lab project, lessons on preparing, uploading and sharing digital learning resources and scenarios using the Go-Lab tools, presentation of inquiry-based learning activities from the Go-Lab repository, familiarisation with the Go-Lab repository and its content, hands-on sessions working with the Graasp authoring environment, with Go-Lab on-line labs and other external resources. Furthermore, piloting evaluation activities and semi guided interviews took place offering significant input to the project. Specifically, during the interviews teachers had the opportunity to express their opinion-reflection about (on): a) their current teaching practices, b) the Go-Lab authoring environment, they have been presented with, and c) the potential of building communities of teachers and learners in order to nurture the upgrading of the teachers understanding about inquiry-based learning and especially their science teaching (pedagogical mentoring) skills. It was reported a) use of labs but limited use of online labs, which opens up great opportunities for Go-Lab, b) satisfaction of the Graasp authoring environment because it supports the Inquiry Based Learning method, c) belief that the opportunity to produce their own ILS can lead to better educational results and that they serve their teaching needs. As main barriers of use of the Go-Lab system in classroom identified the compatibility with the curriculum and the insufficiency of the appropriate infrastructure. In conclusion, it was expressed strong belief that a community and supporting environment should be built.

Part 3 describes the methodology, the format, and the implementation of the Practice Reflection Workshops (PRWs) of the first period, the methodology of data collection and analysis, and the main outcomes of the PRWs. For the collection of teachers' reflection there were used both quantitative and qualitative data. The most important outcome of the analysis of teachers' reflection is their positive response to the Go-Lab initiative. In particular, they identify great chances for Go-Lab as the believe that the use of online labs can increase the attractiveness of education, that students can use online labs at home is attractive, that online labs will motivate students more than the current school practice and that students will learn more with online labs. Furthermore, there appear great implementation perspectives for Go-Lab as teachers appear positive almost to all the relevant statements of the questionnaire. However, some important issues are identified as crucial for the implementation of Go-Lab, such as the compatibility with the curriculum, the limited didactic knowledge of teachers on using online labs, the requirement for training for teachers so that they can use the Go-Lab portal and the fact that schools should give teachers additional time to prepare their lessons based on the online labs. According to the qualitative data, teachers reported their satisfaction with the pedagogical framework and the inquiry methodology but they think that there are misunderstandings in

the implementation of the idea of the inquiry based learning approach. Teachers have also positive attitudes towards Graasp as the Inquiry Learning Spaces (ILSs) authoring environment but they think that they cannot use it without adequate training. Finally, the most common barriers of use of the Go-Lab system identified were the following: compatibility with the curriculum, lack of the adequate infrastructure (computers, strong internet connection), availability of the Go-Lab system in other languages, teachers' illiteracy on online lab and ICT in general and time constrains in the classroom.

The main problems of the Go-Lab implementation that emerged during the PRWs will easily be solved by the tutoring platform of the project that is already designed. The aim of the platform is to provide guidance to teachers on the use of Go-Lad and that way the support to teachers will be improved.

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1 Introduction

The general aim of the Participatory Engagement Activities is to provide input/ feedback for the implementation/ piloting activities (WP 7) and to contribute to the further development of the pedagogical framework of the project (WP 1). Thus, the participatory engagement activities (Task 6.2) constitute an important tool in the project's strategy for stakeholders' continuous involvement in reflection and envisioning the effective integration of the use of online labs in school practice. The participatory engagement activities are of two types: a) online participatory engagement activities and b) workshops.

The aim of the deliverable is to gather, categorise, methodise and systematise the reflections of the teachers' communities in order to chart the effective integration of the use of online labs in school practice. Using these reflections the document makes also suggestions for the next steps.

Three kinds of activities are described: a) The Go-Lab contest "Teaching Through Inquiry", which constitutes an online participation engagement activity, b) the 2^{nd} Go-Lab Summer School which is a teachers' community support activity (Task 6.4) and, among others, included teachers' reflection on the activities performed and c) the Practice Reflection Workshops (PRWs) of the first cycle (M13-M21) which are the core part of the participatory engagement activities.

The Go-Lab contest launched in order to further disseminate the Go-Lab project, to increase teachers' participation in the Go-Lab activities and to provide some teachers with an entry to the 2^{nd} Go-Lab Summer School where they had the opportunity to engage with a plethora of Go-Lab activities. The Practice Reflections Workshops (PRWs) conducted from month 13 until month 21 according to the framework described in D6.1 "Specifications of Participatory Activities". Their aim of the activities above is to identify positive and transferable results and difficulties in the implementation of the Go-Lab model and to provide useful information on the teachers' perspectives. In the document It is described the method of the PRWs and the sample, it is provided analysis of the quantitative and qualitative and suggestions for the future.

2 The online participatory engagement activities: The Go-Lab contest "Teaching Through Inquiry"

2.1 Introduction

WP 6 conducts different series of participatory engagement activities (Task 6.2) including online participatory engagement activities and workshops. The Go-Lab competition contest "Teaching Through Inquiry" consists an online participatory engagement activity which was launched in order to further disseminate the Go-Lab project and to increase teachers participation in the Go-Lab activities. The contest was launched on January 1st 2014 and the submission period ended on April 30th. Teachers were asked to create a lesson plan following the Go-Lab inquiry cycle which would include the use of at least a Go-Lab online lab. More specifically, the lesson plans that were going to be submitted by the contestants had to follow three simple rules:

a) Follow the Go-Lab inquiry cycle. The contestants were given a template of the Go-Lab inquiry cycle where every phase and sub-phase was briefly explained. In addition contestants were provided with example activities which followed the same template, so as to get a clearer idea of what they were expected to do.

b) The lesson plans submitted had to focus on an experimentation that is built on the use of at least one of the online labs that are included in the Go-Lab inventory (Year 1) of online labs.

c) The lesson plans must target students between 10 and 18 years old.

The contest targeted teachers from all countries participating in the Go-Lab pilot phases (WP 7). The plan was teachers with the two winning entries from each country to be invited to attend the Go-Lab summer School in Marathon, Greece between the 13th and 18th of July.

The timetable of the contest was as follows:

January 1st, 2014: Launch of the contest

February 1st, 2014: Start of submission period

April 30th, 2014: End of submission period

May 31st, 2014: Announcement of winners per country

July 13th - 18th, 2014: Summer School Dates

2.2 Contest set–up

The organisation of the contest was made by Ellinogermaniki Agogi (EA). EA was responsible for setting-up the contest, producing all the necessary materials, gather the contestant's entries and announce the results of the contest. It also acted as the main hub of communication for the contestants throughout the duration of the contest. The National Coordinators had the responsibility to evaluate the entries of their own country and report back to EA their results. All project partners were asked to disseminate the contest through all means possible.

2.2.1 Website

In order to better organize the contest, a separate website was created which aimed to provide all interested teachers with the necessary information as well as to keep them posted on all news related to the contest.

Through the website, teachers had access to the following information:

- General Information
- Rules and Conditions

- The prize
- Contest Organizers
- National Coordinators
- List of labs to be used in a lesson plan
- Lesson plan template
- Example Lesson Plans
- Useful Tips
- Useful Resources
- Evaluation criteria
- News
- Contest Dissemination Materials
- Calendar
- Contact persons
- Frequently Asked Questions

2.2.2 Dissemination

In addition to the website, a set of dissemination materials (WP 9) (see Annex A) was produced to further disseminate the contest. These materials were used by project partners in the project's events so as to further disseminate the contest. The project's National Coordinators were the main hub of dissemination for each country while the contest was also communicated through Facebook and Twitter and other websites.

2.2.3 Rules and Conditions

Within the framework of the preparation, a set of rules and conditions was also developed to ensure the smooth running of the contest. The rules and conditions where the following:

General terms and conditions

- Participating teachers may come from the following European countries: Austria, Belgium, Bulgaria, Cyprus, Estonia, Germany, Greece, Italy, Poland, Portugal, Romania, Spain, Switzerland, The Netherlands, United Kingdom
- In order to participate, teachers need to fill in the online registration form.
- The organizers of the contest have the right to disqualify a contestant if the information provided is inaccurate or false.
- Registration provides the organizers with the right to:
  - Publish the name and nationality of the winning contestants in the website of the contest and the Go-Lab website.
  - Publish and make use of the winning lesson plans for publicity and/or outreach purposes.

Submission of lesson plans

- Only registered contestants can submit a lesson plan.
- Contestants must submit the lesson plan electronically between February 1st and April 30th , 2014 via e-mail at golab@ea.gr.
- Lesson plans can be submitted in any of the 15 official languages of the countries mentioned above. Winning lesson plans must be translated to English.

- Lesson plans must be to their totality the work of the contestant. The contestant is responsible for the materials included in the submitted lesson plan especially for:
  - Personal information included.
  - Abuse or violation of any third party's intellectual property rights, including but not limited to copyright or trademark rights or rights of privacy or publicity.
  - Not submitting any material that is defamatory, abusive, harassing, insulting or threatening to any other person; bigoted, hateful or racially offensive; vulgar, obscene or sexually explicit; illegal (or promotes illegal activity).
- The material of the lesson plans cannot be returned and it can be used by Go-Lab for promotion and publicity and/or outreach purposes without prior notice.
- After the deadline of the contest all lesson plans will be available to the public through the webpage of the contest and the Go-Lab portal.
- The judges' decisions are final.

Prize

- All contestants will receive certificates of participation.
- The organizers reserve the right to request the return of the prize should there be a breach of the terms and conditions.
- Prizes are not negotiable and they cannot be transferred to another person.

2.2.4 Evaluation

National Coordinators were responsible for evaluating the entries coming from their own country. All National Coordinators followed the same evaluation criteria which are listed below:

1. **Overall presentation of the lesson plan (10 points)**

This criterion involves the overall evaluation of the lesson plan in terms of structure and presentation.

1a. Organization and structure (organization of each step of the lesson plan, adopted approach, methodology followed, class organization) - **5 points**

1b. Quality of the resources and the additional material provided. - **5 points**

2. **Practical Implementation in class (10 points)**

This criterion involves the evaluation of the lesson plan in terms of how easy it is to adapt it and implement it in the school class.

2a. Connection to the curriculum - **5 points**

2b. Interdisciplinarity - **3 points**

2c. Level of difficulty - **2 points**

2d. Quality of guidelines provided for students and teachers - **5 points**

3. **Creativity and Originality (10 points)**

This criterion involves the evaluation of the lesson plan in terms of creativity and originality. Meaning, the originality of the approach used in order to teach a given subject and the degree to which it encourages students to be creative and inspired to participate in experimentation.

3a. Creativity and level of interaction - **5 points**

3b. Originality - **5 points**

2.3 Contest Entries and Results

Overall, 71 teachers registered to the contest. Out of these teachers, 35 submitted an entry by the end of the submission period. National Coordinators were asked to evaluate the entries of their country. The number of participants per country and their average scores respectively are as follows:

Country	Number of Participants	Average Score (out of 35 points)
Austria	2	32.00
Belgium	1	29.00
Bulgaria	1	23.00
Cyprus	2	30.00
Estonia	1	28.00
Germany	2	25.25
Greece	5	28.62
Italy	1	23.00
Poland	1	30.00
Portugal	5	32.5
Romania	3	30.5
Spain	10	30.80
Switzerland	1	31.00
Total	35	28.07

The scores for all contestants are presented in Annex B.

3 The 2nd Go-Lab Summer School

3.1 Introduction

The 2nd Go-Lab Summer School 2014" that took place in Marathon, Greece between the 13th and 18th of July 2014, is a basic teachers' community support activity (Task 6.4), as its main objective was to introduce to teachers the Go-Lab project, its tools and services.

During the Summer School teachers were presented with numerous online virtual experimentations and remote laboratories from the Go-Lab repository while they also worked extensively on the Go-Lab inquiry cycle. The course included lectures and workshops focusing on:

a) Introduction to the concepts and the idea of the Go-Lab project.

b) Introduction to preparing, uploading and sharing digital learning resources and scenarios using the Go-Lab tools.

c) Presentation of inquiry-based learning activities from the Go-Lab repository apt for use in the science classroom.

d) Familiarization with the Go-Lab repository and its content.

f) Hands-on sessions working with the Graasp authoring environment with Go-Lab online labs and other external resources.

The engagement of teachers to the Go-Lab Summer School took place through the Go-Lab contest (see 2) whereby 35 teachers in total submitted an entry to the contest. The two teachers who achieved the highest scores from each country were invited to attend the summer school. In the cases where there were countries which had less than two participations, runner-ups from other countries were invited to take their place. As a result of the contest, all summer school participants (31 of them) had prepared a lesson plan following the Go-Lab standards before coming to the summer school. As all the teachers' lesson plans were prepared for participating in a contest they were to their majority of very high quality. A few weeks before the summer school another 8 teacher were added to the team of participants. These teachers had either received an Erasmus+ grand or they were selected by the project partners as they were considered to be pioneering teachers who could act as change agents in their countries.

3.2 Preparation

All information regarding the summer school was available to everyone through the summer school's website.

A month before the beginning of the summer school, all participants received an e-mail including all the necessary information about the summer school in general as well as what they were expected to do as a preparation for the course. In order to facilitate the needs of the summer school and make the exchange of information easier, a Graasp space was created for the summer school. All participants also had a separate space where they uploaded and stored their lesson plans and accompanying materials. All the information relative to the summer school (programme, questionnaires, tutors' presentations etc.) was also stored in the Summer school Graasp space.

