Next-Lab

Next Generation Stakeholders and Next Level Go-Lab Ecosystem for Collaborative Science Education with Online Labs

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Work package 1 – Outreach and Impact

D1.5 Next-Lab Year 3 dissemination and implementation activities

Editor(s)	Enrique Martin (EUN), Evita Tasiopoulou (EUN), Jelena Milenkovic (EUN), Rola Sayegh (IMC), Rosa Doran (NUCLIO)
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The Next-Lab Consortium

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10	Ecole Normale Superieure de Lyon	ENS de Lyon	France
11	Turun Yliopisto	UTU	Finland
12	University of Leicester	ULEIC	United Kingdom

Contributors

Name	Institution
Enrique Martin	EUN
Evita Tasiopoulou	EUN
Jelena Milenkovic	EUN
Mattia Gentile	EUN
Diana Dikke	IMC
Rola Sayegh	IMC
Jens Koslowsky	EA
Ton de Jong	UT
Hennie Leemkuil	UT
Sandra Schele	UT
Tasos Hovardas	UCY
Nikoletta Xenofontos	UCY (reviewer)
Effie Law	ULEIC (reviewer)
Matthias Heintz	ULEIC
Pamela Andrade Sevillano	ULEIC
Rosa Doran	NUCLIO
Luísa Almeida	NUCLIO
Koen Veermans	UTU
Olga Dziabenko	UD
Margus Pedaste	UTE
Meeli Rannastu	UTE
ÄliLeijen	UTE
Leo Siiman	UTE
Mario Mäeots	UTE
Gérard Vidal	ENS de LYON

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Executive summary

The goal of D1.5 is to provide an overview of Next-Lab dissemination & implementation activities (WP1 activities with background information of WP2) that have taken place during the 3rd year of the Next-Lab project. This document follows the reporting structure introduced in D1.3, D1.4 and the guidelines presented in D1.1 towards effective outreach and sustainable impact of the Go-Lab ecosystem within the teachers', Teacher Training Institutes' and policy makers' community.

Year 3, the last year of the project, has been in line with the previous years in terms of numbers although extra effort has been allocated (from the outreach perspective), to disseminate the latest outcomes and results of the project.

Through its social media channels, the Next-Lab project has already almost doubled the outcomes of the Go-Lab project. The Facebook group and Twitter channel (the two main dissemination channels of Next-Lab) gained more members in Year 3, compared to Year 1 (109 and 421 respectively). In this regard, Next-Lab developed an end of project campaign aiming to even further extend the project's outreach during the final period of the project.

In terms of dissemination and implementation, both Expertise Centres and Ambassadors have intensified the number and target of their activities. Overall, more than 2907 teachers have been reached through presentations, conferences, seminars, and other dissemination activities and over 1360 teachers have been trained by the project partners. As for the ambassadors, a total of 124 events have been organized, which compares favourably with 2018 were 92 events were carried out. As in 2018, the majority of 2019 events were face-to-face presentations and teacher trainings. Following the project review in June 2018, the project has implemented in 2019 a 3-pillar approach in relation to overall school involvement in the use of the Go-Lab Ecosystem. This new approach included case studies that have been reported in WP2 although this deliverable includes a reflection section on the overall community approach.

Finally, the Teacher Training Institutes framework has continued to grow throughout the 3rd year of the project with further organizations joining the network and documented implementations. Communication with the Ministries of Education has continued and adapted to specific requests and needs.

Contents

1. Introduction

Following the outreach and impact roadmap described in D1.1, this document presents a complete overview of the Next-Lab dissemination & implementation activities and the resulting impact figures during the 3rdyear of the project (as of November 30th, 2019). The 1st and 2nd years of the project were reported in D1.3 and D1.4.

This report provides information on the communication activities organized and carried out by the Next-Lab different groups and provides reflections on their execution and effectiveness. The specific target groups featured in D1.1 were teacher training institutes (Task 1.1), teachers and their organizations (Task 1.2), and policymakers (Task 1.3). The overall impact of Next-Lab through WP1 is also assessed in this document by data analytics on different forms of usage of the Go-Lab Ecosystem and social media, while describing in detail the necessary dissemination materials produced and dissemination & implementation activities carried out.

Being the final year deliverable and while this is a yearly reporting dissemination document, reflection notes have been added to the different sections, aiming to provide a more clearly overview of the results throughout the project.

Finally, as an Annex 1 to this report, you may also find: per country dissemination and implementation summaries of the activities per consortium partner, the primary implementation case studies and the agendas. Other supporting documents have been linked online in order to facilitate the reading of this document.

2. Online Dissemination

2.1 Social Media Channels

As reported in the previous deliverables D1.3 and D1.4, the Next-Lab project adopted the previous Go-Lab project's social media channels. Consequently, the numbers of likes, members, followers and subscribers on the different channels acquired during the Next-Lab project are counted as of January 17th, 2017. Table 1 presents an overview of these numbers across the 3 years of the project.

Table 1: Number of members/followers/likes per social media channel in Year 1, 2 & 3

Social Media Channel	At the beginning of Next-Lab	Joined in Year 1 (as of 04.12.2017)	Joined in Year 2 (as of 30.10.2018)	Joined in Year 3 (as of 05.11.2019)	Cumulative (as of 05.11.2019)
Facebook page[1] (# of likes)	1.217	420	368	345	2.350
Facebook group[2] (# of members)	895	136	197	109	1.337
Twitter[3] (# of followers)	1.158	533	577	421	2.689
Google+ group* (# of members)	147	29	29	-205	0
LinkedIn group[4] (# of members)	166	37	23	-3	223
LinkedIn page[5] (# of followers)	0	33	28	31	92
YouTube channel[6] (# of subscribers)	96	36	41	45	218

**Imported to note that Google+ was shut down by Google on April 2019. The members of the group were notified ahead of time, and several posts were shared to redirect the members to Next-Lab's other social media channels.*

Table 1, visualized in Figure 1, clearly indicates that Next-Lab's most active social media channels are Facebook and Twitter, whereas LinkedIn and YouTube and despite the increase in the number of followers and subscribers, seem to be less popular among the

[1]Facebook page:https://www.facebook.com/GoLabProject

[2] Facebook group:https://www.facebook.com/groups/golab.project/

[3] Twitter: https://twitter.com/GoLabProject

[4] LinkedIn group: https://www.linkedin.com/groups/4946895/

[5] LinkedIn page: https://www.linkedin.com/company/18144102/

[6] YouTube Channel: https://www.youtube.com/channel/UCcpdFl6jliRM5oRSIE-LYvw

Next-Lab audience in general. This is due to the nature of the social media channels, the type of disseminated news in each and their popularity among our target group (teachers, educational institutions and projects). Section 1.1.3 presents more insights into Next-Lab's LinkedIn and YouTube channels.

As for Facebook (page and group) and Twitter, the numbers acquired in Year 3 show a decrease in comparison to those acquired in Years 1 and 2. Nevertheless, interactions on both channels have been valuable, especially in relation to the dissemination and implementation activities held during Year 3. This is further explored in Section 1.1.2, where Twitter's monthly highlights and activities from March till October 2019 are presented. But first, an overview of Facebook and Twitter members, followers and online dissemination activities is provided in the Section 1.1.1.

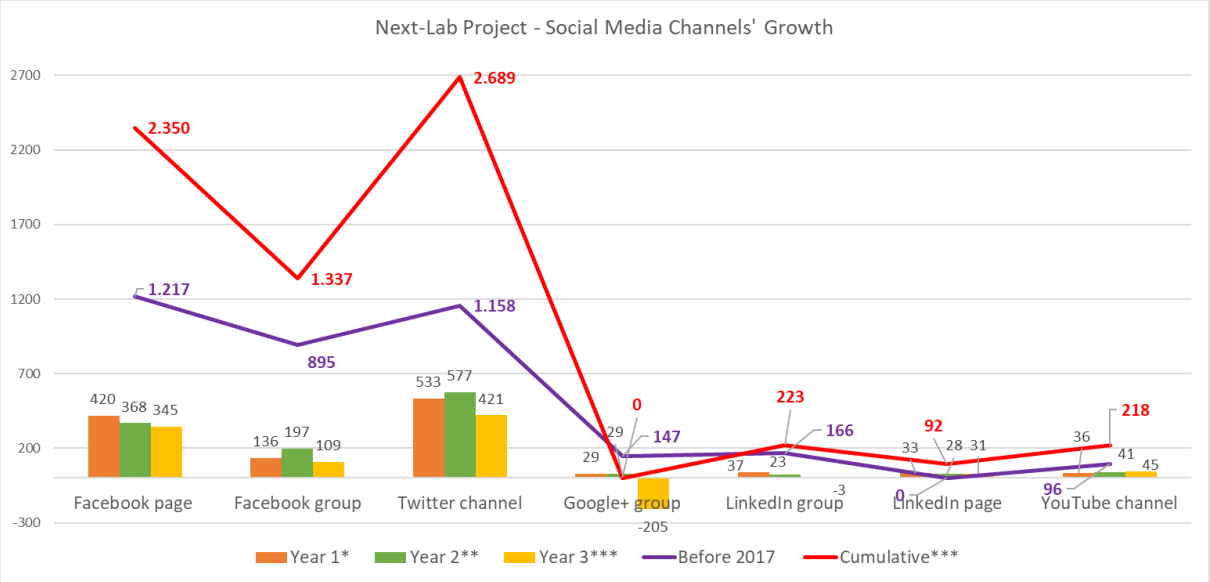


Figure 1: Overview of Next-Lab's social media channels' growth throughout the project

Before 2017: before the beginning of the Next-Lab project, as of 17.01.2017

**Year 1: as of 04.12.2017*

***Year 2: as of 30.10.2018*

****Year 3 & Cumulative: as of 05.11.2019*

Facebook and Twitter: Audience and Activities

Audience: to learn more about most of Next-Lab's online audience, distribution of gender and main countries (on Facebook and Twitter), as well as age range (on Facebook) were examined.

When it comes to gender distribution, Facebook page and Facebook group members are more disproportionate, with 67% female and 33% male in each. Twitter followers are more gender balanced, with 57% female and 43% male. This might be due to the facts that global statistics show that women are more active on Facebook and Twitter than men, and that Next-Lab's main audience, i.e. teachers and educators are more female than male, especially for primary and intermediate education.

Figure 2 shows the distribution by countries across Facebook page, Facebook group and Twitter. Two aspects can be observed in the figure: the most and least reached out countries per channel and the favoured Next-Lab channel per country. As shown in Figure 2, Portugal, Greece and Romania have the highest percentage of Facebook page likes and Facebook group members, whereas Spain and Turkey have the highest number of Twitter followers.

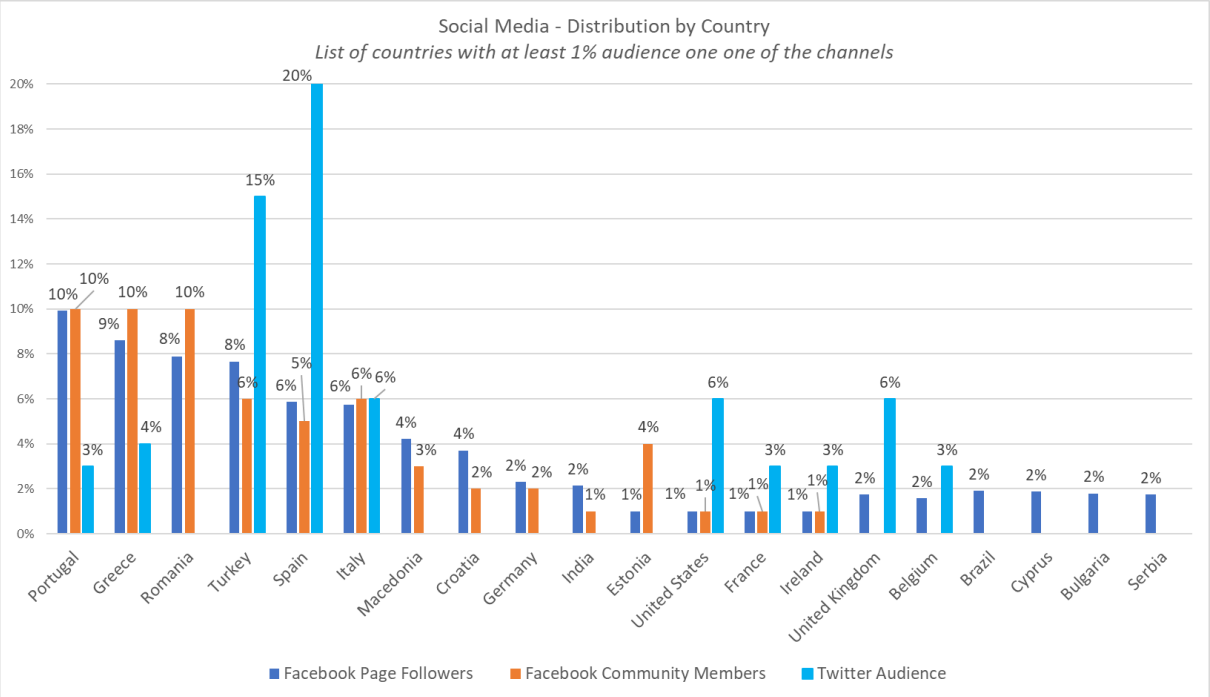


Figure 2 Countries distribution across the main social media channels

Age distribution is provided in the statistics of Facebook pages and Facebook groups. Figure 3 (below) provides an overview of age distribution across 6 age groups: < 25, 25-34, 35-44, 45-54, 55-64 and > 65. Most of Next-Lab's Facebook followers and members fall under the age range 35 and 54. Some of these members are educators who took part in the Go-Lab schools and trainings, others are interested teachers, STEM groups and educational institutions' representatives.

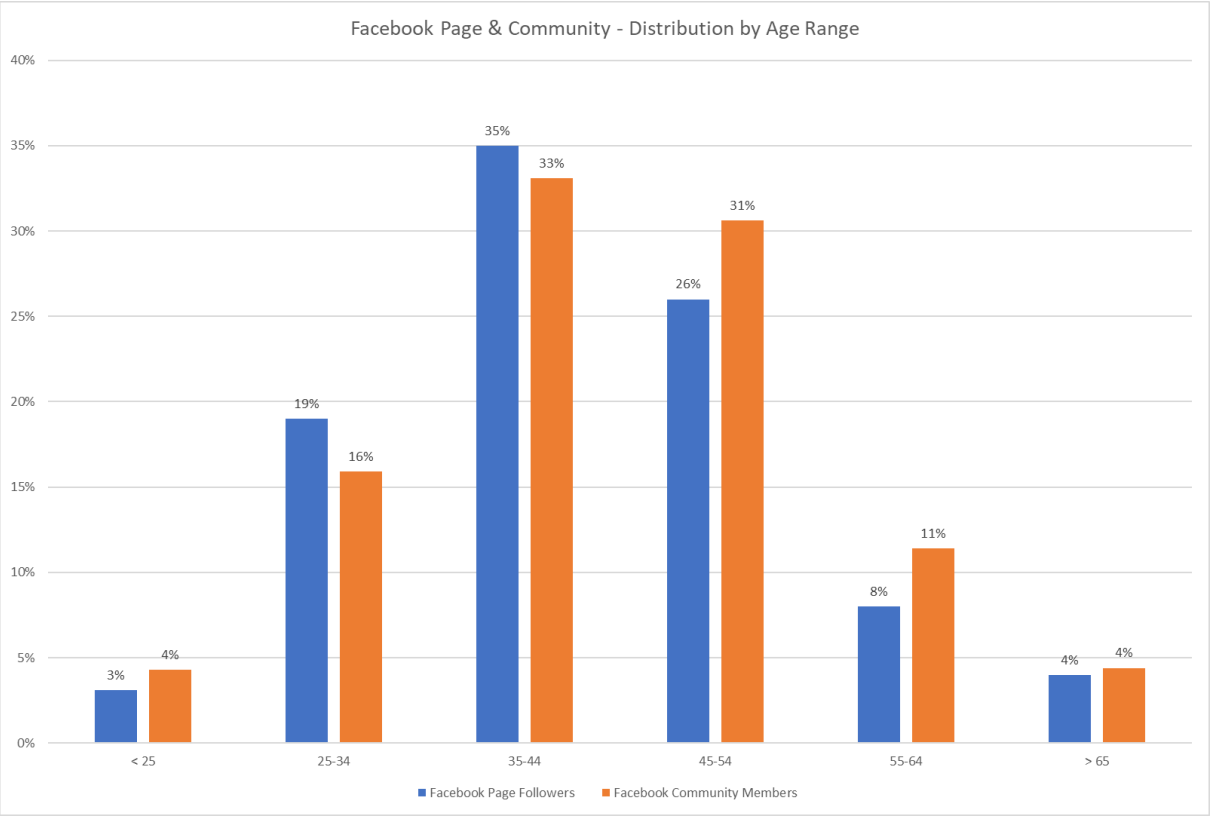


Figure 3 Age range distribution: Facebook page followers and Facebook group members

Activities: the information disseminated on Facebook page, Facebook group and Twitter is similar in context, even if wording might change in the posts and tweets to better fit the target channel.