By the time the summer school began, all participants had prepared an educational activity, and had uploaded it to Graasp along with all its supporting materials.

When arriving in Marathon, each participant received a summer school bag which included the following materials:

1. Training course program
2. Go-Lab brochure
3. Go-Lab authoring tool guide

3.3 Workshops and activities

The program of the training course had 4 main branches:

a) Lectures and plenary sessions
b) Workshops
c) Extra activities
d) Participants' presentations and reflection.

Day 1

During the first day of the summer school participants attended the opening session which was comprised of four talks focusing on different subjects. More specifically the talks given were the following:

Figure 1. Participants during the opening session.

- "From Big Bang to Black Holes" - Rosa Doran (NUCLIO)
- The importance of Geospatial Thinking - Marinos Kavouras (National Technical University of Athens)
- Quantum Physics and Entrepreneurship - Renaat Frans (KHLim Centre for Subject Matter Teaching)
- STEM and Literacies: the School Innovation Perspective - Nikitas Kastis (MENON Network)

Day 2

On this first session of the course, participants were asked to form working groups based on the subject of their lesson plans. In total eight groups were formed; two focusing on electricity and electrical circuits, one on biology and chemistry, two on buoyancy and three on astronomy. The members of each group shared their work and exchanged information and experience. From the beginning of the course, participants were informed that at the end of the summer school, each team was to present to the rest of the group an activity on their subject. Each group could choose to build upon the lesson plan of one member or to make another one from scratch. In addition to their group work participants also worked on their

Figure 2. Off-line activities during the "Asteroid impacts on Earth" workshop.

own activities which they had prepared beforehand in order to improve them based on the exchange of ideas between group members.

The course began with a general presentation of the Go-Lab project which was followed by the presentation of the “Craters on Earth and other planets” Inquiry Learning Space (ILS). During this activity, participants were invited to combine the online activities presented with offline activities. Each team was given a bowl full of sand, a ruler and some plasteline and they were asked to come up with their own off-line inquiry activities that were related to craters. Each team presented their ideas at the end of the session. It is worth noticing that the ideas that were presented by the participants were quite different of each other. Some teams chose to focus their activity on mathematics, introducing many variables for students to change and measure (for example measuring the size and the depth of crates produced using balls of different sizes) while other teams chose to keep their activities simpler focusing on the observation part rather than taking measurements (for example asking questions like “What happens when I throw the ball in different angles?”). One team chose to make the activity in the form of a challenge, giving students specific goals, and asking them to define the correct parameters in order to achieve the goals set. Two teams chose to focus on the environmental/biological aspect of the phenomenon. They used their bowl of sand to make an ‘environment’ and the objective for the students was to observe what happens to this environment when an impact occurs. Two more teams chose to study the physics of the phenomenon focusing more on measuring the momentum and the energy of such impacts.

In the evening session of the day, since the participants had already gotten a first good impression of what a Go-Lab ILS is the tutors made an introduction to demonstrate how such an ILS is made using the Graasp authoring environment and the Go-Lab Inquiry cycle. Participants were asked to start making their own ILS based on the lesson plans they had prepared. During this session, all participants were asked to fill in the ‘Orientation’ phase of an ILS so as to get acquainted with the authoring environment. After the presentation of the repository the authoring environment and its aspects the tutors worked individually with each of the participants, answering questions, demonstrating the use of the tools, discussing activities and proposing improvements and extra material.

Day 3

Figure 3. Group work during workshops

The morning session began with a more thorough presentation of the Go-Lab repository. As participants were already familiar with the Go-Lab online labs and ILSs due to the presentations of the previous day, this talk focused more on presenting the Go-Lab applications. Although participants were free to have a look at all Go-Lab applications, the ones that were presented in more detail were the “Concept Mapper”, the “Hypothesis Scratchpad” and the “Experiment Design Tool”. The second part of the morning session and the evening session of the day was dedicated to working with the Graasp authoring environment. The tutors facilitated the process by giving tips and ideas on how to optimize lesson plans, by answering questions and explaining how the Go-Lab tools work. Participants worked in groups, helping each other and exchanging ideas. It is worth noticing that participants, to their majority, responded very well to Graasp, as it took them only one or two efforts to learn about the most challenging parts of the tool. In particular, the aspects that needed more focus on were how to add pictures, how to add applications and how to integrate applications in the description box.

Day 4

The morning session of the fourth day was carried out at the premises of "Ellinogermaniki Agogi School". Participants visited the school's observatory and a 'Foucault's pendulum' located at the school. During the visit the group was given examples on how to blend online activities of an ILS with offline activities using real experimental infrastructures or museum exhibits. After the visit, participants attended a participatory design workshop where they were introduced to an ILS using the "Splash" online lab. Participants were asked to give their opinion on several aspects of the ILS and its components.

Figure 4. Visit to Foucault's Pendulum

Day 5

The morning session of the fifth day was divided in three parts. During the first part participants were introduced to the concept of the "Big Ideas of Science". After a general introduction on the subject, participants were asked to come up with their own 'Big Ideas of Science' and write them down in post-it notes. After completing this task they were asked to put the post-it notes on a wall and group them into subjects. After the grouping of the ideas, participants selected which group of ideas they preferred to work on. Each group was asked to revise all the post-it notes of the group and come up with one "Big Idea of Science" based on them. By the end of this part of the session each group, presented the "Big Idea" they had concluded to. It is worth noticing that the Big Ideas that the participants came up with are quite close to the Go-Lab set of "Big Ideas of Science" although they were still not presented until after participants had presented their own "Big Ideas".

Figure 5. Working on the" Big Ideas of Science".

Big Ideas of Science presented by the participants.	The Go-Lab set of "Big Ideas of Science"
The Universe is made by a great number of Galaxies.	The earth is a very small part of the Universe. The Universe is comprised of billions of galaxies each of which contains billions of stars and other celestial objects.

Earth and the systems that exist on the planet are related to climate. Earth is a living combination of the interactive systems constantly changing.	The earth is a system of systems which influences and is influenced by life on the planet. The processes occurring within this system shapes the climate and the surface of the planet.
Fundamental particles form the matter we know.	All matter in the Universe is made of very small particles. They are in constant motion and the bonds between them are formed by interactions between them.
All life on Earth has the same biochemical composition that has evolved through time.	Evolution is the basis for both the unity of life and the biodiversity of organisms (living and extinct). Organisms pass on genetic information from one generation to another.
Living things are made up by cells. Cells are the ‘unit’ of life.	Organisms are organized on a cellular basis and require a supply of energy and materials. All life forms on our planet are based on a common key component.
Forces (interactions) act at a distance via fields.	There are four fundamental interactions/forces in nature; gravitation, electromagnetism, strong-nuclear and weak nuclear. All phenomena are due to the presence of one or more of these interactions. Forces act on objects and can act at a distance through a respective physical field causing a change in motion or in the state of matter.
Energy is matter and vice versa. Energy is never lost; it’s just transformed from one type to another through different mechanisms.	Energy is conserved; it cannot be created or destroyed. It can only transform from one form to another. The transformation of energy can lead to a change of state or motion.
Human beings are just a very-very small part of the whole universe.	Earth is a very small part of the Universe. The Universe is comprised of billions of galaxies each of which contains billions of stars and other celestial objects.
Matter in universe is made up of very small particles.	All matter in the Universe is made of very small particles. They are in constant motion and the bonds between them are formed by interactions between them.
When we look at the smallest parts of matter and at radiation, classical physics and its determinism don’t apply any more. A completely new theory needs to be introduced with the following new ideas and tools: a) uncertainty principle, b) wave-	All matter and radiation exhibit both wave and particle properties.

particle duality, c) quantification, d) field theory.

In the second part of the morning session there was a presentation and a discussion on the significance of misconceptions and how they may be tackled using experimental settings. The last part of the morning session was dedicated to the presentation and evaluation of an ILS using the electricity lab in combination with some Go-Lab scaffolds. During the evening session participants worked again on Graasp so as to finish the uploading of their lesson plan.

Day 6

The last day of the summer school was about having participants presenting their work and receiving their certificates. Participants presented the work they had done in groups.

Figure 6. The entire groups of Go-Lab participants and tutors.

Field trips and extra activities were also carried out during the realization of the course. These initiatives included a visit at cape Sounio, and a visit to the museum of Acropolis and the Acropolis. Finally, one intersting point is that some of the participants spontaneously asked for an extra session in the form of a discussion, where they would have the opportunity to discuss with the tutors what kind of features they would like to have in the Go-Lab authoring tool. Their main request was to have the ability to divide their classes into groups and be able to assign roles for each group member within the Graasp authoring environment. Participants were also interested to find out, how they would be able to monitor their students through the platform and how they will be able to manipulate the documents produced by their students. These two features seems to be among their most popular needs. The detailed programme of the course as well as descriptions of the events is presented below.

GO-LAB SUMMER SCHOOL

PROGRAMME

	Sunday 13 July 2014	Monday 14 July 2014	Tuesday 15 July 2014	Wednesday 16 July 2014	Thursday 17 July 2014	Friday 18 July 2014
09:30 to 12:30	Participants' Arrivals and Registration	**Presentation of the Go-Lab project** Eleftheria Tsourlidaki *Ellinogermaniki Agogi* **Working with Go-Lab labs: Asteroid impacts on Earth** Fraser Lewis *University of South Wales*	**Presentation of the Go-Lab tools** Adrian Holtzer *École Polytechnique Fédérale de Lausanne* **Practice on using the Go-Lab tools** Eleftheria Tsourlidaki and Georgios Mavromanolakis *Ellinogermaniki Agogi*	**Visit to Ellinogermaniki Agogi School** **Combining online and offline activities** Eleftheria Tsourlidaki *Ellinogermaniki Agogi* **Speakout loud: Shape our design on Splash ILS** Rob Edlin-White and Matthias Heintz *University of Leicester*	**Showing our students the bigger picture through a federation of online labs** Eleftheria Tsourlidaki *Ellinogermaniki Agogi* **The significance of misconceptions** Georgios Mavromanolakis *Ellinogermaniki Agogi* **Speakout louder: Spark our design on Electricity ILS and other scaffolds** Rob Edlin-White and Matthias Heintz *University of Leicester*	**Participants' Presentations, reflection and certificates** **Closing Lecture (12:30 – 13:30)** Environmental literacy: Covering knowledge, attitudes and behaviour at green outreach sites Franz Bogner *University of Bayreuth*
15:00 to 17:00	**Opening Session (18:00 - 21:00)** **From Big Bang to Black Holes** Rosa Doran *NUCLIO* **The importance of Geospatial Thinking** Marinos Kavouras *National Technical University of Athens* **Quantum Physics and Entrepreneurship** Renaat Frans *KHLim Centre for Subject Matter Teaching* **STEM and Literacies: the School Innovation Perspective** Nikitas Kastis *MENON Network*	**Practice in using the Go-Lab learning spaces** Georgios Mavromanolakis *Ellinogermaniki Agogi* **Working with inquiry** Eleftheria Tsourlidaki *Ellinogermaniki Agogi* **Visit at Cape Sounio, Sanctuary of Poseidon**	**Practice on using the Go-Lab tools** Eleftheria Tsourlidaki *Ellinogermaniki Agogi* *and* Georgios Mavromanolakis *Ellinogermaniki Agogi*	**Visit to the Acropolis Museum and the Acropolis** **Dinner**	**Group work with the Go-Lab tools** Eleftheria Tsourlidaki and Georgios Mavromanolakis *Ellinogermaniki Agogi* **Invited Lecture (17:00 – 18:00)** Scientix workshop Gina Mihai *European Schoolnet* **Farewell Dinner**	**Participants' Departures**