Regular weekly posts and tweets have been part of the outreach and online dissemination plan. These include weekly "Lab of the Week" posts/tweets promoting different labs, from different providers, and for different subject domains and grade levels. Additionally, weekly "Did You Know" posts/tweets were shared to highlight important and new features, elements, functionalities and developments in the Go-Lab ecosystem. An elaborate explanation on these regular posts/tweets was provided in Deliverable D1.4.

Next-Lab events, competitions, campaigns, national activities, and news were also shared across the 3 main online channels. The events and competitions included Go-Lab Summer, Winter and Spring schools, STEM Discovery Week (SDW), Science Project Workshop (SPW) and the representation of Next-Lab at the LEARTEC exhibition, among others. National activities included national training events and implementations. As for news, these included important announcements and updates, such as a mention of the Next-Lab project in the Ukrainian newspaper, Next-Lab's nomination for the DELINA 2019 and .eu Web Award 2019, as well as significant milestones such as the celebration of the 1000 and the 1100 ILSs (Inquiry Learning Spaces).

Twitter Highlights and Implementation Activities

Since March 2019, twitter statistical summary data for monthly overview has become more comprehensive. This enabled the comparison of Next-Lab audience's monthly behaviour summary to other face to face dissemination events. Figure 4 provides an overview of the statistical summary provided by Twitter from March to October 2019. The figure shows two

axes; one on the left with a count in hundreds used for the following data: new followers, tweets, mentions, and profile visits (green line), and another with a count in thousands for tweet impressions (blue line), which show how many total times people have seen the tweets.

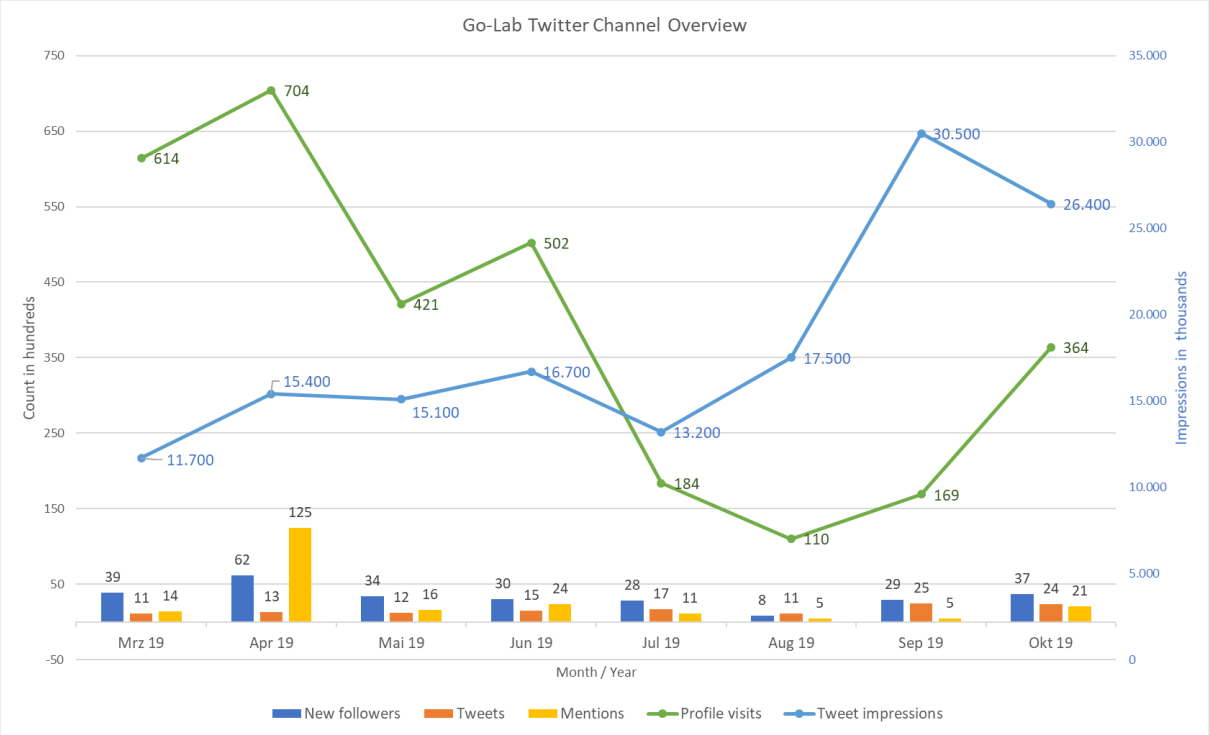


Figure 4 Twitter activities' monthly summaries from March 2019 till October 2019

March had the second-highest number of profile visits and the second-best number of new followers, which happened to be in the same month as the Go-Lab Winter School in Cascais. The Winter School was designed for Teacher Training Institutes with new and old Next-Lab partners joining.

April had an impressive number of mentions and new followers compared to the other listed months, as well as the highest number of profile visits. Two main events took place that month; Go-Lab Spring School and the announcement of the STEM Discovery Week competition, with the latter organized together with other STEM networks and projects.

In May, two main activities occurred: the 28th Science Project Workshop (SPW28) and the Hackathon in France with Next-Lab's partners École Normale Supérieure de Lyon - IFÉ. Generally, the numbers in May are within the average, with no noticeable declinations.

In the summer months, June, July and August, it is generally expected that, due to the schools' inactivity, the number of interactions decreases. Worth noticing that in June the number of profile visits is considered high compared to the other months, which can be due to the fact that the .eu Web Award nomination was announced on that month.

In September and October, two main announcements were promoted: the Go-Lab affiliated TIWI project[7] initiation and the Go-Lab Shaping the Future of Learning campaign launch. Additionally, in September the 34th Science Project Workshop (SPW34) took place. These

[7] TIWI project: http://tiwi.eun.org/

activities had the greatest effect on the increase in tweet impressions, profile visits, as well as the highest numbers of tweets, and a good number of new followers and mentions.

Other

Examining Table 1, it can be noticed that a slight increase in numbers can be seen in Year 3 for the LinkedIn page. LinkedIn page visitors are mainly program and project managers. Hence, only main project news is disseminated through this channel. In Year 3, more educators and managers in the field followed the page, but few posts were shared. This could have been improved by sharing some of the project related publications, when publicly available.

The LinkedIn group mainly consists of members from the project partners, other researchers and educational managers. LinkedIn groups are generally difficult to find on the web and are more private by design, making it more challenging to keep them active and self-sustainable.

The YouTube channel includes all the project's promotional and instructional videos. In 2019, updated versions of the Go-Lab ecosystem introduction video and several "How to" videos, as well as three new informative videos about the Go-Lab ecosystem and its educational value were published. The videos were produced in the same high definition quality and design as the videos uploaded in 2018 and presented in Deliverable D1.4. Furthermore, 16 Go-Lab ambassador experiences' videos were uploaded as part of the Go-Lab Shaping the Future of Learning campaign (see Section **Error! Reference source not found.**).

2.2 Newsblog

Next-Lab news blog has been actively disseminating and promoting the project's news, events, activities and updates on monthly basis. Additionally, the Go-Lab "official" Newsletter is offered on regular basis (quarterly). Typically, once a new news blog is published on Golabz News page[8], it is also promoted on Next-Lab's Facebook and Twitter channels.

By the end of October 2019, 48 news blogs were published on Golabz; 10 in Year 1, 24 in Year 2, and 14 in Year 3. Figure 5 provides an overview of the different themes the news blogs covered over the 3 years of the project (Jan 2017 till October 2019)

[8]Golabz News page: https://support.golabz.eu/news

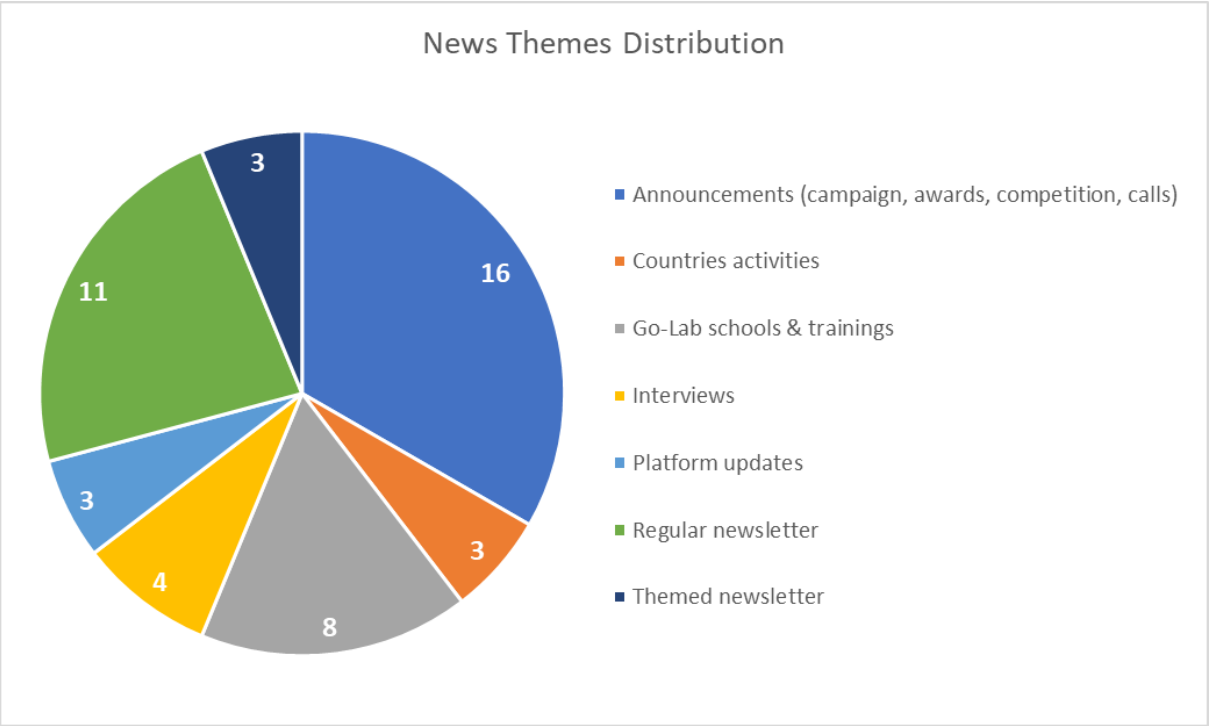


Figure 5 News themes' distribution from Jan 2017 till Nov 2019.

Announcements are the most frequent type of news blog, especially that they incorporate several types of announcements, such as the initiation of the project, NEC and Ambassadors assignment and teachers' calls at the beginning of the project, as well as the different competitions, award nominations and campaigns throughout the duration of the project. Second-most frequent are the quarterly Go-Lab Newsletters which provide an overview of the latest activities and developments. Third-most frequent type of blogs are the ones related to the Go-Lab schools and training events and workshops. These also take place yearly and are an integral part of the Next-Lab project.

As for the rest of the news blogs, these cover interesting and unusual news, such as Next-Lab activities in Cyprus or Taiwan, as well as interviews with the creators of the 500th, 900th and 1000th ILS. Platform updates include latest technical developments and improvements done to the Go-Lab ecosystem, and 1 of the 3 themed newsletters was specifically about Learning Analytics. The other 2 themed newsletters are related to the latest Go-Lab Shaping the Future of Learning campaign news.

2.3 Google Analytics

The Go-Lab ecosystem platforms[9] and the Next-Lab project website[10] underwent several technical development and improvements throughout the project duration. These are presented in Deliverable D4.6 along with the envisioned technical sustainability. Major changes in content and presentation were done to Golabz Support pages[11]. These changes were done under WP2 and presented in Deliverables D2.8 and D2.9.

[9] Go-Lab ecosystem platfroms: Golabz https://www.golabz.eu/and Graasp https://graasp.eu/

[10] Next-Lab project website: https://nextlab.golabz.eu/

[11] Golabz Support:https://support.golabz.eu/

Using Google Analytics for both https://www.golabz.eu/ and https://support.golabz.eu/ domains we can see the number of sessions and users compared per month (Jan till Oct) over the three years of the project; 2017, 2018, 2019.

Figure 6 and Figure 7 present the number of sessions and users on https://www.golabz.eu/ , respectively. When comparing the number of sessions and users per month across the 3 years (i.e. April 2017 vs. April 2018 vs. April 2019), the tendency shows a general increase in almost all months. Noticeable exceptions to this general trend are the months of August 2019 (sessions and users), and the month of April 2018 (users).

October 2019 has seen the highest number of sessions (20.870) and users (15.121) of all times. The Summer months as is usually the case in all years, show a decrease in the number of sessions and users, which increases again drastically starting September.

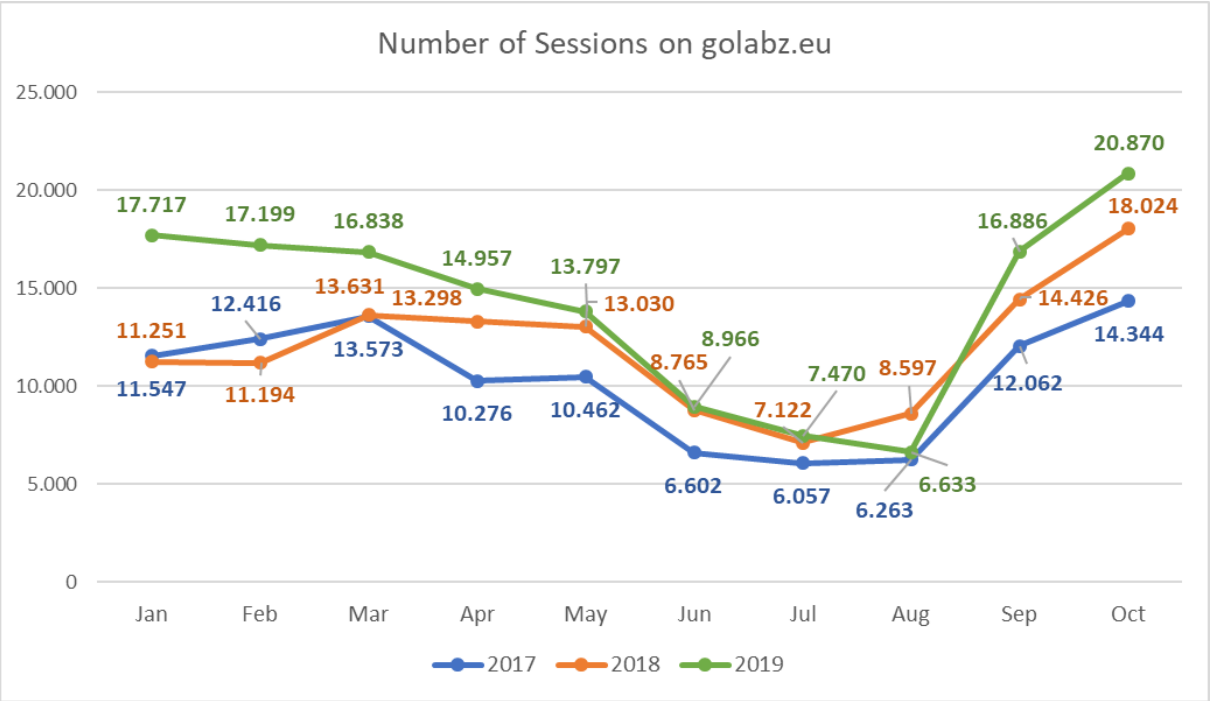


Figure 6 Comparative number of sessions on golabz.eu: from Jan 1 /Oct 31 in Years 1, 2 & 3

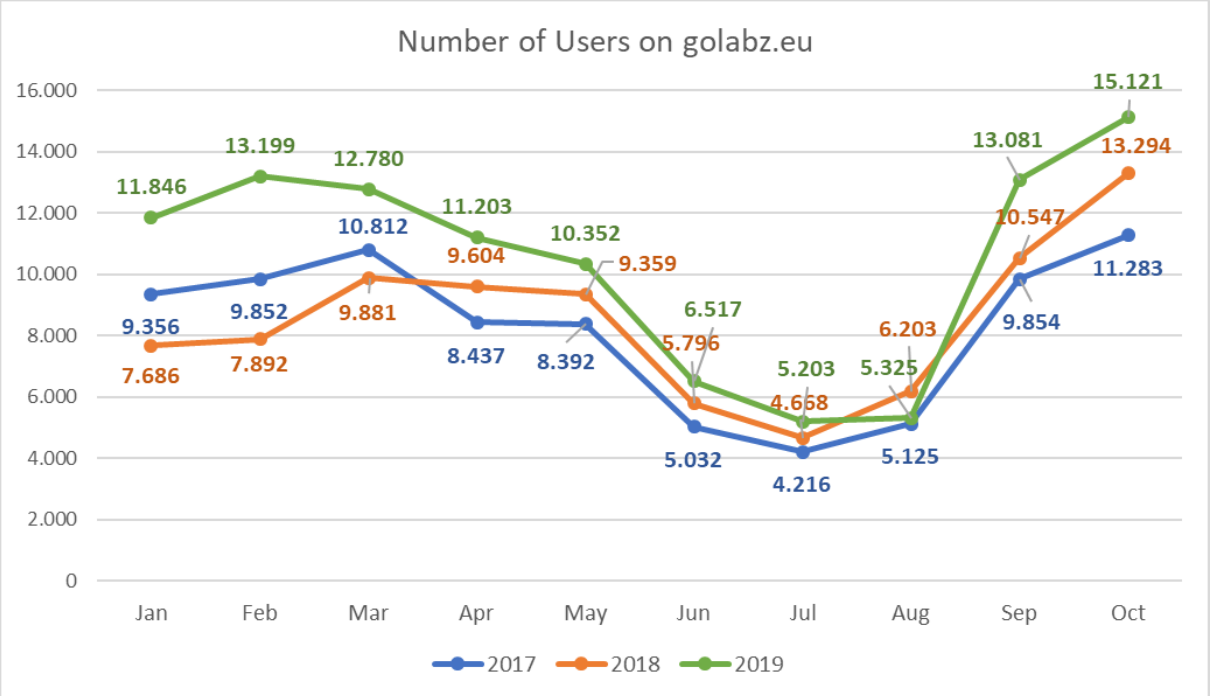


Figure 7 Comparative number of users on golabz.eu: from Jan 1/Oct 31 in Years 1, 2 & 3

Figure 8 presents the number of sessions and users on https://support.golabz.eu/ from June 2018 till Oct 2019. Worth mentioning is that the Support pages have been first published under this domain in March 2018 and Google Analytics were activated for this domain on July 2018. As a result, the number of sessions and visits before that date is 0. Furthermore, the latest major update of the Support pages done in June 2019.

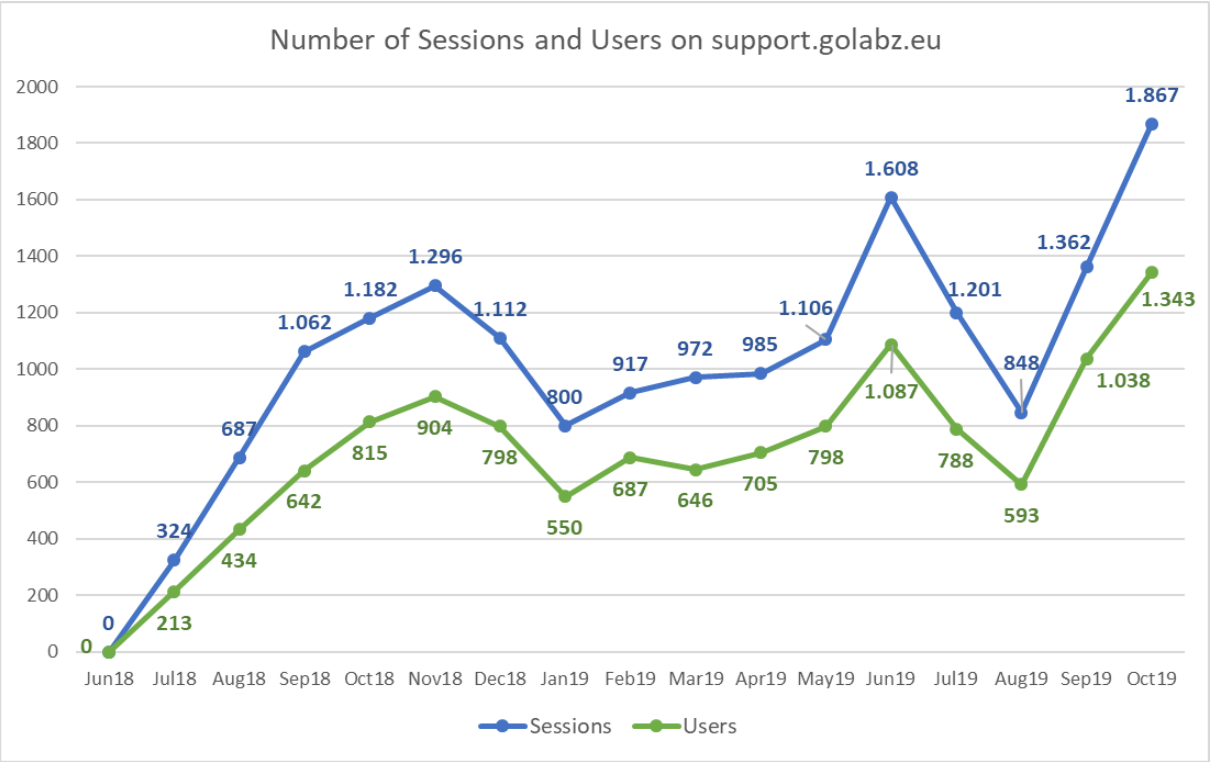


Figure 8 Number of sessions and users on support.golabz.eu: from Jun 2018 – Oct 2019

The updated Support pages have been promoted on the project's social media channels and during the training events. As shown in Figure 8 above, the number of sessions and users has increased continuously from July 2018 till Nov 2018, followed by a gradual decrease period in December 2018 and January 2019, due to the holiday and winter vacation months. As of February 2019 a slight steady increase in the number of sessions (and almost similar increase in users) is observed, reaching its peak in June 2019. Again with the Summer months, another decrease in both numbers was observed, followed by a drastic and continuous increase starting in September 2019.

2.4 Go-Lab final promotion campaign: "Go-Lab shaping the future of learning"

During the final period of the project, in order to spread the word about the latest developments of Go-Lab ecosystem, support of STEM education and the practical implementation of inquiry-based learning, an end project campaign named "Go-Lab shaping the future of learning" was launched in September 2019.

The following channels were used:

- Go-Lab Twitter - 2,770 Followers
- Go-ab Newsletter - 1,802 subscribers
- European Schoolnet YouTube channel - 2.93K subscribers

Figure 9 presents two sample tweets posted on the Go-Lab twitter account and their corresponding outreach:

	
Sample twee 1 Impressions: 4,399 Likes: 27 Retweets: 19	**Sample tweet 2** Impressions: 2,158 Likes: 30 Retweets: 4

Figure 9: End of project campaign sample tweets

Furthermore, the following promotional materials were created:

- Infographic: Go-Lab in numbers
- How is Go-Lab shaping the future of learning?
- Ambassador Stories and SDW (STEM Discovery Week) Stories
- Ambassador Experiences videos

The campaign and all the materials created for this purpose are available at the following link: https://support.golabz.eu/shaping-future-of-learning-campaign

2.5 Reflection

It is worth highlighting the notable efforts of the Next-Lab online dissemination during the last year of the project. While it is difficult to identify the rationale behind the successful outreach of the project, the online dissemination strategy has allowed to maintain and increase the website and platform outreach (see Figure 10) with a decreased number of activities by the NECs when compared to 2018 (see section 3.2 of this document). Golabz.eu had a new sessions record within the last reporting period:

November 2017: 11,864

November 2018: 18,109

November 2019: 20,854

**November 20th this year also showed the busiest day ever with 989 sessions.*

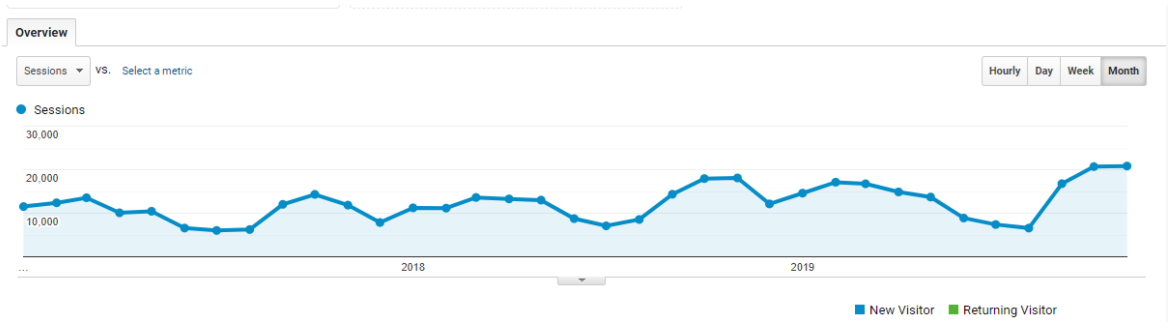


Figure 10: Golabz.eu sessions throughout the project

Also Graasp.eu had very positive numbers compared to the previous exercise:

November 2017: 15'258

November 2018: 12'566

November 2019: 14’842 (Graasp) + 15’302 (page view)

Finally, it should also be mentioned the added value of a spin-off online initiative such as the TIWI project[12]. The project launched a MOOC in September 9th 2019 with the aim of equipping teachers with essential skills and knowledge to teach STEM and ICT with the help of inquiry-based pedagogy. The online course included the use of both Golabz and Graasp. You may find the full course information available here:

https://www.europeanschoolnetacademy.eu/courses/course-v1:TIWI+ICT_Inquiry+2019/about

Over 1,800 participants registered and it is estimated is that this training will have indirect impact to over 7,700 students. The forum, social media channels and the course content remained available after the MOOC closure date.

[12] http://tiwi.eun.org/

3. Next-Lab expertise centres (NECs)

3.1 Introduction

As in the previous 2 years of the project, the Next-Lab Expertise Centres have continued their activities in terms of dissemination and training events throughout the 3rd year of the project. The final outcomes are results of the combined efforts by both the expertise centres and the Next-Lab Ambassadors. This section focuses on the outreach by the NECs and section 4 will provide an update on the ambassadors' actions.

Strategy

While the organization of the trainings under WP2 and the dissemination and outreach in WP1 activities have been key (as in the first two reporting periods: D1.3 and D1.4) to the development of the project, WP1 has also focused, through the NECs, to evaluation. Furthermore, we have continued to hold WP1-WP2 biweekly meetings were activities have been discussed directly with the Next-Lab expertise centres involved.

3.2 European outreach

The section below provides a summary of the 3rd year of the project (from December 2018 to November 2019) dissemination and implementation activities by the project partners. The full details of the NECs activities per country for dissemination, trainings and social media may be found within the following link:

https://docs.google.com/spreadsheets/d/1w9yq3avlHMgs0ia__yz19wWqQGn6-OFMbFQNudzh4qc/edit?usp=sharing

Note: In order to facilitate the reviewing process, to provide a more clear picture of the overall programme activities and to lighten the annexes section of this deliverables, it has been decided to provide access to the full data (instead of tables as they were included in the annex for the previous deliverables, see D1.4 and D1.5).

Dissemination events

The spreadsheet included within the previous section presents the list of online and face-to-face European activities organized during the 3rd year of the Next-lab project. A total of **180 dissemination activities** have been organized this year. As in the D1.4 we have decided to include the final numbers only for the tangible outreach (excluding articles, blog posts, social media, etc.)[13]. Overall, more than **2907 teachers** have been reached through presentations, conferences, seminars, and other dissemination activities.

Following the previous year's reporting structure, the information collected for the dissemination activities and reflected in this document is the following:

- Country/city reach
- Dates
- Type of audience
- Number of attendees
- Title/Course description.

[13]Full details on the outreach through Next-lab social media may be found in section 2.

Other details, such as the Go-Lab domains covered, the events' programmes, partners involved, URLs, materials and photos have been made available online for internal purposes.

Major conferences & highlights

Attending conferences and other educational fair and events have been part of the regular activities of the expertise centres. The list below presents some examples of major dissemination events during year 3:

- Finland: *"Go-Lab Educa-fair"*
  - Continues presentation >>> + 1000 participants
- Germany: *"DELINA Award & Learntec 2019"*
  - Exhibition booth >>> +1000 participants
  - https://www.learntec.de/de/learntec/die-fachmesse/delina-award/
- Portugal: *"Science On Stage 2019 "*
  - Continues presentation >>> + 400 participants
  - https://www.science-on-stage.eu/page/display/4/97/0/s
- Spain: *"EduLearn 2019"*
  - Presentation >>> + 800 participants
  - https://iated.org/edulearn

This sample offers an idea of the variety of audiences and targets reached throughout the 3rd year of the project. Dissemination activities are described in further detail within the per country reports included in Annex 1 of this document.

Implementation activities

The Next-Lab project has continued its strategy of face-to-face European trainings organized during the 3rd year of the Next-lab project. Overall, more than 1360 teachers have been trained by the project partners (in line with the previous years of the project).

As already discussed in D1.3, the targets indicated in both the Description of Works and D1.1 have already been largely exceeded and the focus of this year's activities have been rather in the school approach and other related evaluation activities such as the primary implementations.