Figure 7. The programme of the Summer School

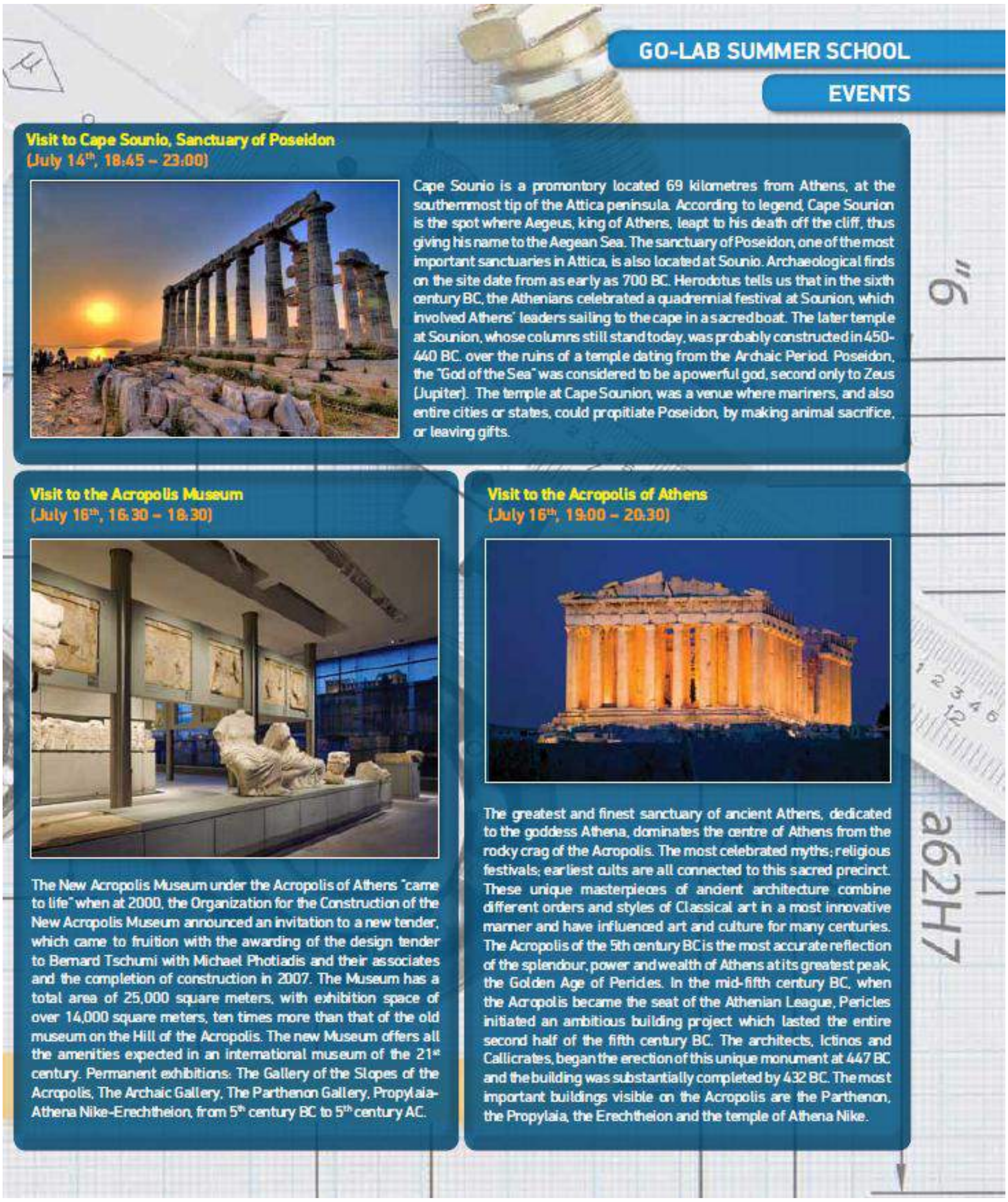

Figure 8. Descriptions of the events carried out

3.4 Summer School Outcomes

3.4.1 Overall assessment

The summer school was attended in total by 39 participants from around Europe.

Country	Number of participants
Austria	3
Belgium	1
Bulgaria	1
Croacia	1
Cyprus	2
Estonia	2
Germany	2
Greece	6
Italy	2
Poland	1
Portugal	5
Romania	3
Slovenia	2
Spain	7
Switzerland	1

Table 1. Participants of the training course per country

All participants worked on their lesson plans and they uploaded them on the Graasp platform. The ILSs produced are listed in the ANNEX D.

3.4.2 Semi-guided interviews

3.4.2.1 The Context

The main objective of the Go-Lab Summer School was to introduce school-teachers to the use of online virtual environments offering access to experimentations and (remote) laboratories, in order that the teachers develop their understanding about the inquiry-based science learning and pedagogical practice, thus help them to develop, improve and enhance their teaching skills.

During Summer School semi-guided interviews were conducted, so that these teachers would express their opinion-reflection about (on): a) their current teaching practices, b) the Go-Lab authoring environment, they have been presented with, and c) the potential of building communities of teachers and learners in order to nurture the upgrading of the teachers understanding about inquiry-based learning and especially their science teaching (pedagogical mentoring) skills. Teachers had the opportunity to reflect upon the practice of the Inquiry Based Learning approach and of the authoring process of the Go-Lab “environment”.

Interviews took place using two different sets of questions (see annex C) in two different days respectively (Tuesday July 15th and Thursday July 17th). The first group of questions refers to the use of online labs, the potential use of online labs and the need for a community platform, while the second group of questions refers to the Go-Lab authoring process and the use of ILSs. In the first day (first group of questions) totally 23 teachers were interviewed whereas in the second day (second group of questions) 21 (some teachers/ groups of teachers interviewed both days). Teachers were divided into 7 different groups (2-5 persons per group) for each set of questions each day.

It has to be clarified that the 39 teachers from different European countries took part in Go-Lab summer school were selected after a contest whereby they were asked to build lesson plans that follow the Inquiry Based Science Education (IBSE) approach and involve the use of online labs that target students between 10 and 18 years old. This means that this sample of participants consists of teachers that know very well and use the IBSE approach and their opinion is of great value to the project.

3.4.2.2 Current Teaching Practices

All interviewers stated that they use labs but only a limited number (N=5) of them use online labs. All teachers who do not use online labs stated that if they had the opportunity they would use them. This finding opens up a great challenge for Go-Lab project to persuade teachers to introduce in their teaching the systematic use of online labs.

A comment which almost all interviewees (N=21) made was that online labs cannot substitute the real experiments because students can better understand the procedure and the reactions taking place observing a real experiment. According to their opinion the ideal usage of online labs would be to complement the real experiments because, in some cases, they are more convenient and easy to use (access in experiments that cannot be conducted in class, students can use online labs as homework, unavailability of materials/ resources/ infrastructure for real experiments, lack of enough teaching time, every single student cannot conduct the experiment by himself/ herself).

From the limited number of teachers who use online labs, the majority of them stressed the need for more suitable online labs, like those Go-Lab offers. In particular, they expressed the opinion that Go-Lab is more advanced than the online labs they use, because teachers can find different online labs, gathered in one platform and through one access point, and therefore makes it easier for them reaching out and organizing the use of these assets. Furthermore, some teachers (N=2) adopt the view that the use of online labs can benefit their professional development by providing them with ideas they can further adapt and use in their lesson.

The slight majority of teachers (N=10), who do not use online labs, agreed that Go-Lab gave them the opportunity to use online labs and convinced them for its usefulness and the advantages these kind of labs can offer.

Concerning the use of scaffolds, it was reported limited use (N=5), as teachers do not use them systematically. On the contrary, all of them use to a large extent the Inquiry Based Learning approach in their lesson, which opens up great possibilities for Go-Lab practice as the methodology it adopts is widely used from teachers.

3.4.2.3 Go-Lab usability, advantages and barriers of use

As teachers during summer school had the opportunity to use the Go-Lab authoring environment, they asked to reflect upon the authoring process and the integration of the Inquiry Based Learning approach.

All teachers use the Inquiry Based Learning approach and as a result they are experienced enough to assess whether and to what extent the Go-Lab authoring environment serves the introduction of this learning approach in the classroom. All interviewees expressed the opinion that the authoring environment can facilitate the introduction of the Inquiry Based Learning approach in the classroom and that it meets its needs. More specifically, the majority of teachers declared that the inquiry cycles follow a specific order that coincides with the stages of the experiment and the corresponding inquiry questions. According to them, this is the most important functionality of the authoring tool, which leads to clear objectives and to the better organization of the lesson.

Overall, although teachers were very satisfied with the authoring process in terms of the methodology adopted, almost all of them complained that it takes a lot of time to learn how to use the authoring environment, but they reported that once they have learnt it then it is very easy to use.

Teachers took part in summer school told that their initial intention was to produce an ILS that can use in their lesson. Thus, they tried to come up with an ILS compatible with their needs and the needs of the curriculum.

According to their opinion, students will find highly attractive the possible use in the lesson of the ILS they produced. Their estimation is that the combined use of multiple forms/ types of content, the interactive environment of the ILS, the possibility for students to conduct and see by themselves the results of an experiment, the immediate and fast process of the experiment and its results and the experience of bringing about by their own movements a specific result, raises the interest of students and open ups their creativity and imagination.

Apart from that, a number of teachers (N=11) pointed out the learning advantages that the use of an ILS can have to students. The most common ones are the following: it improves the critical thinking and the creativity of the students; it involves them actively in the procedure and they do not just observe the teacher conducting the experiment; students can repeat the experiment as many times they want; it makes students to use the correct methodology and better organize their thought as it follows a specific order.

Although it was not asked, some teachers (N=7) identified some advantages of the use of ILS to themselves. They stated that it can help them to improve the collaborative learning in the classroom and their pedagogical approach and that they will be advanced from working on other teachers' work. Some of them made special reference to the teaching time saving that the use of the ILS can contribute.

Concerning the barriers of using the Go-Lab system in their class, almost all teachers (N=19) pointed out the need for compatibility of Go-Lab system with the curriculum -which means that there should also exist compatibility with the class. Immediate connection with the need of compatibility of ILSs with the curriculum has the teaching time, as it was reported that usually teachers have not enough time available to conduct experiments. The second barrier identified (N=13) is the insufficiency of the appropriate infrastructure (mainly strong internet connection and availability of computers). Furthermore, some teachers (N=6) declared that they should make amendments to their teaching practice, because they think that ILSs are ideal for individual and not for group use, like what happens with real experiments. They also reported that, although use of ILSs can contribute to teaching time saving, they have to work extra in order to prepare their sufficient utilization in the class as they have to adapt it to the needs of each student audience. A few teachers (N=5) also said that Go-Lab system should be accompanied by a specific framework for the lesson (e.g. lesson plan) that can better exploit its benefits and help them organize the lesson around it. Finally, as a barrier was also reported the fact that students should get accustomed to use online labs, which now is not the case.

3.4.2.4 Community building

Almost all teachers (N=19) interviewed had strong belief that a community and supporting environment should be built. According to them, this community will help teachers that are highly interested in being actively involved to the authoring or to the further improvement of an ILS. Within the framework of this community teachers can share content or ideas, amend a specific lab to fit their needs, reach the author of an ILS for clarifications and disseminate the advantages of the use of labs to as many teachers as possible. A few teachers also said that within the community it should be provided training to new members who are interested in using Go-Lab. Last but not least, it was also reported that the community could also help to the sustainability of the project after its time.

The community teachers were asking for should be built around the content -namely the ILSs and the labs- where users can present, share and discuss about them.

3.5 Evaluation activities on validating of Go-Lab instruments

During the summer school, the two WP8 questionnaires (pre and post) that will be used from Go-Lab teachers during the large scale pilot activities were piloted.

The aim of this pilot was to validate these instruments and ensure that they measure what we are looking for as for example: knowledge of teaching science, knowledge of instructional approaches and technologies, general technical skills. Moreover WP8 wanted to ensure that the design of the questionnaire and the language used are both understandable by teacher and that language used is understandable by teachers. The total time needed by teachers to fill in these questionnaires was also measured (approximately 8' for each instrument).

Both pre & post WP8 instruments can be found in deliverables D8.1 and D8.2 (annexes).

3.6 Follow up

As a follow up, teachers received all the tutors' presentations and a Facebook group was also created in order to encourage further collaboration and to help them keep in touch. All participants were invited to join the Go-Lab community and participate in the pilot phases of the project. More e-mails will be sent in the future so as to keep the participants updated about the upcoming activities of the Go-Lab project. Finally, all the ILSs produced by the participants will be reviewed by the tutors in order to send to their creators more information and suggestions for refinements.

4 The Practice Reflection Workshops (PRWs)

PRWs are set-up to stimulate reflection about theory and practice and consist the fundamental source of input of teachers' experience on using Go-Lab and its methodology. The first cycle of Practice Reflection Workshops was scheduled to run in M13 - M21. PRWs carried out locally in most of the countries participating in the implementation cycles of the Go-Lab pilot. Five countries (Estonia, Switzerland, UK, Bulgaria and Romania) did not conduct PRWs. According to D6.1 "Specifications of the participatory activities" (p. 14) in Bulgaria and Romania the PRWs are foreseen in the period M25-M33. The other countries that did not conduct PRWs (Estonia, Switzerland and UK) are going to cover this loss in the 2nd cycle of PRWs.

4.1 The methodology and the implementation of Practice Reflection Workshops

4.1.1 Goals, objectives and format

Practice Reflection Workshops aim at engaging teachers in online or face to face interaction to gain insight into the users' point of view after they have accomplished implementation activities**.** This means that prerequisite for teachers to participate in the PRWs was to have used the Go-Lab system in some way, so that they reflect on something they have experienced.

PRWs are organized by National Coordinators in collaboration with WP 6 main partners. The aims of the workshops were:

- To stimulate reflection and formative evaluation on pilot activities among participants and between participants and stakeholders representatives.
- To identify positive and transferable results and difficulties in the implementation of the Go-Lab model.
- To propose improvements in the subsequent phase of development, and to identify criteria for new schools to join the piloting and new stakeholders to join the community.
- To contribute to Project Evaluation activities.

The format/ central points of the PRWs, described in the guidelines that become available for the facilitators, emphasize the following:

- Are the initial objectives of the proposed Go-Lab approach being met?
- Is the proposed organisation scheme of the online labs useful for the teachers practice?
- What is the impact of the project implementation in schools (along with other activities) on the individual teacher? On the school?
- What are the necessary changes (both pedagogical and technical) in order to develop a more suitable environment for experimentation?
- How involved and attracted to the activity are the teachers? Are they reluctant, critical, doubtful or neutral, or enthusiastic, or even multipliers?

The Practice Reflection Workshops followed the following format:

Step 1: Introduction and Case Studies

Facilitators briefly introduced participants to the aim of the workshop and speak about the Go-Lab project developments. Furthermore, they asked each teacher (or a selection of volunteers if your group is too large) to present their experience with the Go-Lab platform as a 'case study' describing all the activities they have undertaken, estimating the impact of the use of the Go-Lab portal and Go-Lab scenarios on the teachers and students, gathering the teachers' estimation of the impact or potential future impact of the proposed environment and activities on the school and curriculum and summarizing the challenges presented by Go-Lab, which they have overcome and which have not yet been solved.

Step 2: Theme Analysis and Group Discussion

After the case studies have been presented, participants asked to highlight the common themes that emerged as common challenges, ideas that could work in different scenarios, and so on (E.g. “Do many of the case studies refer to teacher role?”, “How does the Go-Lab use affect student engagement?”, “Subject knowledge?”). At the end there will be a group discussion of the emerging themes. The discussion should highlight 3-5 common themes emerging from the teachers' presentations. These themes had to be recorded on a reporting template and participants were asked to add examples from the case studies and their own Go-Lab experiences that illustrate the emergent themes. In this way, all participants’ experiences were documented.

Step 3: Recommendations/Conclusions

In this step, working in groups of 3 - 4, participants should create an annotated poster representation of what it means to be a Go-Lab science teacher. In the meantime, participants consider and discuss what themes emerge from the groups. In a final round of discussion, the facilitator asked participants to name 1-5 top five recommendations for the further implementation the Go-Lab scenarios.

4.1.2 The implementation of the Practice Reflection Workshops of the first cycle (M 13-21)

PRWs orginised according to the plan described in 4.1.1 but in some cases they were adapted to meet the present circumstances. Workshops started by giving a general introduction to the Go-Lab objectives and reasoning. In some PRWs teachers had the opportunity to become familiar with the main possible inquiry pathways and reflect upon the inquiry based learning methodology, which in practice means how to build the presented 5 phases and design ILS using the authoring environment (Graasp). Furthermore, in some cases, they could focus on a hand on activity and use the ILSs already produced.

In the first period of PRWs, 25 (6 online and 19 f2f) workshops were conducted in 10 countries engaging 411 teachers from different school settings. Some workshops lasted some hours whereas some of them lasted a few days. Below there is an overview of the Practice Reflection Workshops per country.

Overview of the Practice Reflection Workshops per country						
No	**Country**	**Partner/ NC**	**Date**	**Location**	**Number of Participants**	**Name of event / Description**
1	NL	UTwente	20/5/2014	‘s Hertogenbosch	10	Workshop at a conference on Technology and Education for ICT managers, coordinators, and project leaders
2	NL	Nuclio/UTwente/USW	11/04/2014 – 15/4/2014	Enschede	11	Cosmos
3	BE, PL & IT	EUN	7/4/2014	Online	17	Go-Lab workshop: Inquiry Based STEM teaching with Online Labs
4	BE, PL & IT	EUN	24/4/2014	Online	14	Go-Lab workshop: Inquiry Based STEM teaching with Online Labs
5	BE	EUN	24/5/2014	Brussels	24	Go-Lab workshop: Inquiry Based STEM teaching with Online Labs
6	Europe	EUN	12/6/2014	Online	10	Go-Lab workshop: Inquiry Based STEM teaching with Online Labs
7	ES	UD,EA	19/2/2014	Bilbao	17	GoLab workshop & ILS
8	ES	UD	24/4/2014	Domus Science Museum	19	GoLab workshop & ILS
9	ES	UD	20/5/2014	online	10	GoLab workshop
10	ES	UD	21/5/2014	online	10	ILS
11	ES	UD	25/6/2014	Barcelona	49	ILS
12	AT	CUAS	3/4/2014	Villach	16	Future Jobs
13	AT	CUAS	21/5/2014	Villach	4	GoLab Workshop for teachers

14	AT	CUAS	2/6/2014	Villach	4	Go-Lab Workshop
15	AT	CUAS	24/6/2014	Klagenfurt	10	Go-Lab Workshop
16	DE	UDE	3/6/2014	Duisburg	3	Combined (training and practice reflection), online (google+ hangouts)
17	DE	UDE	28/5/2014	Duisburg	3	Practice Reflection and Training on Inquiry Learning and ILS creation
18	DE	UDE	25/6/2014 – 3/7/2014	Interviews/Phone	13	Interviews on Practice Reflection
19	CY	UCY	31/3 / 2014- 3/4/2014	Nicosia, Cyprus	17	ILS implementation in combination with tool assessment.
20	GR	EA	13/7/2014 - 18/7/2014	Marathon, Attica	39	Go-Lab summer school
21	GR	EA	29/4/2014	Athens	22	CERN Exhibition at Eugenides Foundation in Athens
22	GR	EA	20/5/2014	Athens	24	CERN Exhibition at Eugenides Foundation in Athens
23	Portugal	NUCLIO	1/2/2014	V.N.Gaia	20	Go-lab training
24	Portugal	NUCLIO	4/2/2014	V.Real	20	Astronomy Hands-on training
25	Portugal	NUCLIO	29/11/2013	Leiden	25	ESA/ GTTP training

4.2 Data analysis of the Practice Reflection Workshops

4.2.1 Methodology of data collection and analysis

After the end of the PRWs the facilitators had to fill in the reporting template (see ANNEX F), which provides all the necessary information for the participants' reflection. Facilitators should provide a brief description of the workshop, their observations, common themes identified in the case studies, examples that illustrate common themes and recommendations made by the participants.

For the analysis of the participants' reflections we used both qualitative and quantitative data. The qualitative data come from: a) the reporting templates of the PRWs gathered (one template for each PRW), b) the interviews of the participants in the Go-Lab Summer School (see also 3.4.2) and c) the two open questions of the questionnaires used in three PRWs (see ANNEX E). The quantitative data come from a questionnaire (see ANNEX E) which was used in three PRWs.

4.2.2 Analysis of the qualitative data by category

After extensive elaboration of participants' reflections, the following categories emerged:

Chances and advantages of Go-Lab

The most important evidence that creates great possibilities for Go-Lab is the willingness of teachers to use online labs in classroom. Teachers appear open to the use of online labs in general and find challenging to work with them.

Many teachers expressed the opinion that the biggest advantage of the Go-Lab system is its availability and its accessibility. The fact that Go-Lab system is free of charge and accessible online gives the opportunity of extensive massive use. Other advantages identified were: the attractiveness of Go-Lab and the motivation it offers to students, the fact that it gives teaches and students the opportunity to conduct experiments that otherwise they could never conduct, the speed of the experiment process, the adaptability it offers, as Go-Lab can be used everywhere and can perform a variety of experiments. The overall reflection of teachers towards Go-Lab is positive and teachers seem motivated to introduce it in their teaching practice.

Use of Go-Lab system in the classroom

All participants were highly motivated to use the Go-Lab system in practice, even though most of them have never used it before. According to their opinion, the main functionality of Go-Lab system is that it can successfully contribute and enhance students' learning and that it is attractive for them because of the interaction it offers. They believe that the Go-Lab approach (integrated educational platform with labs, scaffolds, proposed activities, authoring environment) facilitates the introduction of online labs and their use in the classroom. As a prerequisite for the successful introduction of Go-Lab in the classroom teachers stated that is its ability to cover their needs. The major concerns identified for the use of Go-Lab system in the classroom is the compatibility with the curriculum and the time available to use it.

Pedagogical framework and Inquiry methodology

The reflection of the participants upon the inquiry methodology was a core objective of the PRWs. The overall impression of teachers towards the idea of inquiry learning approach adopted by the project was very positive. Most of them stated that it promotes real knowledge because it is based on the "simplifying complexity for students and gradually amplifying it through the process" and "supports self-regulated learning in a structured way". More specifically, teachers believe that ILSs phases are a meaningful way of structuring science learning experiences because they are based on the constructivist learning approach and follow a right order of phases.

In some limited cases some misunderstandings did occur in the implementation of the idea of inquiry based learning approach. Participants commented that not all questions are inquiry questions and that student activity doesn't necessarily mean inquiry. For instance, exploring an interactive application (e.g., a periodic table; ptbale.com) or calculating the rotation of a planet following a procedure is not considered for them inquiry based learning.

In addition, teachers reported that smaller questions/ hypothesis should be used as a starting point, especially if students are not skilled enough. They also proposed that learning goals/ research questions should be indicated in order to make the meaning of inquiry clearer and understandable for students. The procedure of the ILSs should also be further explained by adding a separate extra phase after “orientation” phase or “orientation” phase should provide clearer info of what variables should be studied.

One important point made by participants, which has a pedagogical orientation, is the use of the Go-Lab system with regards to the students’ learning. Some participants expressed the opinion that tracking of students’ progress would be a valuable functionality and that students’ assessment could be within the Go-Lab environment.

The Go-Lab authoring environment (Graasp)

The participants found very attractive the idea to produce an ILS by themselves because it gives them the autonomy to create something that meets their teaching needs. Moreover, they pointed out that the fact that they can use different types of content (video, text, image) makes the ILSs more interactive and appealing to students.

However, it was reported that the authoring environment is very complicated and impossible to use without the adequate training.

Barriers of use

Barriers of use have been a very common point made by the participants almost in every workshop. The most common barriers of use identified were the following:

- Lack of the adequate infrastructure in schools (computers available, strong internet connection, technical support).
- Compatibility with the curriculum. Teachers believe that not all courses/ curricula adopt the inquiry based learning methodology. Furthermore, there are not available ILSs for all modules which make it difficult to use them systematically.
- Availability of Go-Lab system in other languages was identified as a problem both for teachers and students.
- Teachers’ illiteracy on ICT in general and lack of teachers’ training on how to use Go-Lab.
- Time and curriculum constrains in classroom that restrict the implementation both of Go-Lab and the Inquiry Based Learning Approach.

4.2.3 Analysis of the quantitative data

A questionnaire (ANNEX E) developed by the University of Twente was used to gather participants’ reflection in three PRWs in ‘s Hertogenbosch (NL), Bilbao and Barcelona (ES). Although this questionnaire was not used in all PRWs but only in three, it was filled in by a significant number of participants (89 participants, which is the 21,6% of the total participants in all PRWs).

The questionnaire consists of thirteen items that refer to the chances and the implementation of Go-Lab and two open questions on the strengths and the obstacles of Go-Lab. Responders should classify their agreement on the statements according to a seven point Likert scale where the minimum was “agree” and the maximum “disagree”.

4.2.3.1 Responders’ Profile

Totally 89 people filled in the questionnaires. Data indicate that they come from the higher education, secondary, primary, or other areas.

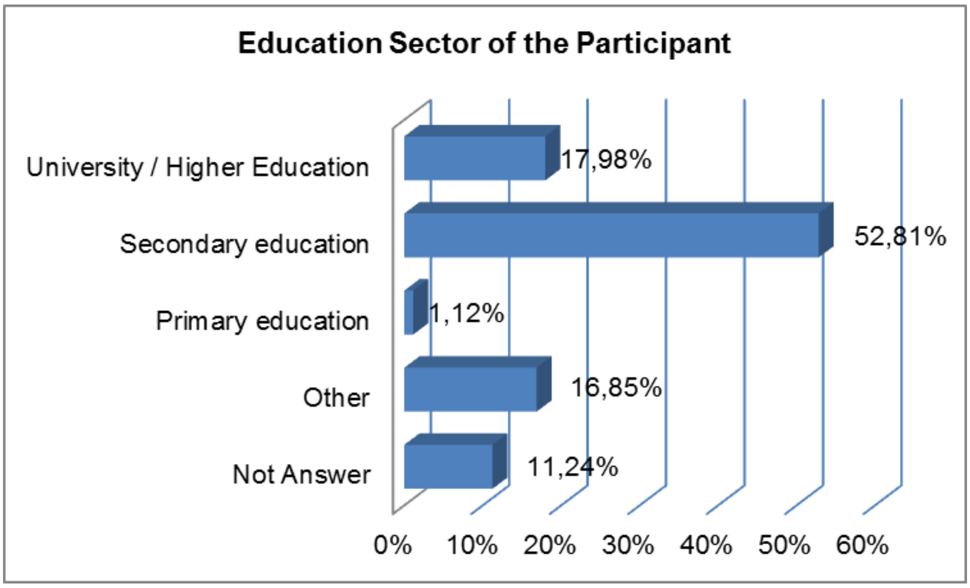

Figure 9. Education sector the participant operates

Above half (52,8%) of the responders (n=89) belong to the secondary education sector and the rest ones to the higher education and other sector.

4.2.3.2 Chances for Go-Lab

The first part of the questionnaire was dedicated to the investigation of the chances for Go-Lab and consists of the four following statements.