The full implementations per country are described in further detail within the reporting spreadsheet discussed and the full reports in WP2.

3.3 International outreach

Next-Lab's NECs have continued to promote the project beyond the natural outreach of the consortium within the EU. Table 2 shows the implementation and dissemination activities conducted within the Next-Lab framework.

Table 2 NECs international outreach

Country	Date	Event type	Audience Type	Audience size	Event type
Ecuador	17/06/2019	Dissemination (WP1)	Local Secondary School Teachers	240	Go-Lab Ecosystem (Graasp / Golabz)

Country	Date	Event type	Audience Type	Audience size	Event type
Ecuador	03/06/2019	Dissemination (WP1)	Local Secondary School Teachers	127	Go-Lab Ecosystem (Graasp / Golabz)
Ecuador	10-11/06/2019	Dissemination (WP1)	Academic / Reseracher	6	Multiplication / Communication / Dissemination
Ecuador	24-25/06/2019	Dissemination (WP1)	Educational authorities	7	Multiplication / Communication / Dissemination
Mongolia	13-18/06/2019	Dissemination (WP1)	International Secondary School Teachers	100	
Mongolia	06/10/2019	Training (WP2)	International Secondary School Teachers	60	Multiplication / Communication / Dissemination
Ukraine	26-28/09/2019	Dissemination (WP1)	International Secondary School Teachers	150	Pedagogy / IBSE

Overall, 7 international activities have been organized with an **outreach of over 790 participants**, including: policy makers, teacher trainers, secondary teachers and other educational authorities. Throughout the 3 years of the project 35 international events have been organized outside the EU borders with an outreach of 1421 participants.

3.4 Impact & Next-Lab schools (community building)

As identified in previous deliverables (i.e. D1.4) a series of good practices have been identified as strong pillars for the sustainability of the use of Go-Lab ecosystem and methodologies by teachers/schools. In many of the countries and as can be found in D2.9 training opportunities were provided to teachers (already involved in the project as well as newcomers). The training opportunities were provided as part of the CPD in different countries and following the national directives for teachers' progression in their career.

In Portugal for instance, Go-Lab was accredited by the Ministry of Education and valued as credits for the participants. The schools studied and presented in D2.9 had the support of their headmaster and several teachers engaged in the training opportunities. This, together with the new national strategy of education for citizenship adopted at a national level by the ministry of education in 2017[14], the national strategy of education for citizenship, enabled multiple collaborations among teachers of different subjects and also among different

[14] DGE. (2017). *Estratégia Nacional de Educação para a Cidadania*. Retrieved from http://www.dge.mec.pt/estrategia%0A-nacional%0A-de-%0Aeducacao-%0Apara-%0Acidadania

schools. Teachers enriched their experiences by participating in Summer Schools and also establishing collaborations with colleagues from other countries participating in Go-Lab.

As an overall we can identify a considerable growth in the number of users and implementers in each country, in particular where NECs and ambassadors were conducting their actions. The engagement and interest of the various members of communities (over 3500 teachers coming from over 40 different countries) demonstrate the maturity of the project and its capability of a cascade impact.

In D2.9 a more in-depth presentation of the case studies collected with the support of several NECs. Reflecting on the main statements made by the participating schools we can clearly conclude that in general Go-Lab is seen as a very valuable tool to promote multidisciplinary / interdisciplinary opportunities in classroom that in fact goes beyond the STEM disciplines. Go-Lab is seen as a friendly tool that easily enables fruitful collaboration among teaches from different disciplines by encouraging collaborative work and joint implementation of the same ILS in a complementary way.

We can also find several statements endorsing the importance of the Go-Lab community building efforts where NECs and Ambassadors tried to engage more than one teacher per participating school. The existence of more than 1 trained teacher was seen as a form of encouragement and empowerment to teachers and effectively increased the degree of use of the system and its associated methodology. It is important to remember that in many cases the learning that was necessary from the side of educators went far beyond the use of the ecosystem. Frequently teachers had to overcome their fear of technology enhanced learning opportunities, change their teaching practice towards a more student-centred approach and finally get acquainted with the Go-Lab ecosystem and its multiple opportunities.

Peers to peer support was recognized as an effective mechanism to promote the adoption of Go-Lab in schools and to ensure the support of school headmasters and community in general. This was understood as a bottom-up boost to its adoption and recognized as a very sustainable approach.

Taking into consideration the 5 pillars of community building, developed in the framework of Go-Lab[15], we can find several evidences, as reported in the case studies, of its actual importance. The proper engagement of member of the school community, the training opportunities and support appear several times in the case study as being key for the uptake of the project. The teacher's community and the opportunity to participate in national and international activities, in particular the summer schools, also had a visible impact. The community building efforts also foster important results and can be found in the various presented cases as an important motivational element. The endorsement and recognition by the education authorities also scores high in the perception of teachers of its importance. The CPD associated with a proper recognition was highly welcomed in several of the presented cases. The continuous support of the NECs and ambassadors also played a major role in the successful outcome of the school enrolment as an overall and not only as a solitary teacher activity.

[15] Doran, R., & Sotiriou, S. (2015). Report on Development of the Virtual Go - Lab User Community - V1.

Finally, the constant community building efforts, such as newsletter and social media efforts, as can be seen in D1.5 also present a successful case of teachers' empowerment and sense of ownership. Go-Lab can certainly be seen as a project where teachers became journey companion. This network of users will certainly be the most important part of the sustainability of Go-Lab.

3.5 Primary teacher implementation

Another main target of the project via WP3 and under Task 3.5 was to prepare the Go-Lab ecosystem for usage in primary education. Whereas in the Go-Lab project the target age group ranged from 10-18 years old, in Next-Lab this was extended to include younger children, starting at the age of 6. Labs available to fit this younger age range were consequently made available. In D3.2 we analysed the current set of labs available at Golabz for their suitability for primary education and we used the curriculum analysis that is delivered in Next-Lab Deliverable 1.2 to identify gaps where new labs should be found or added. A cooperation was also set up with two distinguished sets of international lab repositories (PhET and Amrita) to align (and translate) suitable labs from their collection to primary education. In addition to this, new labs for primary education have been developed in Next-Lab and are now organized per age range (see Figure 11).

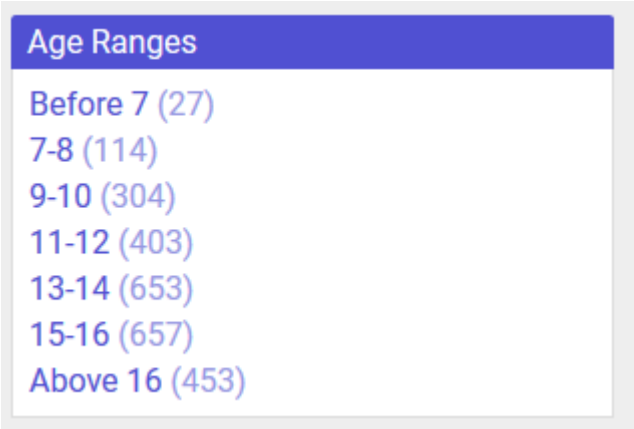


Figure 11: Screenshot of age range section within the spaces page of golabz.eu

D3.5 described the specific primary labs in detail. Of the newly added labs approximately 25 match the age range of primary education. Twelve of these labs for primary education were specifically selected by the Next-Lab team. The labs were selected, because they deal with a primary education topic, new to Go-Lab, such as learning about three-dimensional objects. Labs more suitable for primary education students also include the Circuit Construction Kit: DC lab that includes the strategy to solve multiplication problems in the Area Model labs.

In connection to the above, the Next-Lab project has also proposed a targeted evaluation of these primary implementations via the NECs, in order to understand and collect feedback from Go-Lab primary teachers (linked to the focus teacher group described in D1.1).The purpose of the collected data was to learn about the classroom use of the Go-Lab in Primary Education across Europe, understand how this experience was for teachers and students, in terms of benefits and drawbacks when using those elements and finally, collect good implementation examples. These examples will be shared publicly, by the end of the project, aiming to engage teachers and support project's sustainability even after the project has been finalized.

The research questions proposed have been the following:

1.Background details about

1a. Your teaching background, your school and your students

1b. Other staff members in your school using Go-Lab

2.Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

3.How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

3b. Students' behaviour and response to the practice

4.What was good about the ILS you have used and what were the drawbacks?

5.Would you do it again and would you recommend it to your colleagues?

All primary teacher implementations collected by the NECs have been added to Annex 2 of this document and will be made publicly available to all teachers through Go-lab and the project's premium website.

3.6 Reflection

NECs have continued to perform a wide range of activities which combined with the significant number of international dissemination activities, have given Next-Lab an additional dimension in terms of outreach.

The data collected from the primary schools Go-Lab implementations, see Anne 3, has revealed that in terms of impact, primary students respond very enthusiastically to Go-Lab implementations and they even ask for more such experiences once they are over.

At the same time all teachers seem to agree that the use of IBSE via the Go-Lab ecosystem is very much fitted for primary education since not only promotes scientific thinking, but it also adds the excitement factor that children of this school age appreciate. In terms of time investment, additional time is needed for teachers to prepare their lessons while some teachers mentioned the need to have available more ILSs in their national language. Small technical issues have also been mentioned but their nature and short duration did not endanger in any case the implementations.

4. Go-Lab ambassadors

4.1 Introduction

To support the implementation of the Go-Lab Ecosystem and Next-Lab project's outreach on a national level, **19 Go-Lab Ambassadors** are delegated as nationwide contact points in their respective countries, representing different educational systems and communities. Table 3 shows the complete list of countries and national representatives involved in the ambassadors' network.

Table 3: List of ambassadors

Country	Ambassador
Belgium (Flanders)	Fatiha Baki
Bulgaria	Svetla Mavrodieva
Croatia	Ivana Gugić
Czech Republic	Helena Lazarová
North Macedonia	Silvana Ristevska
Germany	Jörg Haas
Hungary	FilepDoina Otilia
Israel	Stella Magid-Podolsky
Italy	Stefano Macchia
Latvia	Ilze Šmate
Lithuania	Rigonda Skorulskiene
Malta	Geraldine Fsadni
Poland	Malgorzata Maslowska
Romania	Lidia Ristea
Serbia	Nada Stojičević
Slovakia	Gabriela Krížovská
Sweden	Preeti Gahlawat
Switzerland	Philippe Kobel
Turkey	Erkan Akar

Communication with ambassadors is done regularly through a dedicated mailing list, closed Facebook group as well as through emails, calls, and training. Ambassadors are regularly updated on recent project developments, and training opportunities.

The coordination of Go-Lab ambassadors is carried out continuously and involves constant communication with the teachers, the assistance of the qualitative and quantitative aspects of European-wide dissemination (please see section 4.3 for the description of the process of coordination and reporting of the Go-Lab ambassadors). Besides, a closed Facebook group for the Go-Lab ambassadors is used for sharing, news, internal communication, best practices in teaching and learning and the organization of different workshops and trainings.

4.2 Activities

The main tasks of the Go-Lab Ambassadors for 2019 (Year 3) are the following:

1. Delivery of a teacher training (at least 1)
2. Delivery of a workshop (at least 1)
3. Writing of 1 ambassador case study on the use of Go-Lab Ecosystem in class
4. Writing 1 report on a successful implementation of the Go-Lab Ecosystem at school level (case studies collected from teachers, school administration and headmasters in a school of an ambassador or any other school where Go-Lab was implemented).

Additionally, the optional tasks are:

1. Delivery of a presentation
2. Delivery of a webinar/online training
3. Writing teachers case study (on top of the compulsory task no.5)

Clarification of dissemination events from the task list above:

- **A teacher training** – a face-to-face event with min 10 participants with minimum duration of 1.5 hour
- **A workshop** – a face-to-face event with minimum 5 participants with min duration of 45 minutes
- **A presentation** – a face-to-face talk of minimum 10 minutes at an event, which can be organised by other parties, not necessarily by an ambassador (for example, a national conference, an invited talk at an event, etc) with minimum 5 participants
- **A webinar** – an online seminar with duration between 45 minutes and 1 hour with minimum 10 participants
- **An online training** – a training that happens online with minimum duration of 1 hour with minimum 10 participants
- **A case study** – a written responses to a set of questions provided by EUN related to the ambassador's experience in implementation of Go-Lab in classroom, 2 pages document
- **A report** – a set of case studies (written responses to a set of questions provided by EUN) collected from teachers, school administration and headmasters related to the experience in implementation of Go-Lab in classroom, 3 pages document

The work for all the above tasks is covers the period going from **1st of January 2019 to 30th of November 2019.**

The overall goal for ambassadors is the dissemination of the projects' resources and activities on a local, national and international level. Below you can find a detailed report of ambassadors' activities. The numbers presented in this document are based on the

ambassadors' end of year dissemination reporting and were analysed on **2nd of December 2019**.

In 2019, a total of **124 events** were organized by the Go-Lab Ambassadors. As in previous years, the majority of 2019 events were face-to-face teacher training (55) and workshops (42). On top of the usual activities organised in 2019, the ambassadors delivered other types of activities that count for almost 20% of all activities organised in the course of 2019. In particular, ambassadors organised webinars, presentations, contributed to an Inquiry-based themed MOOC, contributed to newspapers articles, as well as curated labs from Go-lab repository to be included in a Chemistry textbox for high school teachers in Malta. The distribution of events per country is provided in Figure 12 while Figure 13 shows that among the Ambassadors, the delivery of teacher trainings and workshops were the most popular.

On top of the usual trainings and workshops, reflecting on the strategy of working with ambassadors on a feedback on a qualitative aspect of the Go-Lab Ecosystem integration at a school level, ambassadors worked on two additional tasks in 2019:

1. Writing of an ambassador's case study on the use of Go-Lab Ecosystem in class
2. Writing a report on a successful implementation of the Go-Lab Ecosystem at school level (case studies collected from school administration and/or headmasters)

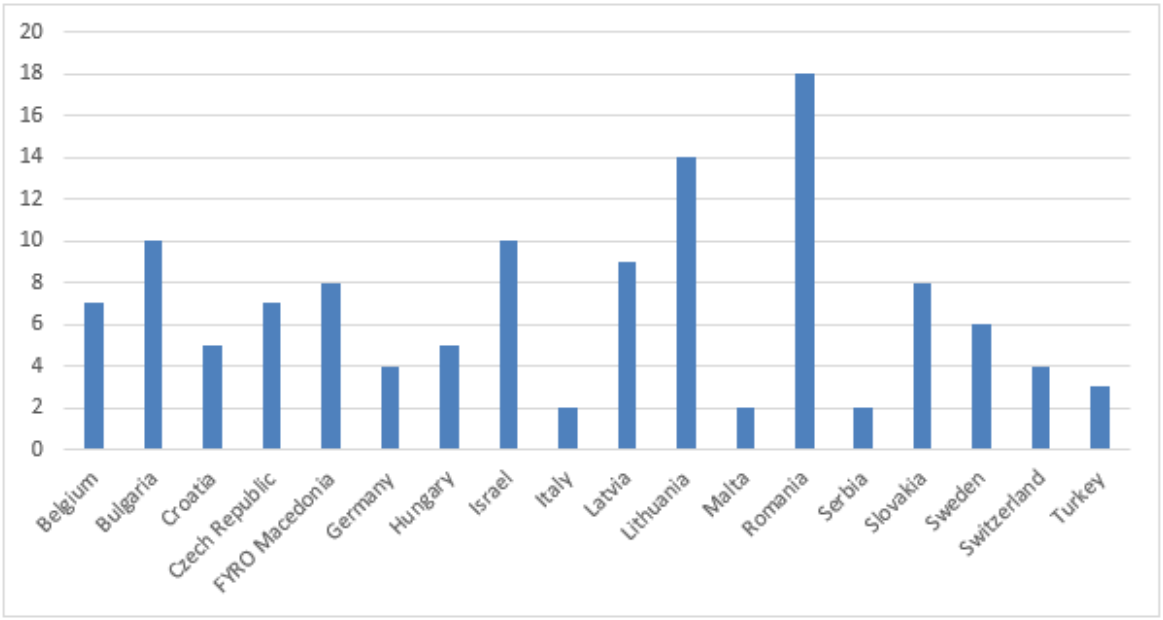


Figure 12: Distribution of 2019 events per country where an activity took place

Figure 13: The distribution of types of events.