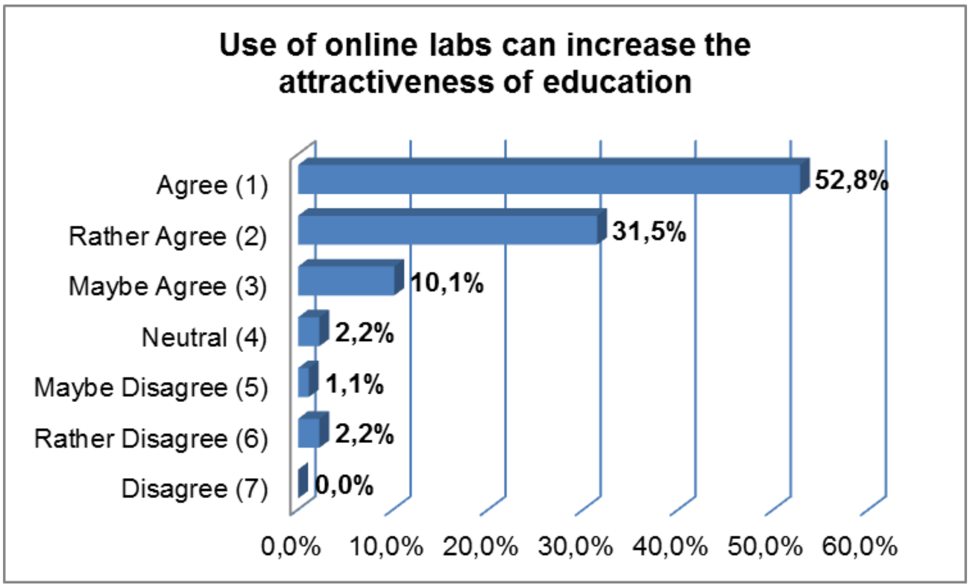

Figure 10. Chances for Go-Lab: Use of online labs can increase the attractiveness of education

The vast majority of the responders have high expectations from Go-Lab as they believe (n=89, average 1,74, standard deviation = 1,06) that the use of online labs can increase the attractiveness of the education. The vast majority (84,3%) of the participants “Agree” or “Rather Agree” with the above statement.

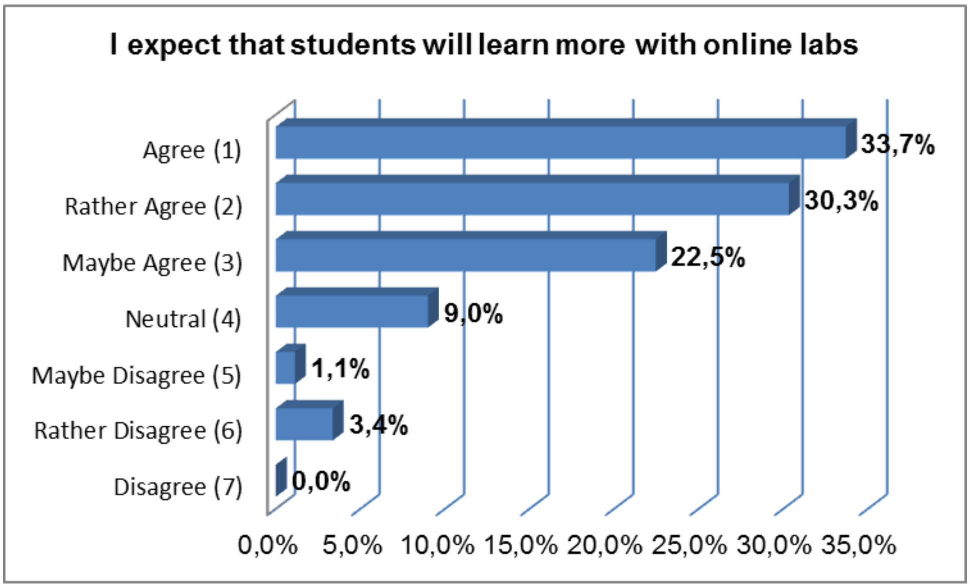

Figure 11. Chances for Go-Lab: I expect that students will learn more with online labs

Respondents indicated quite positive reactions on the learning value (for students) of the use of online labs, as the 33,7% of them agree with that and the 52,8% of them “rather agreeing” or “maybe agreeing” (n=89, average 2,24 , standard deviation = 1,23). This finding indicates the potential Go-Lab can have to students’ learning as teachers appear to believe to its learning impact.

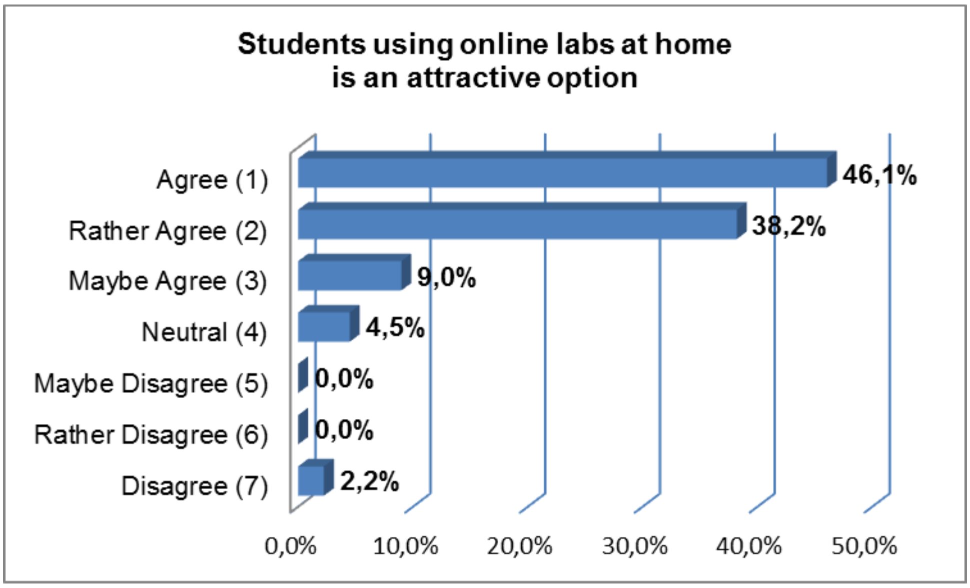

Figure 12. Chances for Go-Lab: Students using online labs at home is an attractive option

Respondents indicated very positive reactions on the option of online labs being accessible by the students’ home in a degree of 84,3% (“agree” and “rather agree”) (n=89, average 1,83 , standard deviation = 1,13). Students using online labs at home is a core target of Go-Lab project and teachers seem to have very strong belief that students will use it such way.

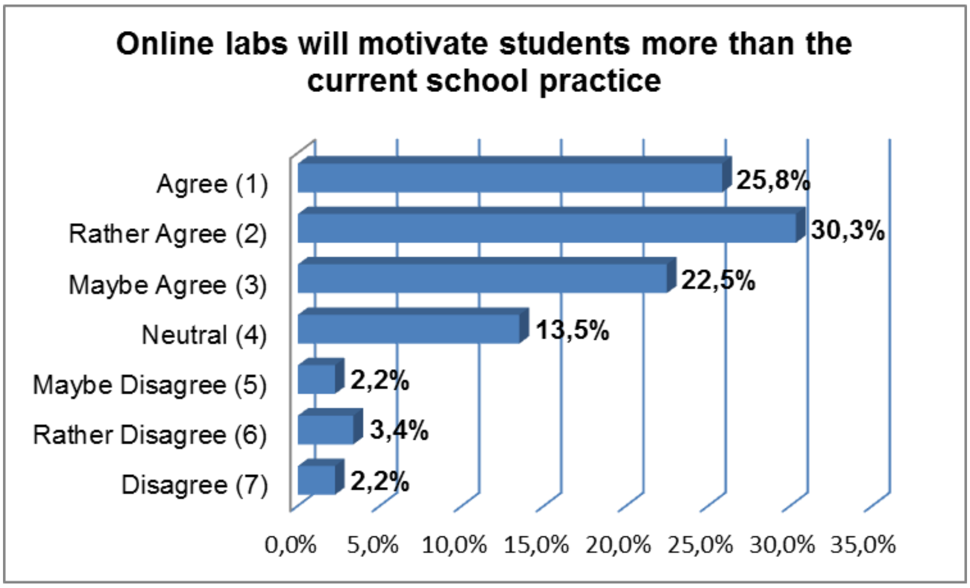

Figure 13. Chances for Go-Lab: Online labs will motivate students more than the current school practice

Responders seem to believe that online labs will operate more motivationally for students than current school approaches (n=89, average 2,55 , standard deviation = 1,43).

The above finding on the chances for Go-Lab reveals that the overall impression of teachers is very positive. This means that teachers both believe that Go-Lab is something essential for school education and that it will have a significant impact on students learning as well as attracting their attention and motivate them. Teachers seem to believe to the perspective Go-Lab offers but it has also to be examined its implementation in practice, because in order for Go-Lab to be successful its practical value should be in accordance with teachers' expectations.

4.2.3.3 Implementation of Go-Lab in practice

The second part of the questionnaire aimed to investigate teachers' opinion on the implementation of Go-Lab and consists of the thirteen following statements.

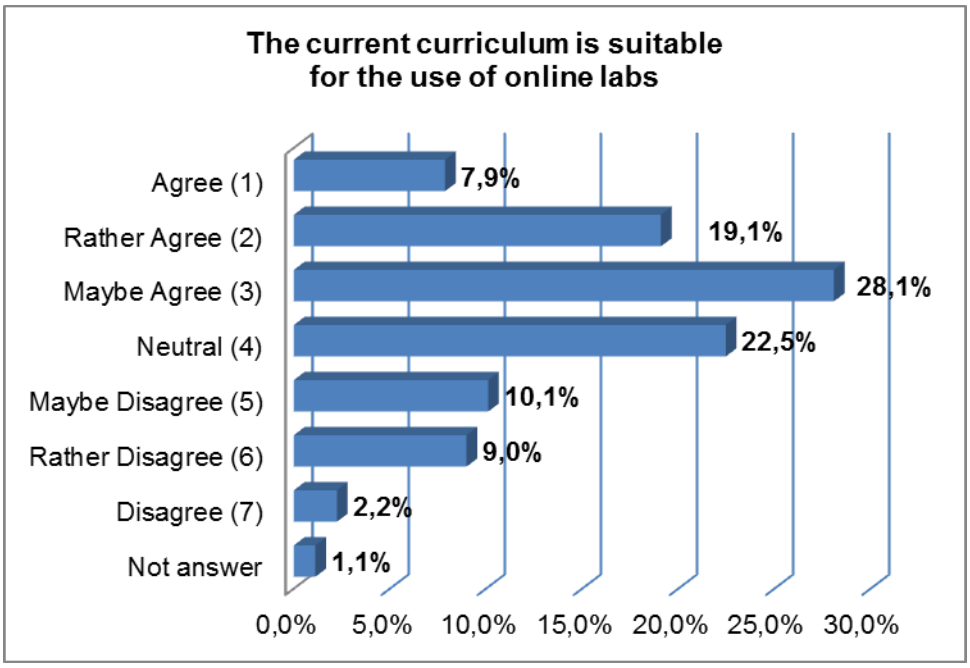

Figure 14. Implementation of Go-Lab: Students using online labs at home is an attractive option

Respondents replied positively on the relation between the current curriculum and the appropriateness of online labs for it ("neutral" to "maybe agree" sum up to 50,6%) (n=89, average 3,40, standard deviation = 1,47). Profoundly there is a gap between the two, setting the route towards further alignment. At this point, an inconsistency has to be noticed, as the quantitative data available straightly identified the compatibility with the curriculum as the main barrier for the successful implementation of Go-Lab. Maybe it can interpret the moderate agreement of teachers on this statement.

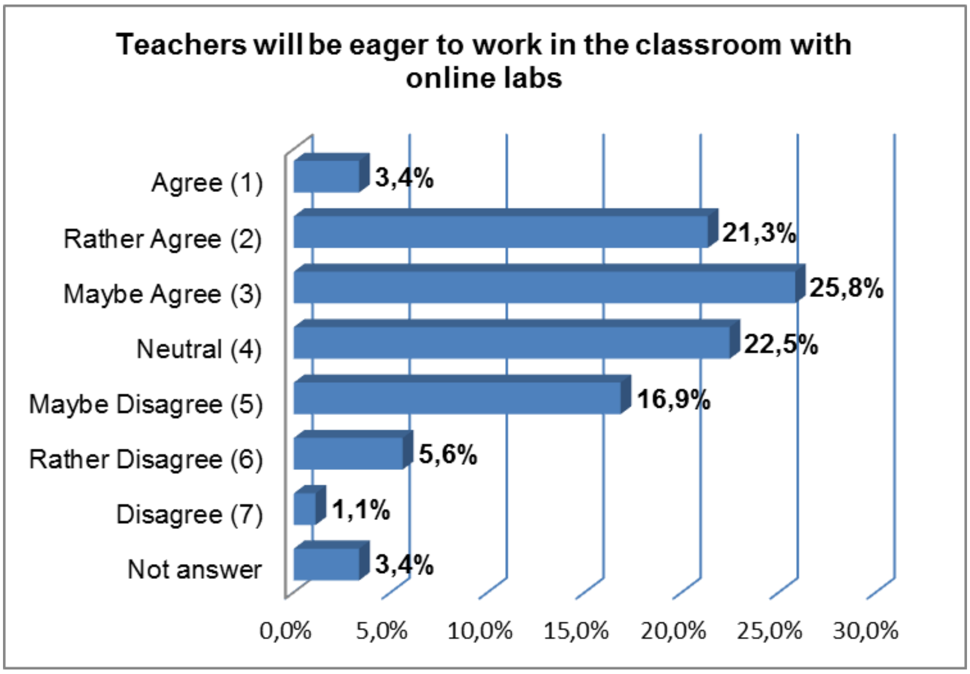

Figure 15. Implementation of Go-Lab: Teachers will be eager to work in the classroom with online labs

Respondents indicated the positive tension of medium to increased teachers' eagerness on using online labs in their classroom activities ("neutral" and "maybe agree" sum up to 48,3%) (n=89, average 3,39 , standard deviation = 1,33). Thus, this finding request further analysis.

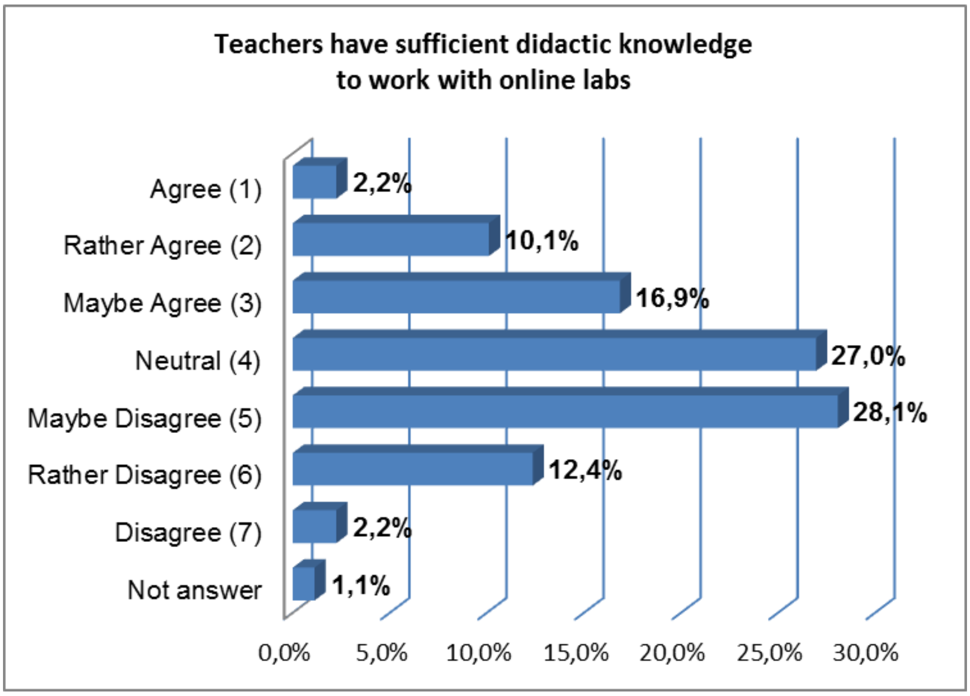

Figure 16. Implementation of Go-Lab: Teachers have sufficient didactic knowledge to work with online labs

To further investigate the previous statement teachers were asked to indicate their perceptions about the (didactic) knowledge of teachers to use online labs in their daily practice. Results indicate that teachers could have limited didactic knowledge on using online labs in their routine ("neutral" and "maybe disagree" sum up to 55,1%) (n=89, average 4,11, standard deviation = 1,33). Thus, further efforts are requested on teacher development on the use of online labs in practice. This finding is confirmed by the fact that many teachers during workshops stated that they need training in order to learn how to use Go-Lab.

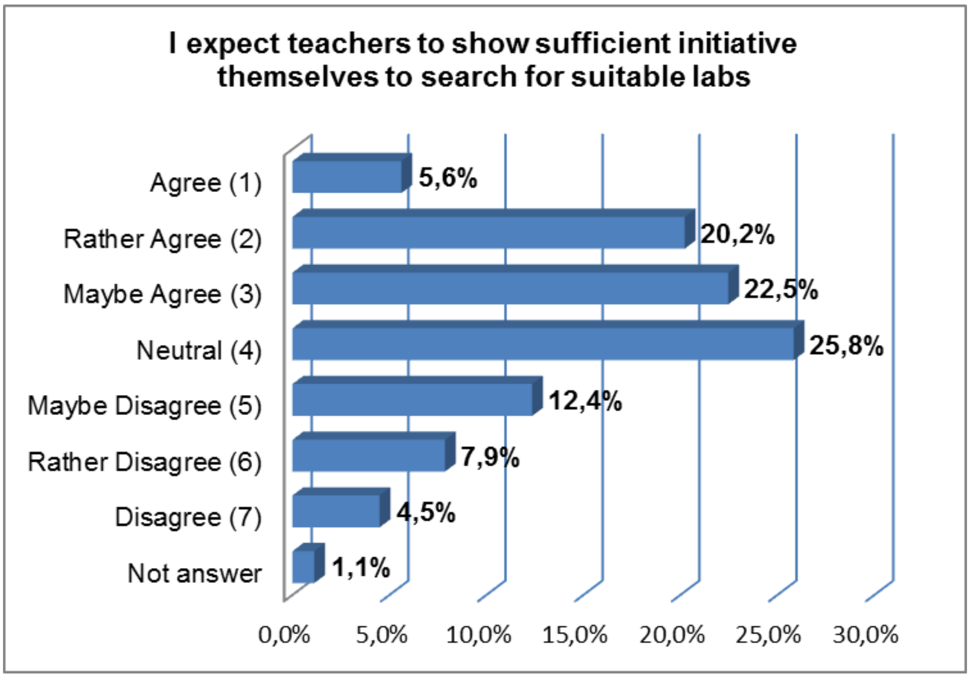

Figure 17. Implementation of Go-Lab: I expect teachers to show sufficient initiative themselves to search for suitable labs

Results indicate that teachers may take initiatives to search for suitable labs ("neutral" and "maybe agree" are estimated to 48,3%) (n=89, average 3,57, standard deviation = 1,51). This finding justifies the willingness of teachers supporting the idea of further teacher development on the topic of interest.

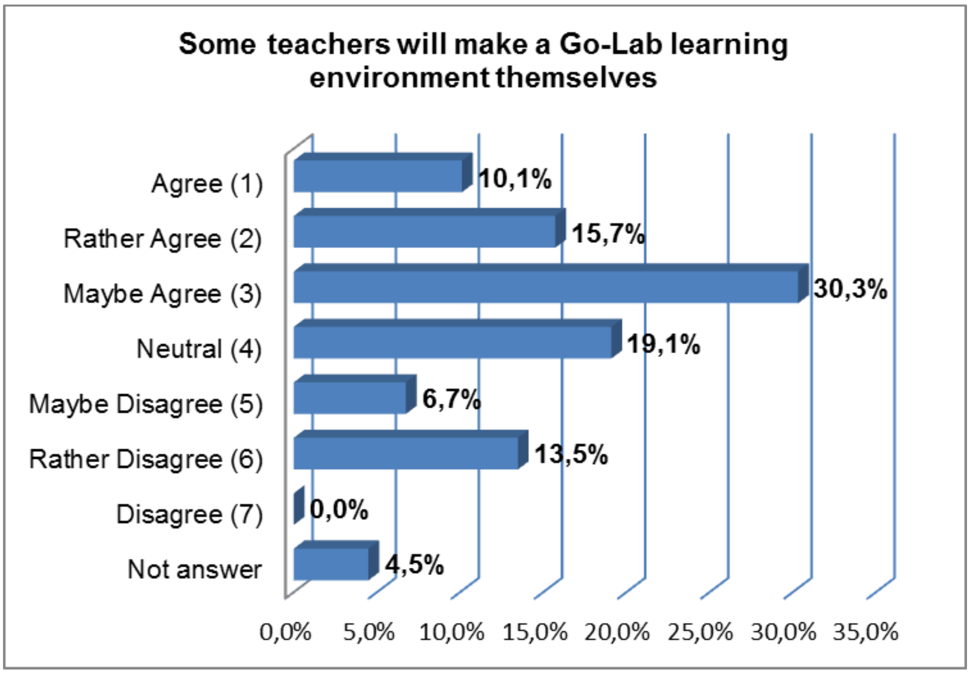

Figure 18. Implementation of Go-Lab: Some teachers will make a Go-Lab learning environment themselves

Teachers appear to be somewhat positive on creating a Go-Lab learning environment, a quite promising result for the project exploitation ("neutral" and "maybe agree" sum up to 49,4%) (n=89, average 3,24 , standard deviation = 1,49).

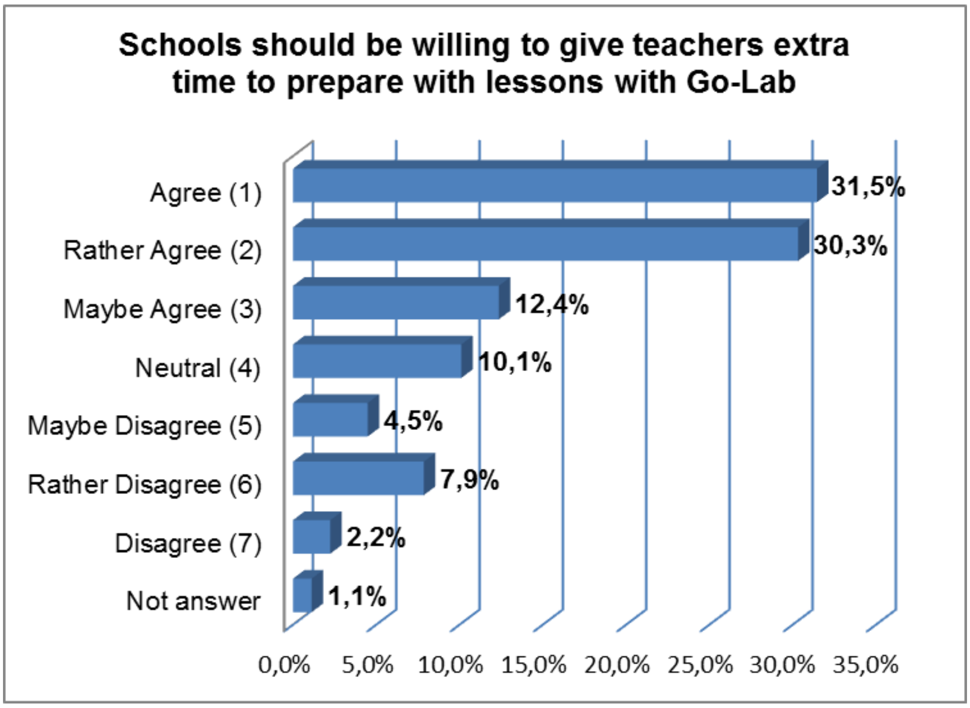

Figure 19. Implementation of Go-Lab: Schools should be willing to give teachers extra time to prepare with lessons with Go-Lab

Respondents clearly indicated that schools should give teachers additional time to prepare their lessons based on the online labs provided by the Go-Lab project ("agree" to "maybe agree" sum up to 74,2%) (n=89, average 2,55 , standard deviation = 1,67).

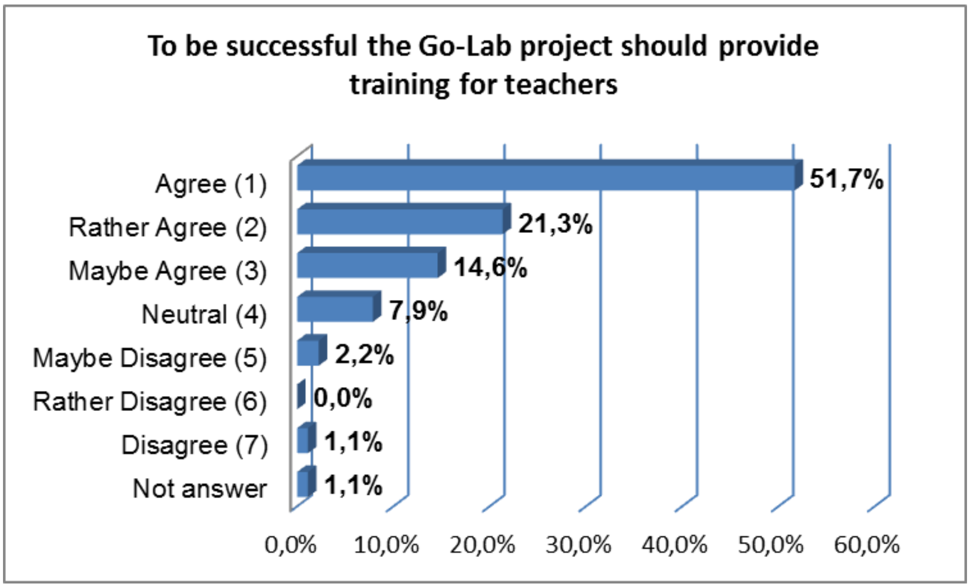

Figure 20. Implementation of Go-Lab: To be successful the Go-Lab project should provide training for teachers

Respondents clearly indicated that training for teachers should accompany the use of Go-Lab project ("agree" to "rather agree" sum up to 73%) (n=89, average 1,89 , standard deviation =

1,22). This finding confirms both the finding of lack of didactic knowledge of teachers on working with online labs and the reflections of many teachers during workshops where they stressed the need of their training on Go-Lab.