As for the online social media dissemination, approximately 188 social media posts were published mainly in Facebook and Twitter, but also on Instagram. Ambassadors actively use their individual and professional accounts to inform their audience about upcoming national events and disseminate new features of Go-Lab. Besides, the ambassadors regularly post in groups of relevant projects to notify the audience of these groups about Go-Lab activities.

Ambassadors' engagement and performance in the use of social media has developed after they received training with recommendations on how to communicate properly via social media. In addition, they have been trained on the updated GDPR regulation and on good practices of the use of social media. This training was part of their bi-annual ambassadors' meetings that are organised by European Schoolnet. This year, even more so than previous years, the ambassadors actively participated in social media campaigns as the faces of "Go-lab Shaping the Future of Learning".

A total of 16 (out of 19) ambassadors have joined the 28th Science Projects Workshop on 24 - 25 June 2019, while the second face-to-face ambassadors' training of this year – 34th Science Projects Workshop on 25 – 26 October 2019 was attended by 15 ambassadors. Both international workshops were organised by European Schoolnet in the Future Classroom Lab, in Brussels, Belgium. In December 2019, five (5) ambassadors attended 35th Science Projects Workshop as facilitators of workshops for future Go-Lab representatives. About 50 teachers from all over Europe, experienced in the use of Go-Lab, were invited to become representatives and disseminators of the benefits of the Go-Lab ecosystem, encouraging other teachers to apply inquiry-based learning (IBSE) methods in science teaching. The ambassadors trained the teachers on following topics: "How to teach Go-Lab", "How to create a good lesson plan with Go-Lab", "Go-Lab and collaboration", "Dissemination of Go-Lab", and "Go-Lab – a whole school approach".

In order to better coordinate the ambassadors and provide them with support on dissemination activities happening in 19 countries, a set of short midterm 1:1 meetings were organised during the SPW28 (June 2019) and included reflection time and sessions on reporting in the programme of SPW34 (October 2019) training. During the SPW28, special sessions on *"Share your experience and successful stories"* was organised for ambassadors to share with their colleagues and to discuss activities they organised. This was also an opportunity for the ambassadors to hear about stories learned during the Spring School of 2019 from the ambassadors who attended the school. While during the SPW34 the focus was on individual 1:1 review of the work done in 2019.

4.3 Go-Lab Ambassadors reporting and monitoring

Throughout 2019 the 19 Go-Lab ambassadors received continuous support from their dedicated coordinator at EUN. Starting from 2018 and even more so in 2019, the ambassadors have gradually developed to an engaged community that works closely together on promoting and disseminating Next-Lab in their respective countries. They support each other, provide feedback and collaborate on Next-Lab activities.

Administration aspects

The formal collaboration with the ambassadors starts from the moment they sign their contract at the beginning of the year and ends with the evaluation of their dissemination activities and the terms of feedback on their reporting, at the end of the year. After the reporting is finished, ambassadors receive their payment. The final payment is based on a list of national dissemination activities approved by the coordinator. For a dissemination event to be approved, there should be proof of its organisation, and the event should be reported by following a well-known template.

Monitoring, support and feedback

As part of monitoring and support procedure, the ambassadors are regularly monitored by the coordinator via emails, 1:1 face-to-face session during multiple trainings in Brussels, so that both parties are well-informed about the dissemination aspects of the project.

In addition, the ambassadors receive timely feedback and support for any dissemination-related activities (both online and face-to-face). Some examples of the type of the support ambassadors can request from their designated coordinator: feedback on the programme and the content of a training or a workshop they are planning, request the presence of an EUN representative in a webinar (short presentation and/or communication with participants in chat and provision of technical support), ask for support (both logistical and pedagogical) for the organisation of a training with more than 20 attendees, and get in touch with their national Ministry of Education.

Through email exchange and various requests from ambassadors, EUN stays informed about the upcoming events in each country. The coordinator monitors the quality of the delivered material during the national training and the status of attendance. The coordinator provides feedback and recommendations on what can be improved.

Training

In order to train ambassadors on qualitative aspects of organisation and delivering national dissemination activities, ambassadors' training is organised twice per year in European Schoolnet's Future Classroom Lab (FCL)[16].

The ambassadors receive high quality training on Inquiry Based Learning (IBL) and the use of Go-Lab tools, project communication and 21st century skills by the Next-Lab consortium partners.

Professional development (online training as well as places in Summer/Autumn/Winter/Spring schools) are offered to ambassadors in order to ensure that they have all necessary knowledge to perform their tasks in an efficient way and be the main contact point providing technical and pedagogical support to teachers on national level. This year two ambassadors attended Spring School and four attended Summer School.

Reporting procedures

In accordance with the contract, the reporting process is transparent and simple to follow. The reporting process has been explained in detail to the ambassadors during the training in Brussels, before they signed the contracts, and reminders on reporting procedures are sent out regularly, especially before the end of the reporting year.

In Year 3, ambassadors reported their dissemination activities by using the following procedure. To ensure the correct information presented in the reporting, **EUN established a two-component reporting** – the ambassadors have to fill in the timesheets, provide support material in Graasp proving that a training took place in Graasp.

In order to complete the reporting, the ambassadors have to follow the steps indicated below:

- They claim the **time spent** on the Next-Lab dissemination activities by filling in the timesheet form via this link https://teachtimesheets.eun.org/

[16] http://fcl.eun.org/

- Upload training and/or dissemination **material** (could be pictures, PowerPoint presentations, Word documents used for a training, programmes, etc.) in Graasp, in the Events space dedicated to their country
- In case they carried out **social media dissemination**, they are asked to fill in this form https://www.surveymonkey.com/r/next-lab_socialmedia.
- Ambassadors need to ensure that they have permission from all persons appearing in pictures and the material shared. Registration forms created for events follow the General Data Protection Regulation (**GDPR**).

In the contracts that Go-Lab ambassadors sign on an annual basis, it is indicated that they will be paid on the basis of the filled in timesheet form and after completing their reporting.

The **compulsory tasks** that the ambassadors can report time spent on in the timesheet form are:

1. Preparation of a teacher training (at least 1)
2. Preparation of a workshop (at least 1)
3. Delivery of a teacher training (at least 1)
4. Delivery of a workshop (at least 1)
5. Writing of 1 ambassador's and at least 1 teacher's case study on the use of Go-Lab Ecosystem in class
6. Writing 1 report on a successful implementation of the Go-Lab Ecosystem at school level (case studies collected from teachers, school administration and headmasters in a school of an ambassador or any other school where Go-Lab was implemented).

The reporting is considered completed if an ambassador fulfilled the above listed steps.

In addition, these are the **optional tasks** that the ambassadors can report time spent on in the timesheet form are:

1. Preparation of a presentation
2. Preparation of a webinar/online training
3. Delivery of a presentation
4. Delivery of a webinar/online training

Writing teachers' case studies (on top of the compulsory task no.5)

4.4 Reflection

All these efforts above described have led to a considerable increase in the number and quality of events organised in 2019 in comparison to 2017 and 2018. For comparison, in 2017 the ambassadors organised 79, in 2018 105 and in 2019 124 events. In addition, case studies testify to successful implementation of Go-Lab in individual classrooms as well as on a whole school level.

5. Next-Lab Teacher Training Institutions (TTIs)

5.1 Introduction

The outreach of the Teacher Training Institutes (TTIs) framework has been exponential during the 3rd year of the project, while consolidating the implementations within those organizations that were already part of the framework in the previous years. Table 4 presents the list of the 30 institutions that are currently part of the Next-Lab TTIs framework. This section will present the results for the last year of the project and the overall impact on TTIs throughout the project. Further information about the TTIs may be found in deliverables D1.1, D1.2 and D1.4.

Table 4: List of TTI representatives

Organization	Country
Cyprus Pedagogical Institute	**Cyprus**
UTE – Tartu Ulikool	**Estonia**
TOKL – University of Turku	**Finland**
University of Jyväskylä	**Finland**
Alençon's Training Teacher Institute	**France**
University of Augsburg	**Germany**
GFOSS	**Greece**
National & Kapodistrian University of Athens (Dpt. of Biology)	**Greece**
National & Kapodistrian University of Athens (Dpt. of Education)	**Greece**
University of Athens	**Greece**
University of Macedonia, Thessaloniki, Greece	**Greece**
University of Patras/University of Athens	**Greece**
University of the Aegean	**Greece**
Israel Institute of Technology	**Israel**
Riga Technical University - Distance Education Centre	**Latvia**
Vilnius Gediminas Technical University	**Lithuania**
Vytautas Magnus University Education Academy	**Lithuania**
Universiti Teknologi Malaysia	**Malaysia**

Escola Superior de Educação de Coimbra	**Portugal**
Polithecnic Institute of Santarem	**Portugal**
University of Aveiro	**Portugal**
University of Coimbra	**Portugal**
Extremadura University	**Spain**
INS Tordaria (Departament d'Educació) i ICE de la UPC	**Spain**
University of the Basque Country, Bilbao Campus	**Spain**
ELAN (UT)	**The Netherlands**
BAUSTEM Center at Bahçesehir University	**Turkey**
Yildiz Technical University	**Turkey**
Precarpathian National University	**Ukraine**
University of Leicester (ULEIC)	**United Kingdom**

Strategy

By the end of 2018, Go-Lab had entered the curricula of 9 TTIs. In order to meet the original proposal's target (12 TTI implementations), the project focused on extending its network and reinforcing its activities within the already functioning framework and facilitating exchanges among TTIs with similar priorities in order to accomplish further complete implementations. The latter differ among TTIs and also depend on the set-up of the curriculum, the end terms of the study, flexibility and main priorities of the curriculum. The different sections below address the new activities and the ongoing successful activities to be reinforced.

5.2 Year 3 activities and materials for TTIs

Organization of trainings and networking events

The third and last year of the TTIs activities within the Next-Lab project has been very rich in terms of face-to-face interaction. Other than the regular online exchange, two meetings were organized in 2019. The first, in the shape of a Go-Lab Winter school for TTIs (Cascais, March 2019) and the second, a final networking meeting in Brussels, November 2019. These meetings will be described in full within this section.

Presentation of the TTIs Framework in events and conferences

As one of the central components of the 3rd year was the outreach of activities, the Next-Lab TTIs framework has been presented in a number of major international educational conferences. The most relevant events were the TTIs framework have been presented this year have been the following:

- **1st International STEM Education Conference**

The 1st International STEM Education Conference[17] was held in Istanbul on June 13-14, 2019. The conference was organized in collaboration with International Centre for STEM Education (ICSE), Ministry of Education, Istanbul Ayvansaray University, Turkish STEM Alliance and Hacettepe University as part of the STEM PD Net project.

- **International Symposium on New Issues in Teacher Education (ISNITE 2019)**
  The 6th International Symposium on New Issues in Teacher Education 2019 was held in Valetta (Malta) on 16-18 September 2019. The presentation entitled: "*Online tools and inquiry-based learning for teacher training institutions*" was part of the conference programme within the theme of digital landscapes in teacher education[18].
- **Fiera Didacta 2019**
  Third edition of Fiera Didacta Italy, one of the largest educational fairs in the EU Organized for over fifty years in Germany, focused on education, vocational training and relation among school and work. Fiera Didacta Italia is directed to institutions, teachers, school directors, educators and trainers, as well as professionals and entrepreneurs operating in the school and technology sector.

ILS Evaluation online discussion

As a follow up of the Cascais Winter School, the project has fostered exchanges between those TTIs especially interested in the development of a common framework for the evaluation of ILSs. While these exchanges, have not formalized into a clear set of common materials, exchange of currently used resources has taken place during the last year of the project, via both the TTIs Community of Practice in Graasp and online meetings organized ad-hoc for this purpose.

5.3 Next-Lab Winter School for Teacher Training Institutes

Next-Lab's Winter School for Teacher Training Institutes (TTIs) was organized in Cascais, 5-8 March 2019.

The meeting was targeting all TTIs organizations involved in the Go-Lab dissemination and training, including those organizations already implementing Go-Lab within their Universities curriculum, those organizing minor courses and dissemination events and those interested in starting their work with the Go-Lab Ecosystem.

Five partners of the Next-Lab project (NUCLIO, EUN, EA, ENS de Lyon and UT) welcomed 29 TTIs representatives from all over Europe. The winter school was tailored to the needs of two very different target groups; beginners, new to the Next-Lab project and with very little (or no experience) in the use of Go-Lab, and implementers experienced TTIs that have already incorporated the Go-Lab Ecosystem as part of their institutions' curriculum.

The goal was for the participants to network and share good practices while receiving further training on the use of virtual and remote laboratories, as well as inquiry-based science teaching techniques to help them develop, improve and enhance their Go-Lab implementations.

[17] https://www.stempd.net/event/1st-international-stem-education-conference/

[18] https://www.um.edu.mt/events/isnite2019

The Go-Lab Winter School participants enjoyed a series of hands-on workshops, including topics such as effective examples on how to introduce inquiry to teachers, inter/multidisciplinary approaches in school education, what makes a good ILS, learning analytics and differentiation in ILSs.

Next-Lab TTIs got the opportunity to present their national experiences and work with other colleagues from across Europe, to discuss new ideas and possible future collaborations. By the end of the week, participants had created numerous learning scenarios and shared experiences, which encompassed all the essential features for a successful inquiry-based multidisciplinary science teaching.

During the meeting, 9 implementations were presented, 4 of which coming from new implementers:

- University of Turku
- ELAN - University of Twente
- University of the Basque Country
- Polytechnic University of Catalonia (new)
- Vytautas Magnus University Education Academy (new)
- Israel Institute of Technology (new)
- Yildiz Technical University
- University of Coimbra
- University of Macedonia (new)

The full report for this meeting is publicly available from the TTIs Community of practice here: https://graasp.eu/resources/5d135d9b98eddd716f2b4eae

This report includes the different approaches for implementation presented during the Winter School by the TTIs and identifies learnings, trends and similarities. The full presentations of the TTIs are also available in the following link: http://graasp.eu/spaces/5c7fbe520f737eea0bd6cecc

5.4 Final TTIs networking event

The Final TTIs networking event was organized in Brussels, 5-6 December 2019. The purpose of this meeting was to invite current and new TTIs to discuss and share experiences in relation to the implementation of Go-Lab and Inquiry Based Learning and Innovative approaches in pre-service teaching. Following the networking approach developed in previous years and also in parallel to the Teacher Organization activities (see D1.6), this meeting was organized in collaboration with the spaceEU project[19], were TTIs are working on curriculum implementations connected to space related topics. Table 5 presents the list of institutions that participated to the final event and the programme (incl. list of participants and agenda) may be found within Annex 3.

[19] http://www.space-eu.org/

Table 5 Final TTIs event participants

Organization	Country
Ecsite	**Belgium**
Municipal center for extracurricular activities	**Bulgaria**
University of Turku	**Finland**
National and Kapodistrian University of Athens - Department of Biology	**Greece**
University of Macedonia	**Greece**
University of the Aegean	**Greece**
National and Kapodistrian University of Athens - School of Education	**Greece**
GFOSS	**Greece**
Science Gallery Dublin	**Ireland**
Mary Immaculate College	**Ireland**
Technion-Israel Institution for Technology and Science	**Israel**
Riga Technical University Distance Education Study Centre (RTU DESC)	**Latvia**
Vilnius Gediminas Technical University	**Lithuania**
Vytautas Magnus University Education Academy	**Lithuania**
Leiden University	**Netherlands**
Polytechnic Institute of Santarém (School of Education)	**Portugal**
University of Coimbra	**Portugal**
Escola Superior de Educação de Coimbra	**Portugal**
ICE-UPC and FCRi	**Spain**
University of Extremadura	**Spain**
Parque de las Ciencias de Granada/ESERO Spain	**Spain**
Centro Autonómico de Formación e Innovación (CAFI)	**Spain**
Universitat de València (Faculty of Training Teachers)	**Spain**
Meram District Directorate of Education	**Turkey**

The meeting had a three step approach: First, implementers (new and experienced) had the chance to present their implementations; second, current TTIs presented their plans for future implementations and/or other related Go-Lab activities; and third, spaceEU TTIs, shared their activities and explained how this could be connected to a Go-Lab implantation too. Finally, a sustainability session was organized in order to openly share and discuss the different possibilities and aspects of the programme after the end of the project.

New implementers

During the final event, five new implementers presented their activities. All of them had attended the Winter School for TTIs in Cascais:

- National and Kapodistrian University of Athens - Department of Biology
- Polytechnic Institute of Santarém / School of Education
- National and Kapodistrian University of Athens - School of Education
- Escola Superior de Educação de Coimbra
- University of the Aegean

Following the results of the meeting, at least 10 more TTIs have plans for Go-Lab implementations, while all of them envision different types of collaboration and use of the Go-Lab Ecosystem. The full presentations by the TTIs (including current implementations and future plans) have been made available via the TTIs Community of Practice in Gaasp:

https://graasp.eu/spaces/5df74bb3d9fbb14845bfee27

Sustainability section

During the Sustainability session, the participating TTIs have been organised in 3 groups and have discussed the following questions:

- From your side/perspective, as a TTI, come up with activities/collaborations/project ideas that would sustain the use of the Go-Lab eco-system.
- What are the possible problems/issues that might undermine these plans and what kind of support is needed in order to overcome them?

When it comes to the 1st question, TTIs agreed that within their University programmes they have quite some flexibility in making use of the Go-Lab Ecosystem by using it for teaching inquiry-based learning and collaborative learning and investigating the effectiveness of the use of online laboratories vs physical laboratory work and the effects on student learning. Many TTIs have also mentioned their intention to bring the curriculum aspect within their work with pre-service teachers and prepare with their help more ILSs that will fit specific subjects and topics.

The problems/issues were mostly related to the fact that with the mobility of staff within Universities, there is always a chance that the person leading the use of the Go-Lab Ecosystem might be not be there to further support its implementation and inclusion to the University programme. Training within the departments might help to overcome this boundary.

5.5 Reflection

As presented in D1.1, European Schoolnet is responsible for the development of the Teacher Training Institutes (TTIs) framework, aiming for the outreach and adoption of Inquiry Based Learning in digital environments such as the Go-Lab ecosystem and in general, fostering innovative approaches to initial teacher training.

The TTIs framework outreach plan has included the provision of dissemination & support materials, experts support, customization of tools, trainings and the exchange of best practices within innovative teacher training institutions all over Europe, while fostering a network of EU projects within the field of Initial Teacher Education.

One of the key outreach goals of the Next-Lab project was to establish connections with Teacher Training Institutes in a selection of countries and to enter the curriculum of 12 of these organizations. In order to do so, EUN was expected to organise an initial meeting in year 1 with a number of Teacher training institutions in order to launch the process of identification to be supported via WP2 for the development of teacher training materials and implementation examples. At the time of writing this deliverable, 3 networking & training meetings and one winter school have been organized, **30 TTIs are currently part of the framework and 18 institutions have already implemented Go-Lab** as part of the official teaching programme.

While even more TTIs are planning to implement Go-Lab within the post-reporting and post-project period, many others have already done multiple Go-Lab related activities that have been reported in previous deliverables (D1.3 and D1.4) and this document, such as evaluation (for research purposes), student Master thesis, presentations and liaisons with local authority. TTIs have in this regard played a crucial role not only in the formal implementation of Go-Lab but also in the overall dissemination of the tools as part of the outreach & impact strategy.

6. Policy makers

6.1 Year 3 summary

As it has already been presented in D5.3 and reinforced in D5.4, the role of policy makers in the establishment and mainstreaming of the Go-Lab Ecosystem, has been a project priority right from the beginning of the project. European Schoolnet (EUN) as a network of 34 ministries of education has been using all available opportunities in order to inform policy-makers on the progress and evolution of the system and to provide them with an insight on the implementations and uptake of the Go-Lab ecosystem in their countries. During the last year of the Next-Lab project, personalised support has been offered to countries that have expressed specific needs in relation to Go-Lab and all these efforts and their outcomes are presented in the final project deliverable D1.6. The main highlights of the policy makers targeted actions have been:

- From a communication and dissemination point of view, EUN has used its channels (e.g. social media, Policy newsletter,) in order to provide policy makers with information on the developments of the Go-Lab ecosystem.
- During Eminent 2018, the annual conference organised by European Schoolnet and bringing together Ministries of Education and policy makers, a dedicated Next-Lab session has been organised with a number of Ministries of Education. The session started investigating the issue of the Go-Lab ecosystem sustainability and various ideas have been presented and further investigated.
- During the meeting of September 25th, 2019, the Ministries of Education STEM representatives working group (MoE STEM WG) had the opportunity to be presented to a good Go-Lab ecosystem implementation practice by the Georgian MoE representative. The development of ILSs per subject for the training of pre-service teachers and the piloting of their use with a selected number of schools were the main aspects of this national implementation.

  In the light of D1.6 the collection of policy making related activities and initiatives from the Next-Lab partners has been organised.

6.2 Reflection

The connection with policy makers has been a particularly intense and challenging process for WP1. Various channels and types of activities have been put into use in order to maximise the potential outcomes.

An analysis on the impact of the Go-Lab ecosystem to policy makers is described in D1.6.

7. Conclusions

This report provides a summary of all communication and dissemination related activities carried out in 2019 by the Next-Lab NECs and Ambassadors while it serves as a status update report regarding the main types of outreach activities, the role of the respective stakeholders and finally, offers an end of project reflection for the different actions.

As established within the roadmap deliverable D1.1, WP1 had the challenging role of building and sustaining relations between Next-Lab and project's main stakeholders: teachers, Teacher Training Institutes and policy makers. The available data across the different dissemination platforms (as demonstrated in Section2 2), shows that Next-Lab has kept its outreach momentum throughout, and has achieved to not only train a larger amount of teachers (almost year after year) but specially to deliver a higher number of dissemination activities with an increased overall outreach.

According to the results presented in this report (Section 3 "NECs", Section 4 "Ambassadors", Section 5 "TTIs" and Section 6 "Policy makers"), it is worth highlighting the notable efforts of the project dissemination during its final phase. While it is difficult to identify the rationale behind the successful outreach of the project, the online dissemination strategy (incl. the end of project campaign and spin-off initiatives), have allowed to maintain and even increase the website and platform outreach with a decreased number of activities by the NECs when compared to 2018. Actually, both Golabz.eu and Graasp.eu had a new sessions record within the last reporting period (see section 2.5).

Ambassadors have been proved to be one of the major assets in WP1, with a new record of activities in 2019 (events per year: 74 in year 1 = 74, 92 in year 2 and 124 in year 3). In addition, case studies used during the end of project dissemination campaign have testified the successful implementation of Go-Lab in individual classrooms as well as on a whole school level thank you to their effort.

TTIs have also played an important role in this success story. With over 18 official implementations and 30 organizations being currently actively involved in the network. While even more TTIs are planning to implement Go-Lab within the post-reporting and post-project period, many others have already done multiple Go-Lab related activities, such as evaluation, student Master thesis, presentations and liaisons with local authorities.

Finally, the connection with policy makers, which has been particularly intense and for which we provide very detailed information within the end of project deliverable D1.6 (Next-Lab Overall impact on teacher organisations and connection to policy makers) was also related and sometimes it was also the result of the extensive dissemination work.

Annex 1: National dissemination and Implementations reports

1.National dissemination and implementation report Spain

1.1 Dissemination Activities

The main objectives of the Spanish Next-Lab Expertise Centres remains the same as was at the beginning of the project namely (1) to broad the circle of STEAM primary and secondary teachers who will use the Go-Lab system in their day-to-day lesson instruction; (2) to introduce the tool to the TTIs, (3) to encourage the TTIs lecturers to incorporate the IBSE teaching with Go-Lab ecosystem in their curriculum; (4) communication and cooperation with policy makers. The main goal to reach school students - major target audience.

In order to perform these tasks, we use the common dissemination tools such as dissemination workshops, multiplier events, newsletters, published paper, conference presentations, info on the website and social media

1.1.1 Summary of dissemination events

Table 6: Next-Lab Dissemination Events - Spain

Title	Location	Date	Description
IBSP in school education	Bilbao, Spain	25 Jan. 2019	The seminar was performed in frame of the Prest-Gara action to disseminate good practices among secondary teachers. The event offered a presentation (around 30 teachers)
Go-Lab ecosystem: using online laboratories in a primary school	Palma de Mallorca, Spain	02 July 2019	Presentation on the international conference EDULEARN19. https://iated.org/edulearn/ (around 30 participants)
Go-Lab ecosystem: using online laboratories in a primary school	Palma de Mallorca, Spain	01-03 July 2019	EDULEARN19 conference proceedings (800+ readers)
Go-Lab ecosystem reinforce usage of IBL approach	Barcelona, Spain	08 July 2019	Introducing the project and Go-Lab ecosystem (35 participants)
NextLab Project and its product for enhancement of school education	Pereyaslav, Ukraine	03-05 July 2019	The session was included as a part of the TTI training workshops in a frame of the MoPED project (52 teachers).
Engaged learning for science students.	Kyiv, Ukraine	26 Sept. 2019	Presentation (keynotes) of T.de Jong on the conference “New Pedagogical Approaches in STEAM Education”, Kyiv, Ukraine, 26-28 Sept.2019 (200 participants)

Title	Location	Date	Description
From traditional lesson to inquiry-based learning	Kyiv, Ukraine	27 Sept. 2019	The dissemination workshop was held within the conference “New Pedagogical Approaches in STEAM Education”, Kyiv, Ukraien. The primary and secondary school teachers of Ukraine participated in this event. (150 participants)
Go-Lab ecosystem for innovating STEAM education	Uman, Ukraine	22 Nov.2019	The dissemination workshop aims to introduce the Go-Lab ecosystem to school teachers of the region. (20 participants)

1.1.2 Target audience and impact

The main audience of the dissemination events is secondary primary school sectors’ teachers in Spain and internationally. The international dissemination to the audience articulated in the project objectives such as representatives of Teacher Training institutions, school sector, education policy makers was performed during this year as well. The main impact is the expending awareness on the Go-Lab ecosystem and increasing willingness to incorporate it in the university curriculum and school lessons. Overall more than 500 participants took part in these events.

1.2 Implementation Activities

1.2.1 Summary of implementation activities

Table 7: Next-Lab implementations - Spain

Title	Location	Date	Description
ILS for STEM education	Bilbao, Spain	Jan-May 2019	Training course consists of 4 workshops. It is the part of training action of the regional government on the professional development of the secondary school teachers Prest Gara. UD Next-Lab team was selected to train STEM teachers during the open call. At least 1 ILS were built each attended teacher. 8 Participants
IBSP in the secondary school STEM lesson	Barcelona, Spain	09-11 July 2019	Get familiar with IBSE and Go-Lab ecosystem, create at least one ILS using chosen online laboratory. The workshop was organized with support of the FCRi: Fundacio Catalana per la Reserca i la Innovacio. 35 participants
Implementation of the IBSE in the TTI curricular	Ukraine	January – August 2019	The IBSE pedagogical approach and Go-Lab ecosystem were integrated in the curricula of 5 Ukrainian Universities in 5 regions of Ukraine (Kyiv, Uman, Ivano-Frankivsk, Lugansk (non-occupied territory), and

Title	Location	Date	Description
			Odesa). More than 500 pre-service teachers have participated to the pilot courses in Fall semester and have participated in Spring semester (scheduled).

1.2.2 Target audience and impact

The target audience is secondary school teachers, and students and professors of teacher training institution on national and international level. More than 500 participants were embraced in the implementation activities.

2.National dissemination and implementation report Finland

2.1Dissemination Activities

2.1.1 Summary of dissemination events

The Finnish dissemination of Go-Lab was realized in different types of events that can be broadly characterized into three categories: i) fair presentations, ii) demonstrations and iii) lectures, both locally and nationally. The Table 8 below provides an overview of the dissemination events in Finland in 2019.

Table 8 Next Lab dissemination events -Finland

Title	Location	Date	Description
Demonstration of Go-Lab	Turku	14.01.2019	2 h exemplary Go-Lab lesson for 8th grade students.
Go-Lab at Educa-fair	Helsinki	25-26.01.2019	Open continuous presentation at Educa-fair, the largest educational fair for teachers, policy makers, researchers etc. in the field of education in Finland.
Overview of Go-Lab and how it can be integrated in teacher training	Turku	27.02.2019	Presentation of Go-Lab as an a way to integrate technology and inquiry-learning in a teacher training institute (TTI) curriculum for a delegation from Vytautas Magnus University Lithuania (vice-rector and Faculty of Education staff)
Inquiry learning theme day	Kaarina	06.03.2019	5 x 45 min exemplary Go-Lab lessons during the inquiry learning theme day.
Demonstration of Go-Lab	Turku	11.02.2019	1 h demonstration of the basic features of Go-Lab for the teacher staff.
Inquiry learning theme day	Kaarina	13.03.2019	5 x 45 min exemplary Go-Lab lessons during the inquiry learning theme day.

Title	Location	Date	Description
Go-Lab in conjunction with Open Schools for Open Societies - project	Hämeenlinna	22.03.2019	OSOS-presentation with Go-Lab as one example.
Demonstration of the features of Go-Lab	Raisio	02.05.2019	30 min demonstration of the features for the teacher staff.
Lecture on inquiry-based learning and simulations in inquiry-learning	Turku	03.09.2019	Go-Lab as an example of implementing inquiry-learning in classroom. The lecture was held in a comprehensive school (grades 1 – 9) for the teacher staff and for the furniture manufacturer Isku.

2.1.2 Target audience and impact

Fair presentation

Educa-fair is the largest educational fair for teachers, policymakers, researchers etc. in the field of education in Finland. The yearly event is organized in Helsinki, and it gathers together around 20 000 professionals from all around the country to hear about the latest trends in education. Our target audience in the event were teachers outside the Turku area. Go-Lab was presented at the exhibition area of the fair. The stand was visited by about 100 teachers and policymakers during the two-day-event. We used iPads, laptops and exemplary ILSs to show the features of Go-Lab and give short introductions on how to implement ILSs in the classroom.