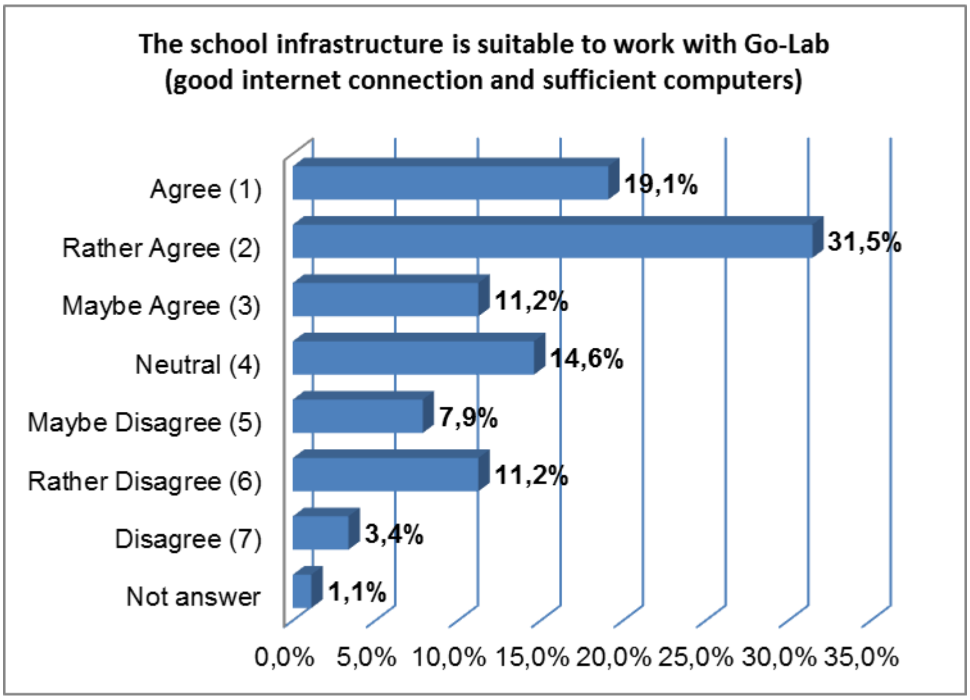

Figure 21. Implementation of Go-Lab: The school infrastructure is suitable to work with Go-Lab (good internet connection and sufficient computers)

Respondents find the existing school infrastructure appropriate for the Go-Lab project (“agree” to “rather agree” sum up to 50,6%) (n=89, average 3,04 , standard deviation = 1,78). This confirms the fact that teachers focus on the infrastructure available as during PRWs many of them identified the school’s infrastructure as the main barriers of the successful implementation of Go-Lab.

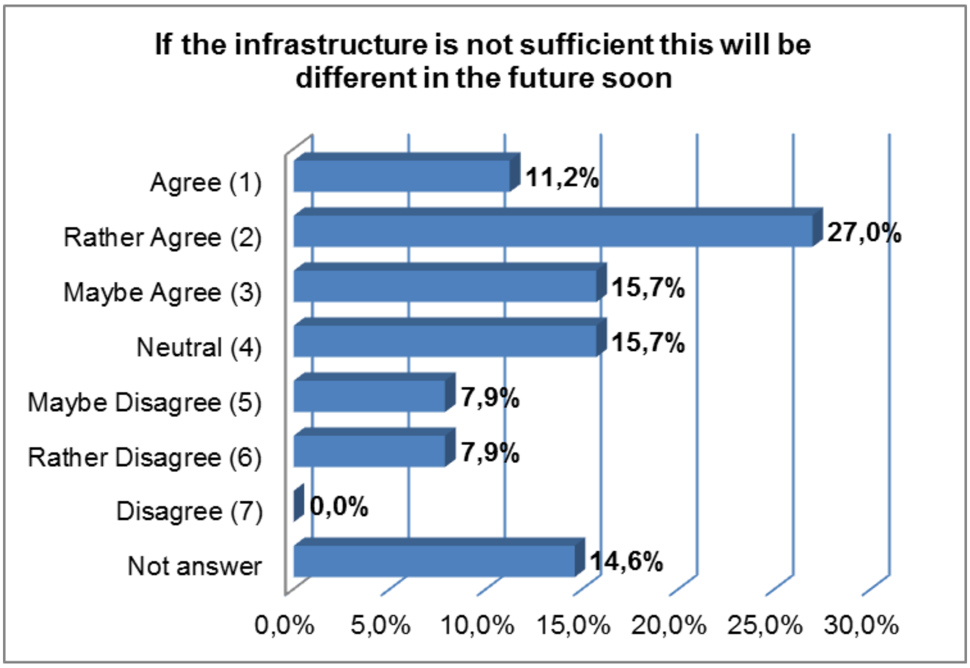

Figure 22. Implementation of Go-Lab: If the infrastructure is not sufficient this will be different in the future soon

Teachers believe that school will invest on the infrastructure in order the requirements for the Go-Lab project to be covered (n=89, average 2,62 , standard deviation = 1,50).

5 Useful points to be taken into consideration and suggestions for the future

Overall teachers seem excited with the idea of Go-Lab and its use in the classroom, as they believe that it is advantageous both for them and for the students as Go-Lab can increase the attractiveness of education and can lead to better educational results. It was also reported that students have positive attitude towards the use of online labs. One very important point emerged from the participants' reflections is that they liked the methodology of the Inquiry Based Learning adopted by the project and the idea of creating their own Inquiry Learning Space (ILS).

Teachers appear to have a strong belief both to the chances for Go-Lab and its implementation in practice. This means that their attitude offers the ideal ground for Go-Lab implementation in the school practice. This finding is of great significance because ICT driven innovations to be introduced in classroom settings need the consent of those who are going to use them in their daily teaching practice.

From teachers' reflection appears that there is fruitful ground for the implementation of Go-Lab but also there are significant issues to be taken into consideration. These issues are important for the successful implementation of Go-Lab and its introduction in the classroom. Teachers report a lack of didactic knowledge to use online labs in their daily practice and this fact is amplified by their need for extra time to prepare lessons based on online labs. Furthermore, teachers themselves stress the need for their training on Go-Lab tools and services. It is clear that training of teachers on Go-Lab is required and thus a tutoring platform is ready to operate in order to support them on using Go-Lab. Tutoring platform is going to contribute to teachers' training and in the framework of task 6.4 analytic guidelines for its use are going to be released. As during PRWs it was reported, at least from the less ICT literate teachers, difficulty in using the ILS platform (Graasp), the tutoring platform is also going to support teachers on its use. Furthermore, a new version of Graasp is ready by the technical team of the project (WP 5) which is more user friendly than the previous one. This initiative can also offer a solution to the problem of the limited ILSs availability, because teachers can easily produce their own ILSs, which can cover better their teaching needs.

With regards to the methodology of the project, the inquiry based learning method seems ideal for teachers. However, in some cases further explanations are needed. According to teachers' comments, a better understanding of the learning goals/ research questions is required, which should make clear the variables studied. This seems to be a great necessity for the project, which is worsen by the fact that teachers in general terms seem to have insufficient didactic knowledge to work with the online labs. As a result, more attention should be paid to the training of teachers on the inquiry based learning method that Go-Lab employs and the tutoring platform can also contribute to that.

Curriculum compatibility identified as the main barrier. This does not refer to the pedagogical part of the ILS phases because that was liked by the teachers. It refers to the content of the labs available which, at least at this time, seem unable to offer a variety of modules. As it is difficult to change the curricula in all countries and make them fit Go-Lab, this problem may disappear if there are more labs available. That means that we have to invest in more and different Labs. Offering more modular ILSs to cover the necessity described above can also contribute to the saving of teachers' time as they reported that the use of online labs requires extra time of preparation.

Last but not least, a common problem reported during the workshops, was the language. In order for Go-Lab system to be more attractive in different language settings it should be provided with translations.

ANNEXES

ANNEX A

Dissemination Materials

Dissemination of the contest through Facebook

Dissemination of the contest through the Galileo Teachers Training Website

ANNEX B

Scores of the submitted entries

SURNAME	NAME	COUNTRY	TITLE	Total	Does the entry fulfill the contest's rules?	Overall presentation of the lesson plan (10 points)		Practical Implementation in class (15 points)				Creativity and Originality (10 points)	
						1a.	1b.	2a.	2b.	2c.	2d.	3a.	3b.
OGBUAGU	Bettina	Austria	What is light? From candles to ccds.	35,00	Yes	5	5	5	3	2	5	5	5
MORAK	Sonja	Austria	Elektrischer Strom: elektrische Leiter und Isolatoren, Stromkreis mit und ohne Schalter	29,00	Yes	4,00	4,00	5,00	2,00	2,00	4,00	4,00	4,00
FATIHA	Baki	Belgium	Ons Heelal van oerknal tot nu!	29,00	Yes	4,00	4,00	5,00	2,00	2,00	4,00	4,00	4,00
JOKIN	Ivo	Bulgaria	„Click…Click…Explore the impact craters of the Moon and the Earth”	23,00	Yes	3,00	3,00	3,00	2,00	2,00	3,00	4,00	3,00

PERIKLEOUS	Michael	Cyprus	Ηλεκτρικά κυκλώματα – Μέτρηση ηλεκτρεγερτικής δύναμης (Η.Ε.Δ) και εσωτερικής αντίστασης πηγής με ροοστάτη	31,00	Yes	5,00	4,00	5,00	2,00	2,00	4,00	5,00	4,00
HADJIAGAPIOU	Marietta	Cyprus	Δυναμικός ηλεκτρισμός	29,00	Yes	4,00	5,00	5,00	2,00	1,00	4,00	5,00	3,00
MAE	Karolin	Estonia	EVOLUTION (Natural vs sexual selection)	28,00	Yes	4,00	4,00	5,00	2,00	2,00	3,00	4,00	4,00
WEISS	Ruediger	Germany	From Circualr Motion to the Mystery of Dark Matter	28,00	Yes	4,50	4,00	5,00	1,00	2,00	4,00	4,00	3,50
HAAS	Jorg	Germany	Disco unterm Weihnachtsbaum	22,50	Yes	3,00	5,00	5,00	1,00	1,00	2,00	2,50	3,00
CHIOTELIS	Ioannis	Greece	Do you believe in Ghosts?	20,00	No	-	-	-	-	-	-	-	-
NERANTZIS	Nikolaos	Greece	Μία διδακτική πρόταση για τα απλά ηλεκτρικά κυκλώματα συνεχούς ρεύματος στις Φυσικές Επιστήμες	33,00	Yes	5,00	5,00	5,00	2,00	2,00	5,00	4,00	5,00
TOUMPANIARIS	Panagiotis	Greece	Νόμος του Ohm	26,00	Yes	4,00	4,00	5,00	1,00	2,00	4,00	3,00	3,00
ROZI	Ekaterini	Greece	Spectra	27,00	Yes	4,00	4,00	4,00	3,00	1,00	3,00	4,00	4,00

	Maria												
BARAS	Giannis	Greece	Study of the characteristic curve of electrical power source, resistance consumer and crystal diode, using the VISIR remote Lab	28,50	Yes	4,00	4,00	4,50	2,50	2,00	3,00	4,50	4,00
MACCHIA	Stefano	Italy	Il principio di Archimede nelle alluvioni urbane (urban flash flood)	23,00	Yes	4,00	4,00	3,00	2,00	1,00	3,00	3,00	3,00
ROCHOWICZ	Krzysztof	Poland	“We Are Stardust… or In the Trace of Supernovae”	30,00	Yes	4,00	5,00	4,00	2,00	2,00	5,00	4,00	4,00
FOLHAS	Alvaro	Portugal	A Densidade de uma substância e a avaliação da sua pureza	32,00	Yes	5,00	5,00	5,00	2,00	1,00	5,00	5,00	4,00
FREITAS	Fernanda	Portugal	Stellar evolution	33,00	Yes	5,00	5,00	5,00	2,00	2,00	5,00	5,00	4,00
VASCONCELOS	Ana Lucia	Portugal	How dangerous can be a meteorite?	33,00	Yes	5,00	5,00	5,00	2,00	2,00	5,00	5,00	4,00
RIBEIRO	Carla Isabel	Portugal	The moons of Galileo Galilei	32,00	Yes	5,00	5,00	5,00	3,00	1,00	5,00	5,00	3,00
PINTO	Rui	Portugal	Livro - O nosso mundo	0,00	No	-	-	-	-	-	-	-	-

DELLIA-RAISSA	Fortu	Romania	Craterele de impact pe Lună	30,00	Yes	3,00	3,50	5,00	1,50	2,00	5,00	5,00	5,00
CIUREA	Isabela	Romania	Ohm's law	29,00	Yes	5,00	3,00	5,00	4,00	3,00	4,00	3,00	2,00
CRISTINA IULIA	Anghel	Romania	Gruparea rezistoarelor	32,50	Yes	5,00	5,00	5,00	1,00	2,00	5,00	5,00	4,50
AGUIRRE-MOLINA	Daniel	Spain	Si se derrite el Polo Norte… ¿subirá el nivel del mar?	32,00	Yes	5,00	5,00	5,00	2,00	2,00	5,00	4,00	4,00
VIÑAS DIEGUEZ	Jose Manuel	Spain	Meteoritos	32,00	Yes	5,00	5,00	3,00	2,00	2,00	5,00	5,00	5,00
ARTIACH	Ramon	Spain	Resistors in series-parallel connections	32,00	Yes	5,00	5,00	5,00	2,00	2,00	5,00	5,00	3,00
CALZADA	Carmen Díez	Spain	Gases_lab virtual laboratory	28,00	No	2,00	5,00	5,00	2,00	2,00	4,00	4,00	4,00
ECHANIZ	Mikel	Spain	Which part of an iceberg can you see?	34,00	Yes	5,00	5,00	5,00	2,00	2,00	5,00	5,00	5,00
VERGARA GASULLA	Enrique	Spain	Impacto exterior?	31,00	Yes	4,00	5,00	3,00	2,00	2,00	5,00	5,00	5,00
JIMENEZ DE LLANO GARCIA	Julieta	Spain	La ciencia en nuestra historia: El Prestige	30,00	Yes	5,00	4,00	3,00	3,00	2,00	4,00	4,00	5,00
GIL OSINAGA	Mikel	Spain	Understanding ohm´s law in dc circuits by analogy	35,00	Yes	5,00	5,00	5,00	3,00	2,00	5,00	5,00	5,00
HELEN	Stamp	Spain	Evil aliens throw rocks	22,00	Yes	5,00	2,00	3,00	2,00	2,00	2,00	3,00	3,00

			at Earth											
ZURITA I MON	Silvia	Spain	Better if bulbs don't explode/Why did bulb explode?: Ohm's law	32,00	Yes	5,00	4,00	5,00	2,00	2,00	5,00	4,00	5,00
KOBEL	Phillipe	Switzerland	Comprendre le pouvoir des bulles grâce aux vols paraboliques: Un laboratoire virtuel par l'investigation	31,00	Yes	5,00	4,00	4,00	3,00	2,00	4,00	4,00	5,00

ANNEX C

Questions for semi-guided interviews during Go-Lab Summer School

Teaching practices - Use of labs

1. Do you use labs?

2. Do you use online labs?

If Yes

a. Is the lab you use better that Go-Lab?

b. Does Go-Lab makes it easier for you to use online labs?