Demonstrations

After the experiences of the first two years of Next-Lab, we found out that the optimal way for the teachers to see the positive outcomes of the Go-Lab is to actually go in their classrooms and to give an exemplary Go-Lab lesson (note: demonstrations combined with training are mentioned under implementation). During the spring we started to adopt this approach as our dissemination strategy. Our target audience was local teachers who had not attended or heard about Go-Lab during the first two years of the project. We gave exemplary lessons at the inquiry-learning theme day at the local science centre Tuorla, where teachers, pre-service teachers and their students attended in various inquiry-learning sessions. Besides that, we demonstrated the use of Go-Lab twice in the local schools' teacher staff meetings.

Lectures

During the year, Go-Lab was presented on expert lectures about contemporary perspectives on learning, as an example of how to apply inquiry-learning in the classrooms. These presentations were targeted to teachers and other personnel in the field of education. Go-Lab ILSs have been an elaborate way to illustrate different phases of an inquiry cycle in a concrete and usable way. In general, these dissemination lectures were not just about Go-Lab, but on how to apply contemporary learning frameworks in practice by using Go-Lab ecosystem.

2.1.3 Outcomes

Fair presentation

The impact of the Educa-fair was relatively high. First, we attracted teachers from the cities where we usually have limited resources to visit, among which one teacher that later attended the last teacher conference in the University of Twente. Second, the Educa-fair acted as a kick-off event for the third year of the project in Finland. From the event, we got contacts and feedback that benefited us throughout the rest of the year.

Demonstrations

The demonstrations held in different events proved to be a way of reaching interested teachers that may not have the time and resources to invest in something for which the direct value for their classroom practice is yet unknown. In the exemplary case of Aurajoki school, these demonstrations were the starting point of a collaboration trajectory that eventually resulted in the foundation of a Go-Lab -teacher workgroup in the school that was recognized by the management through the allocation of time in the teachers' work-plan. In between, teachers from this school also attended the Go-Lab Tallinn Spring School to share their experiences and acquire more knowledge to use in their own school. In general, the events garnered relatively high interest of teachers, that would otherwise not have been reached for the reason outlined above, and thus introduced more teachers to Go-Lab some of which have started using Go-Lab as part of their teaching on a more frequent basis.

Lectures

The lectures given on inquiry-learning combined with Go-Lab resulted in several collaboration opportunities, especially within our own TTI. For instance, the presentation on DigiErko-cruise (https://digierko.fi/) for in-service teachers specializing with ICT resulted in collaboration with another project called OpenDigi (https://opendigi.fi/). Through this collaboration, two teacher students designed a Go-Lab ILS, tested it as part of their teaching practice in a local school and then presented both the designed ILS and the results of the classroom implementation to their fellow teacher students. This model of collaboration where teacher education and TTI-projects can work together with local schools presented itself as an efficient and an elegant way of implementing Go-Lab in a wide variety of ways. At the same time, through such activities we can foster the adoption of inquiry-learning in a way that it affects many different educational actors (pre-service teacher, in-service teachers, teacher trainers) across multiple settings (pre-service training, in-service training, implementation in schools).

2.1.4 Other project dissemination materials

Our stand in the Educa-fair was part of the University of Turku stand, with our own area with a display for the dissemination materials and for the ideas behind the project and demonstrating ILSs as they would be used in the classroom.

Figure 14 Educa Fair

2.2 Implementation Activities

2.2.1 Summary of implementation activities

The Finnish implementation activities of Go-Lab included i) workshops for the in-service teachers organized in our TTI, ii) Go-Lab and inquiry-learning thematized training for pre-service teachers and iii) exemplary lessons including training for the in-service teachers in the field. **Table 9** provides an overview of these events.

Table 9. Next-Lab Implementation Events - Finland

Title	Location	Date	Description
Go-Lab workshop	Turku	08.01.2019	1 h demonstration + hands-on workshop of Go-Lab basics
Go-Lab Workshop	Turku	20.01.2019	3 hrs workshop on Go-Lab basics
Go-Lab Workshop	Turku	21.01.2019	2 hr workshop and exemplary lesson on Go-Lab basics
Planning session with local teacher trainers for using Go-Lab in Teacher Training at Rauma Campus	Rauma	24.01.2019	2 hrs introductory session to general and possibilities of Go-Lab

Title	Location	Date	Description
Inquiry-based learning and Go-Lab	Rauma	11./12./13./15.2.2019	5 x 3 hrs training for the pre-service teachers
Go-Lab Workshop	Turku	26.02.2019	3 hrs workshop on Go-Lab basics
Go-Lab Workshop	Turku	05.03.2019	3 hrs workshop on Go-Lab basics at a local school
One-on-one online training	Turku	18.03.2019	1 h Skype training
Go-Lab workshop	Hämeenlinna	20.03.2019	1 h introduction to Inquiry-based learning and 2 h workshop on Go-Lab
Go-Lab Workshop	Turku	26.03.2019	3 hrs workshop on Go-Lab basics
One-on-one training	Turku	01.04.2019	1 h Training for the ICT tutor teacher supporting teachers in the use of ICT in education
Simulation and games in education - course	Turku	02.04 – 08.05.2019	Introduction to simulations in education. IBSE theory, requirements for integrating simulations in education. Introduction to the go-lab environment and hands-on go-lab/graasp workshops. (re)Designing ILS assignment
Example lesson + training	Vehmaa	06.05.2019	2 hrs lesson + 1h training
Collaborative planning with Go-Lab teacher team	Turku	04.06.2019	1,5 h time for planning of the Go-Lab team concept for the fall semester
Using Inquiry-based learning and Go-Lab in education	Raisio	07.08.2019	3 hrs workshop for in-service teachers on inquiry-learning and Go-Lab

Title	Location	Date	Description
Collaboration	Turku	13.8.2019	Start of the academic year. Designing collaboration between the school and the Next-Lab team.
Using Go-Lab in education for pre-service teachers specializing in ICT	Turku	03.10.2019	2 hrs workshop on how to use Go-Lab in a school environment.
Planning and assessing digital materials and learning environments - course	Turku	10.09 – 09.12.2019	Go-Lab introductory training and differentiating 8 ILSs on a course for digital teaching and learning minor studies
One-on-one training	Turku	25.10.2019	1 h training for a teacher interested in using Go-Lab in her classroom
Project course on digital learning and teaching	Turku	October – December 2019	Planning and executing Go-Lab sessions for 6th-grade-students.
Student counselling	Turku	October 2019	Guiding TTI students on how to use Graasp and Go-Lab
Mentoring	Turku	01.11.2019	Coaching for two teachers on using Go-Lab in a classroom more extensively.
Exemplary lesson	Turku	04.11.2019	2 hrs exemplary lesson in using Go-Lab with special needs students.
Collaboration	Turku	12.11.2019	Meeting with the team of “Next-Lab teachers” of Aurajoki school
Exemplary lesson	Turku	20.11.2019	2 hrs exemplary lesson + training for teachers
Exemplary lesson	Turku	28.11.2019	2 hrs exemplary lesson + training for teachers
Exemplary lesson	Turku	29.11.2019	2 hrs exemplary lesson + training for teachers
Collaboration and training	Turku	3.12.2019	1 h training for teachers interested in using Go-Lab in their classroom in collaboration with team of "Next-Lab teachers"

Title	Location	Date	Description
Exemplary lesson	Turku	4.12.2019	Planning and executing Go-Lab sessions for 8th-grade-students.
Exemplary lesson	Turku	5.12.2019	2 hrs exemplary lesson + training for teachers
Exemplary lesson	Turku	9.12.2019	2 hrs exemplary lesson + training for teachers

2.2.2 Target audience and impact

Workshops for the in-service teachers

During the spring, we organized an open workshop series at the University of Turku introducing Go-Lab for the local area teachers. The invitation to the workshops was disseminated by sending a promotional letter and registering form to schools in the Varsinais-Suomi area. Three 3-hour workshops were given after-school hours for local teachers on grades 3 to 9, once a month from January to March. The focus of these training sessions was on how to implement Go-Lab easily in the classroom. The content included exploring various ILSs and going through the implementation process from the discovering in the portal to the student assessment.

Go-Lab and inquiry-learning thematized training for pre-service teachers

Throughout the whole year, Go-Lab was integrated into several courses of Department of Teacher Education at the University of Turku. All courses included at least one lecture about the basics of inquiry-learning, followed by hands-on session(s) in Go-Lab on how to apply the theoretical knowledge in practice. The courses in the spring semester were Geography and Biology for 1st year pre-service primary school teachers and Simulation and Games in Education for international BA/MA students. In the fall semester, Go-Lab was implemented in two courses for pre-service teachers specializing in the use of ICT in education. On these courses, students differentiated existing ILSs and implemented their work in classrooms in collaboration with in-service teachers.

Exemplary lessons combined with training for in-service teachers

Both in the spring and fall semesters we held targeted exemplary lessons as a low threshold example case for teachers in schools not yet introduced to Go-Lab. The lessons were designed to introduce the practical use of inquiry-learning and Go-Lab in a classroom environment and so teacher could see what Go-Lab ILSs could bring to their classroom. We focused closely on how Go-Lab can benefit teachers and how they can start incorporating more inquiry-learning activities to their day to day routines. The invitation for these training events was disseminated through local county-level authorities as well as existing networks.

2.2.3 Outcomes

Workshops for the in-service teachers

Workshops for in-service teachers garnered some interest, but in total the amount of teachers reached was relatively low compared to the amount that was reached out to. From the discussions with teachers who attended these events and also teachers met elsewhere, we have come to understand that in the Finnish context such training events are difficult for teachers. The reasons for this are myriad, but it seems that it is difficult to get Finnish

teachers to attend in-service training events outside of their institutions and/or outside of working hours during the regular school year. Combined with the experience of the workshop that was organized in August for the teachers of the municipality of Raisio just before the start of the new school year, it has become clear that the best timeframe for these kind of workshops is just before the beginning of the school year. During this period, just before the students arrive, teachers often have training events at their schools or as part of larger training events organized for all teachers in the municipalities that are paid for by their employers or the municipality.

Go-Lab and inquiry-learning thematized training for pre-service teachers

Through collaboration on the Geography and Biology course in the spring semester, we reached close to 100 pre-service teachers about to enter their first practicum period. As such, it was a good opportunity for us to present the Go-Lab ecosystem and encourage students to try out an ILS in a classroom during their practicum. Ideally, the introductory workshops would have been earlier in the academic year, as that would have provided us with the opportunity to set up more in-depth collaboration with the students. This would have allowed for coaching and co-creation lessons with the students with the emphasis on using Go-Lab in a comprehensive manner as part of their practicum. Nevertheless, this was an experience that has potential for further development in the future and lessons learned have been shared with the teachers in the ICT in education courses. In the Simulation and Games course students were allowed to work in different sized groups, which resulted in small groups that in the end did not have enough time to work out their (sometimes potentially rather nice) ILS ideas into complete ILSs. This experience was also shared with the teachers in the fall courses and will be taken into consideration also in the spring when the it is held the next time. It is important to note that none of these students are in-service teachers yet and that as such the real outcomes can only be expected to show once they are. Experiences with students implementing ILSs as part of their practice are nevertheless promising in that respect.

Exemplary lessons and training for the in-service teachers

The exemplary lessons and trainings reached around 150 students and 15 teachers. In practice, this method of reaching out to individual teachers proved to be quite successful compared to the workshops held at the university. Teachers in Finland are enthusiastic about collaborating with actors outside of their schools, as long as it means these actors are willing to come to the school, but maybe more importantly if they recognize the collaboration as one on a level playing field, and not as one in which someone from outside the classroom comes to tell what should be done in the classroom. The exemplary lessons do just that, they show someone teaching, not to tell them what to do, but to share an experience that they may also want to implement in their own classroom. The latter is very important in the Finnish context as teachers have a strong autonomy for planning and executing their teaching. Because of this strong autonomy, decisions made on other levels do not necessarily reach the actual classrooms easily. As such, approaching school headmasters or municipalities is not a guaranteed road to implementation of Go-Lab on a school level, though it can act as a good route of disseminating the basic ideas and potential that in combination with exemplary lessons could spark the real interest in individual teachers. As shown in the Aurajoki school case described below, this sparked interest in an individual teacher may transform into school wide adoption of Go-Lab.

In the case of Aurajoki school (see also the description in D5.5), starting from individual teachers that grew into an active Go-Lab teacher group, inquiry-learning has started to become an established part of the school's curriculum. This has now been recognized by

the school management who has granted each member of the group 40 hours of paid worktime to develop inquiry-learning methods and to help other teachers to adopt said methods. As such, it seems likely that the use of Go-Lab and inquiry-learning will spread to teachers outside of the Go-Lab teacher group. One key take-away message from this outcome is, that while it might seem inefficient to target and recruit individual teachers, the example shows that it may result in school wide adoption when these teachers disseminate the Go-Lab ecosystem within the organization.

2.2.1 Related materials

The promotional letter for the workshops organized for the local teachers.

TURUN YLIOPISTO
Kasvatustieteiden tiedekunta

GO-LAB

TUTKIVAA OPPIMISTA GO-LAB-YMPÄRISTÖSSÄ - TYÖPAJAT 2019

Tervetuloa tutustumaan Go-Lab-verkkoympäristöön (golabz.eu) sekä virtuaalisten laboratorioiden hyödyntämiseen tutkivan oppimisen tukena! Järjestämme talvella 2019 opettajille ilmaisia työpajoja, joissa muokataan valmiita Go-Labin materiaaleja tai suunnitellaan uusi kokonaisuus käytettäväksi omassa luokassa.

MIKÄ GO-LAB?

Go-Lab (golabz.eu) on verkkoportaali, joka koostuu valmiista oppimiskokonaisuuksista, jotka hyödyntävät erilaisia virtuaalilaboratorioita ja -applikaatiota. Portaaliin on koottu yli 500 erilaista laboratoriota sekä useita tutkivan oppimisen toteuttamista tukevaa työkalua. Oppimisympäristössä opettaja voi muokata jo olemassa olevia oppimiskokonaisuuksia tai luoda ja jakaa uusia oppimiskokonaisuuksia oppilaiden ja muiden opettajien kanssa. Go-Lab on käyttäjilleen ilmainen ja soveltuu sekä peruskoulun, että toisen asteen opetukseen.

OHJELMA

1) Go-Lab-ympäristön esittely
2) Esimerkkimateriaalien kokeilu
3) Oman materiaalin valmistelu käytettäväksi luokassa

Työpajat ovat sisällöltään yhtenevät. Voit osallistua yhteen tai molempiin työpajoihin.

KENELLE?

Työpajat soveltuvat parhaiten 3-9-luokilla ympäristöoppia tai luonnontieteitä (biologia, maantieto, fysiikka, kemia...) opettaville opettajille tai muuten aiheesta kiinnostuneille.

» www.golabz.eu

HORIZON 2020 The EU Framework Programme for research and Innovation. Project Number: 731685

TYÖPAJOJEN PÄIVÄMÄÄRÄT JA SIJAINTI

Ti 29.1. klo 16-19 @ Edu357a
Ti 26.2. klo 16-19 @ Pub431

Työpajat järjestetään Turun yliopiston EduCariumilla ja PubliCumilla (Assistentinkatu 5). Paikalla opasteet.

KOULUTTAJINA

Go-Lab-tiimi / Turun Opettajankoulutuslaitos

ILMOITTAUTUMINEN (PAIKKOJA RAJOITETUSTI)

bit.ly/golab_koulutus2019

LISÄTIEDOT

Projektitutkija Miikka Korventausta, miikor@utu.fi

Tervetuloa!