If No

c. Does Go-Lab give you the chance to use online labs?

d. Does Go-Lab persuade you to use online labs systematically?

3. Do you use scaffolds in your lesson?

4. Do you think that building a community platform would be useful for the sustainability of the practice gained here?

ILS authoring process and use

Authoring process

1. Do you think that the Go-Lab authoring environment could facilitate the introduction of the inquiry approach in the classroom? Why?
2. Does the Go-Lab authoring process in terms of the methodology adopted meet the needs of the Inquiry based learning approach as you are used to apply it in your teaching? Why?
3. Which are the most important methodological functionalities of the authoring tool according to your view?
4. Does the ILS authoring process meet your expectations? Do you have any methodological improvements to propose?

Use of ILS

5. Are you planning to use the developed ILS in your lesson?
6. Which features of the developed ILS students might find attractive and which they might not?
7. Are there any barriers in using the Go-Lab system in your class?

ANNEX D

Participant's Name	Name of the activity	Online Labs used	Link to the online version
Macchia Stefano	Splash: Virtual Buoyancy Laboratory	Splash	http://graasp.epfl.ch/metawidget/1/dd6fb35b0c3b192e335e1b66d102a1ad6e48e6df
Daniela Marconi	Ohm's law	Electricity Lab	http://graasp.epfl.ch/metawidget/1/9fcc40f4fde82f097608e002d45456600f7d2497
Jorg Haas	Rocking around the Christmas tree	Electricity Lab	http://graasp.epfl.ch/metawidget/1/5066cf3c9658c936fc7d470aeccb3f70515c185b
Nikolaos Nerantzis	Simple DC Circuits Lesson	Electricity Lab	http://graasp.epfl.ch/metawidget/1/306e21145d1b6809e9f869ae4130c460bd03b7d5 http://graasp.epfl.ch/metawidget/1/6aa8317dbe999cd445bdd8c22fa6dd167617b602 http://graasp.epfl.ch/metawidget/1/aea63d8d8a1065f4e5d6052bd268b226bdf9a453
Sonja Morak	Elektrizität in der Volksschule	Electricity Lab	http://graasp.epfl.ch/metawidget/1/49bccbdf80d1522e0368ad41e88b2332e8b5fb40
Isabela Ciurea	Isabela's Ohm	Electricity Lab	http://graasp.epfl.ch/metawidget/1/668987f781981e1e1820b0a96aad8218561322de
Giannis Baras	Study of the characteristic curve of electrical power source, resistance consumer and crystal diode, using the VISIR remote Lab	VISIR remote Lab	http://graasp.epfl.ch/metawidget/1/ee8fc9ab8a9a04cc812bf83205f3bbb3630ec18d
Silvia Zurita	Better if bulbs don't explode	Electricity Lab	http://graasp.epfl.ch/metawidget/1/911fe1de969fea248e5a9b5a06635bcff4ef8574

Isabela Ciurea, Cristina Iulia Anghel, Giannis Baras, Silvia Zurita Common ILS		Electricity Lab	http://graasp.epfl.ch/metawidget/1/94ad6cef837abb33de93bc87fc4bd8a3491b8637
Bettina Ogbuagu	The Faulkes Telescope Project	Faulkes Telescopes	http://graasp.epfl.ch/metawidget/1/4ca93099bdaa0799d7eaca5e0cf470c3939c9023
Panagiotis Toumpaniaris	Inverse-square law	Radioactivity lab	http://graasp.epfl.ch/metawidget/1/c7c87c8e540ef7237e89043587b3a93b6388132d
Ruediger Weiss	From Circular Motion to the Mystery of Dark Matter	Faulkes Telescopes	http://graasp.epfl.ch/metawidget/1/ead30e625f302c4bc434f01b9c2ae3458851ff81
Olivia Fischer	Splashdive!	Splash	http://graasp.epfl.ch/metawidget/1/452ff70785241607905e9a1b8ecf46462b04991f
Mikel Etxaniz	Which part of an iceberg can you see?	Splash	http://graasp.epfl.ch/metawidget/1/9ff19f9d5c1a5fb5453a1c78bd07afcd580be79c
Fatiha Baki	Our Universe	CERNLand, The LHC Game	http://graasp.epfl.ch/metawidget/1/bddedf490f8ac432fcaba89b72a32da5b31ffb46 http://graasp.epfl.ch/metawidget/1/f9ca982171a95e30597da9f9861858d79c2ff0be (French)
Vergara Gasulla Quique	Traitement images astronomiques	Observing with Nasa	http://graasp.epfl.ch/metawidget/1/f9ca982171a95e30597da9f9861858d79c2ff0be
Krzysztof Rochowicz	We Are Stardust... or In the Trace of Supernovae	Faulkes Telescopes, SalsaJ	http://graasp.epfl.ch/#item=space_14991
Fernanda Freitas	Stelar Evolution	Faulkes Telescopes, SalsaJ	http://graasp.epfl.ch/metawidget/1/d7dbc3443e6858afcb181bb30a655a970b131afd

Dellia-Raissa Fortu	Craters on Earth and Other Planets	Down2Earth	http://graasp.epfl.ch/metawidget/1/3366185c199b0a74b9d06b112260fd3f9f537859
Cristina Iulia Anghel	Electricity lab	Electricity lab	http://graasp.epfl.ch/metawidget/1/585bdbf812a066bf3f3ff023e79f8fd76dc38bd7
Alvaro Folhas	Alvaro's ILS	Splash	http://graasp.epfl.ch/metawidget/1/8c63c627d95c944e175aedc4c8268cafee3fb0c3
Martin Čokl	Astronomy with Lego bricks	Faulkes Telescopes	http://graasp.epfl.ch/metawidget/1/971ded1c582de1abf6021e7e4e33ac6a4584657d
José Viñas	Meteorites	Down2Earth	http://graasp.epfl.ch/metawidget/1/5e3bcba52ce4949a47f188feb3c85b978b9c8cfb
Marjeta Prasnikar	Neutralisation titration	Chemcollective	http://graasp.epfl.ch/metawidget/1/2b50ac076df44362ac5d4ed93a56ccb14c21efb4
Eleni Voukloutzi	Tracking unseen particles - Distinguish electrons from muons /HY.P.A.T.I.A. - Hybrid Pupils' Analysis Tool for Interactions in ATLAS	HYPATIA	http://graasp.epfl.ch/metawidget/1/6e1ce40fb1b8c6914d0a216020a1aef977000acd
Marietta Hadjiagapiou	Electrical Resistance & Ohm's Law	Electricity lab	http://graasp.epfl.ch/metawidget/1/c7c96ddff0a3eeea842dfb00eb0d9915cbcaff41
Michael Perikleous	Electric circuits - Measurement of electromotive force and internal resistance with	Electricity lab	http://graasp.epfl.ch/metawidget/1/1ff477746da72a1fed6310c970301d6a0501d581

	rheostat		
Carmen Diez	Diez' Gas Law	Virtual Lab Charless'Lab, Virtual Lab Boyle's Law	http://graasp.epfl.ch/metawidget/1/0d4bd396ef014804ae56a0bbaac5acbfa2ab4ec2
Mikel Gil Osinaga	Ohm's Law via mountain runners	Electricity lab	http://graasp.epfl.ch/metawidget/1/8aed9d6c0edf811050690ab722066e3ff0781867
Carla Ribeiro	MicroObservatory	MicroObservatory, Stellarium	http://graasp.epfl.ch/metawidget/1/b4ea75db27fbc83a94813ccfbb6305777ee6f93f
Ivo Jokin	Craters on Earth and Other Planets	Down2Earth	http://graasp.epfl.ch/metawidget/1/0275970daef3ea949435717a5a564c0a1d9b1c2e
Ekaterini Maria Rozi	“Spectra” Lesson plan	SpectrJ	http://graasp.epfl.ch/metawidget/1/8b7f0a56e2d85b6303694b72e09d76bceb399e73
Kalliopi Ardavani	Eratosthenes Experiment	SunDial	http://graasp.epfl.ch/metawidget/1/55303ebafe4327810f3224b35033f5a0f9aa211f
Karolin Mae	EVOLUTION (Natural vs sexual selection)	Endler`s guppies	http://graasp.epfl.ch/metawidget/1/77121735c264b26ada1fd56ec7890f2b6262619a

ANNEX E

Questionnaire Go-Lab

Background

Educational sector:	
Position:	
Experience (in years):	

Chances for Go-Lab
Use of online labs can increase the attractiveness of education
Agree o -- o -- o -- o -- o -- o -- o Disagree
I expect that students will learn more with online labs
Agree o -- o -- o -- o -- o -- o -- o Disagree
That students can use online labs at home is attractive
Agree o -- o -- o -- o -- o -- o -- o Disagree
Online labs will motivate students more than the current school practice
Agree o -- o -- o -- o -- o -- o -- o Disagree

Implementation
The current curriculum is suitable for the use of online labs
Agree o -- o -- o -- o -- o -- o -- o Disagree
Teachers will be eager to work in the classroom with online labs
Agree o -- o -- o -- o -- o -- o -- o Disagree
Teachers have sufficient didactic knowledge to work with online labs
Agree o -- o -- o -- o -- o -- o -- o Disagree
I expect teachers to show sufficient initiative themselves to search for suitable labs
Agree o -- o -- o -- o -- o -- o -- o Disagree

Some teachers will make a Go-Lab learning environment themselves
Agree o -- o -- o -- o -- o -- o -- o Disagree
Schools should be willing to give teachers extra time to prepare with lessons with Go-Lab
Agree o -- o -- o -- o -- o -- o -- o Disagree
To be successful the Go-Lab project should provide training for teachers
Agree o -- o -- o -- o -- o -- o -- o Disagree
The school infrastructure is suitable to work with Go-Lab (good internet connection and sufficient computers)
Agree o -- o -- o -- o -- o -- o -- o Disagree
If the infrastructure is not sufficient this will be different in the future soon
Agree o -- o -- o -- o -- o -- o -- o Disagree
Open questions about chances and implementation (please, answer in keywords)
What do you see yourself as strengths of an initiative such as Go-Lab?
What obstacles do you see for the successful introduction of Go-Lab?

ANNEX F

WP6 Practice Reflection Workshop Reporting Template

Refer to guidelines and fill out one report per workshop. Send completed reports by June 30th 2014 to wp6 leader.

GO-LAB Event Code	*[LLXX-DDMMYY] Please follow this format: LL= 2 letter country code, XX = partner id, DDMMYY = date*
Context: standalone event or combined with other ws, online or face to face	
Country City/Region	
Working language	
Start/End Date	*Please use this format DD/MM/YYYY*
Organizing Institute	
Coordinator name and email	
Total number of teachers/schools	*Provide the number of participants*
Brief description	*Write one or two paragraphs briefly describing the activity*
Facilitators Observations	*Give a short description of the level of interaction, the impact you percieve GoLab to have on this particular group, elements that testify to a sense of community with other GoLab users or not. Did you present the website/ Graasp/ blog and encourage them to contribute? Did they communicate with colleagues/ express a desire to do so?*
Common themes identified in the case studies	*After participants have presented their experiences with the GoLab implementation, have a group discussion to analyse the results of these case studies and list here any common themes that have been identified, along with two-three examples per theme.*

Examples illustrating common themes	
Recommendations made by participants	*After their interaction with the GoLab system in a real scenario and reflection on this experience, ask participants to identify 1-2 recommendations for the continuation of the GoLab development.*
Website	*(if applicable) The URL of the website that has been set up for this activity.*
Photos or other relevant material	*Select 3-4 good-quality photos or other relevant material (flyer, brochure, poster) and attach them in this report*
Event agenda	*(if applicable) Please copy here the agenda of the event (program of activities, etc.).*