Esimerkkimateriaali *Skeittaaja* 4-6-luokkalaisille

Figure 15 Promotional letter to teachers

2.3 Website, Newsletter and Social Media

2.3.1 Website

In Finland, we provide a page about Next-Lab on the website of University of Turku as one of the projects under the science learning heading (picture below, https://www.utu.fi/en/units/edu/units/okl/research/themes/science-learning/Pages/Next-Lab.aspX). It includes information about the project, links to the main site of the project and our contact details for training requests.

Figure 16 Finnish Next-Lab page

2.3.2 Social Media Channels

At this point, the University of Turku does not have Next-Lab/Go-Lab specific social media accounts. However, Go-Lab was disseminated through Facebook groups for the pre-service teachers on all levels of education in the University of Turku at the Turku campus and at the Rauma campus. Those teachers who have opted in for receiving the general newsletter also receive the newsletter from the project.

Occasionally, the project was disseminated through a personal twitter account.

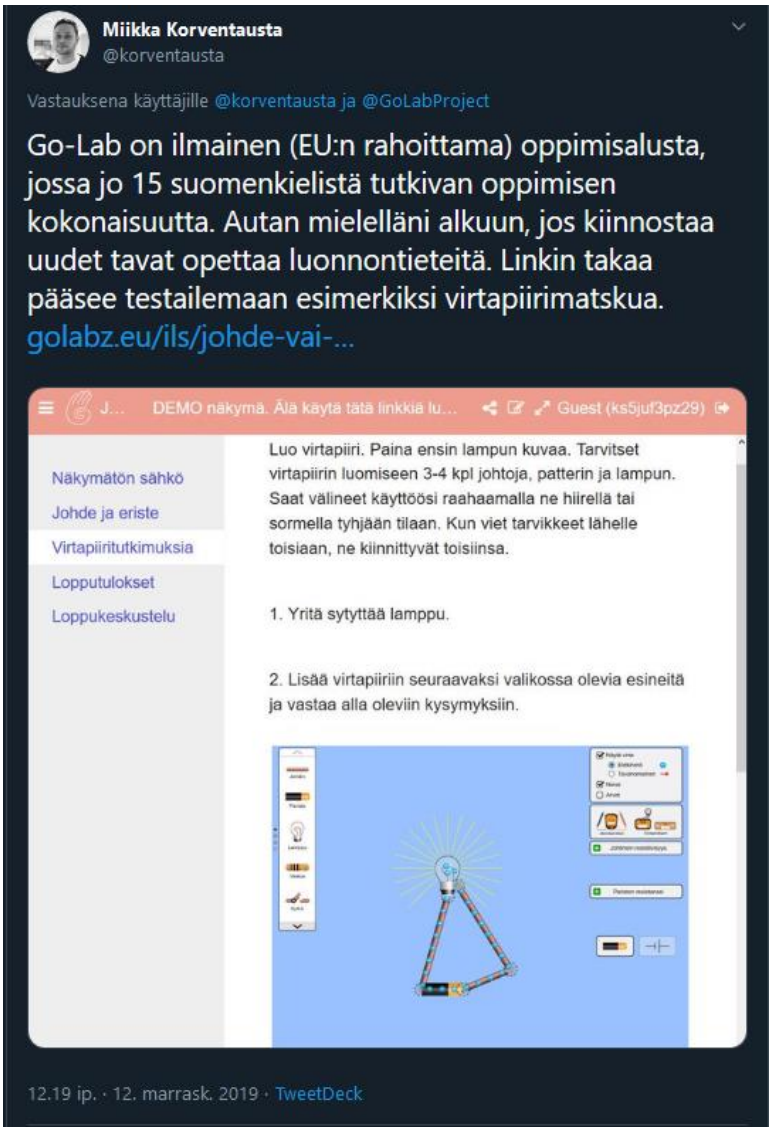


Figure 17 Twitter dissemination

3. National dissemination and implementation report Germany

3.1 Dissemination Activities

3.1.1 Summary of dissemination events

During Year 3 of the project, IMC's dissemination activities aimed at introducing the Go-Lab ecosystem to a wide range of stakeholders, with the aim to enable future cooperation possibilities in Germany. The Next-Lab project was nominated for the DELINA 2019 award, which gave it a platform at the LEARNTEC exhibition to disseminate the project to a great number of stakeholders and establish new networks with potential future partners in Germany such as Pearson publishing house and the state media centre (Landesmedienzentrum) Baden-Württemberg. IMC also established a new contact with an international school in Saarbrücken the German-French Secondary School, where STEM

teachers were introduced to the Go-Lab ecosystem. Furthermore, IMC was invited as a keynote speaker at the Day of Sciences 2019 (Tag der Naturwissenschaften) and was the host of the Autumn Meeting for School-Business (Herbsttreffen Schulewirtschaft Saarland), where policy makers and educational organizations were introduced to the Go-Lab ecosystem. Educators and teachers showed great interest in the Go-Lab ecosystem and new contacts were established during these events, such as the contact with the State Institute for Pedagogy and Media (Landesinstitut für Pädagogik und Medien) in Saarland. Follow-up with some of the established contacts has already started, whereas additional activities are planned with others.

Table 10. Next-Lab Dissemination Events - Germany

Title	Location	Date	Description
DELINA 2019 at LEARNTEC	Karlsruhe, Germany	29.01.2019 till 31.01.2019	The DELINA award is part of LEARNTEC, Europe's leading digital learning exhibition. Next-Lab represented by IMC, was nominated in the category of Early Childhood and School Education and was offered a booth in the exhibition. The results were announced on the second day of the exhibition, where Next-Lab won third place of the DELINA 2019 award.
Pearson Publishing House Germany	Online Meeting (Germany)	18.02.2019	Pearson Group, Germany showed interest in Go-Lab, the use of Labs and creation of content suitable to their digital books and content creation. An online meeting was set between representatives from Pearson and IMC, where the Go-Lab ecosystem was presented, and discussions on how it can be integrated in digital books and learning content were held.
Deutsch-Französisches Gymnasium Saarbrücken (German-French Secondary School)	Saarbrücken, Germany	22.02.2019	IMC contacted the Deutsch-Französisches Gymnasium Saarbrücken (the German-French Secondary School in Saarbrücken) and held a presentation at the school to introduce the Go-Lab ecosystem to a group of STEM teachers.
Tag der Naturwissenschaften 2019 (Day of Sciences 2019)	Baden-Württemberg, Germany	25.09.2019	The Day of Sciences is part of the STEM teacher training events for middle and secondary school teachers in PH Weingarten, Baden-Württemberg, Germany. During the event, presentations and workshops related to STEM education are offered. Next-Lab's NEC Germany was invited as a keynote speaker to present the Go-Lab ecosystem to the participants.

Title	Location	Date	Description
Herbsttreffen: Schulewirtschaft Saarland **(Autumn Meeting: School-Business Saarland)**	Saarbrücken, Germany	04.11.2019	Saarland's Herbst Schulewirtschaft is a network of educational policymakers, organizations, schools and companies that aim at establishing a bridge between school life and the workplace. With focus on digitizing schools, universities and preparing students for their future careers, the autumn's meeting was held at IMC, where Next-Lab's representative, introduced the Go-Lab ecosystem and its potential in transforming STEM education.

3.1.2 Target audience and impact

IMC's dissemination and networking activities targeted different stakeholders in Year 3 of the project, with the aim to establish new cooperation opportunities. For instance, being nominated for the DELINA award, Next-Lab was presented at the LEARNTEC 2019 exhibition, which had 11,600 visitors. LEARNTEC exhibitors included educational organizations and companies in the field of school, university and corporate education, where they presented their products, services and solutions. During the three days of the exhibition, the Go-Lab ecosystem was presented to interested visitors, with several networking opportunities with other exhibitors established. For instance, contact to Pearson Publishing House, as well as educational organizations in Baden-Württemberg were established during the exhibition. Discussing new cooperation possibilities with other companies and educational organizations, such as publishing houses and eLearning content creators can support Next-Lab's exploitation plan. The online meeting held with Pearson Publishing House in Germany included different types of representatives such as project managers, a digital producer, an editorial lead, and content creators. Cooperation opportunities with Pearson is planned to be followed-up.

Reaching out to policy makers, governmental representatives, teacher training institutes, educational organizations and educators has also been important for the dissemination activities in Germany. For example, at the Day of Sciences, the Go-Lab ecosystem was presented to almost 100 attendees, including teachers, educators and governmental representatives, who showed interest in the Go-Lab ecosystem and its potentials in STEM classes. The Go-Lab Ecosystem received very positive feedback and some teachers expressed the wish to start using it immediately. At the autumn meeting of the School-Business in Saarland, a group of policymakers, companies' representatives, teacher training institutions, teachers, and students got together to share their experiences and vision on the digitization of schools, careers and the workplace in Germany.

3.1.3 Outcomes

The Go-Lab ecosystem has been disseminated to several target groups in Germany, with more focus on Saarland and Baden-Württemberg. Future cooperation with companies, STEM networks and teacher training institutes in these two regions are planned. These include discussions of new regional, national and international Go-Lab related projects, as well as the presentation of services and products that Next-Lab's exploitation plan offers, such as commercial teacher trainings and professional content creation, among others.

3.1.4 Related materials

Next-Lab print materials, roll-up, poster, and PowerPoint slides (where applicable).

4. National dissemination and implementation report Portugal

4.1 Dissemination Activities

4.1.1 Summary of dissemination events

NUCLIO has successfully met with groups of science teachers in schools to promote the Next-Lab project and offer support for teachers who were willing to start using the Go-Lab Ecosystem. And as always, NUCLIO disseminates the Next-Lab project in all events that it participates in, such as science fairs, teachers' meetings, talks in conferences and courses/workshops of other projects that have some affinity with Next-Lab.

Table 11. Next-Lab Dissemination Events

Title	Location	Date	Description
Science teachers meeting at school	Águeda	9th January 2019	During the science teachers group meeting at school, a member of NUCLIO (also teacher at that school), introduced the Next-Lab project to the group and proposed to have teachers using the Go-Lab ecosystem still this school year.
Science teachers meeting at school	Oliveira do Bairro	10th January 2019	During the science teachers group meeting at school, a member of NUCLIO (also teacher at that school), introduced the Next-Lab project to the group and proposed to have teachers using the Go-Lab ecosystem still this school year.
Science teachers meeting at school	Marco de Canaveses	9th January 2019	During the science teachers group meeting at school, a member of NUCLIO (also teacher at that school), introduced the Next-Lab project to the group and proposed to have teachers using the Go-Lab ecosystem still this school year.
Science teachers meeting at school	Torres Novas	17th January 2019	During the science teachers group meeting at school, a member of NUCLIO (also teacher at that school), introduced the Next-Lab project to the group and proposed to have teachers using the Go-Lab ecosystem still this school year.
Science teachers meeting at school	Cascais	15th October 2019	NUCLIO organized several astronomy workshops for students at the school and grasped the opportunity to introduce the Next-Lab project to the teachers and offer

Title	Location	Date	Description
			support for those who are willing to use the Go-Lab Ecosystem.
Teacher Training Course: "Teachers and students in the 21st century: inquiry and interdisciplinary learning	Madeira	15th March 2019	The Next-Lab project was introduced to the teachers (~20) participating in this teacher training course.
Teacher Training Course: "Teachers and students in the 21st century: inquiry and interdisciplinary learning	Azores	22nd March 2019	The Next-Lab project was introduced to the teachers (~15) participating in this teacher training course.
Teacher Training Course: "Teachers and students in the 21st century: inquiry and interdisciplinary learning	Cascais	11th September 2019	The Next-Lab project was introduced to the teachers (~20) participating in this teacher training course.
Science on Stage Festival 2019	Estoril	31st October – 3rd November 2019	The Science on Stage festival brings together science teachers (~400) from all over Europe to exchange best practice teaching ideas and concepts with colleagues from more than 30 countries in the biggest science teaching European festival. There were roll-ups in exposition and flyers were handed out. There was also a Go-Lab challenge that had participants use the GRAASP platform in a fun way.
Visit to schools	Mongolia – several locations	13th – 18th June 2019	The university of Ulan Bator organized an itinerary for NUCLIO to go to 5 schools and do workshops. NUCLIO introduced the Next-Lab project to the teachers (~10/school) in these schools.
Global Hands-On Universe Conference	Haute-de Provence	26th - 28th August	NUCLIO disseminated the Next-Lab project during the annual G-HOU conference (~100 participants).

4.1.2 Target audience and impact

NUCLIO has strategically put its efforts in disseminating the Next-Lab project to groups of teachers from the same school and was successful in having several meetings with the science groups of several schools. This dissemination led to teacher trainings in several schools.

Science teachers from the same school are also the target audience when the dissemination is made within other teacher training sessions since there are usually groups of teachers from the same school. Being able to relate the Next-Lab project with the training courses has a great impact and seems to lead teachers to the Go-Lab Ecosystem.

In the case of the Science on Stage Festival 2019, there were almost 500 teachers, from over 30 countries, participating in the event. They were mostly Science teachers, from all school levels, and there was a great interest in knowing more about the project.

As for the Global Hands-On Universe conference, there were teachers, educators and science researchers with interest in education.

4.1.3 Outcomes

The most striking outcome was the interest of several schools in having training courses and workshops on Go-Lab. The meetings with the science teachers' group of schools led to further training.

In general, the dissemination events provided many contacts of teachers interested in knowing more about the project and creating accounts on Go-Lab.

4.1.4 Related materials

4.2 Implementation Activities

4.2.1 Summary of implementation activities

NUCLIO held teacher training certified courses of 50 hours in different parts of the country. NUCLIO has also promoted several short workshops within meetings and festivals.

Table 12. Next-Lab Dissemination Events

Title	Location	Date	Description
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Vila Real	December 2018 - May 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Águeda	January 2019 - May 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Oliveira do Bairro	January 2019 - May 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Lagoa	December 2018 - June 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Torres Novas	February 2019 - May 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Lamego	February 2019 - July 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.

Title	Location	Date	Description
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Marco de Canaveses	March 2019 - June 2019	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Seia	October 2019 - May 2020	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Teacher training course "Go-Lab: online labs and skills for the 21st century"	Lisbon	November 2019 - May 2020	This teacher training course is certified by the Ministry of Education and reflects on the teachers' careers. There are 25 hours of training with the teachers present, and they are obliged to work another 25 hours on their own.
Workshop "Go-Lab, Inquiry Scenarios Using Online Labs"	Estoril	1st November 2019	This workshop was held within the Science on Stage Festival. It was a 1h workshop to show the Go-Lab Ecosystem and discuss its advantages.
Workshop "Astronomy Scenarios in Go-Lab"	Tenerife	16th July 2019	This workshop was held within the teacher training course "Astronomy Adventure in Canary Island". Astronomy scenarios in Go-Lab were explored in this 2h workshop.
Workshop "Astronomy Scenarios in Go-Lab"	Ulan Bator, Mongolia	10th – 13th June 2019	This was a 2 day workshop that was held at the University of Ulan Bator, for basic and secondary teachers, .
Workshop "Astronomy Scenarios in Go-Lab"	Provence	26th August 2019	This workshop was held within the conference "Global Hands-On Universe". Astronomy scenarios in Go-Lab were explored in this 2h workshop.

4.2.2 Target audience and impact

The certified teacher training courses were for middle and secondary science teachers. These courses provided time to explore the inquiry methodology and the Go-Lab Ecosystem quite thoroughly. They also had time to build their own ILS and were obliged to implement it with their students. These training courses had a big impact on the teachers and should leave them autonomous to continue using Go-Lab in their teaching. Moreover, most teachers in the different training courses belonged to the same school, which helps to implement a policy of Go-Lab usage in the school.

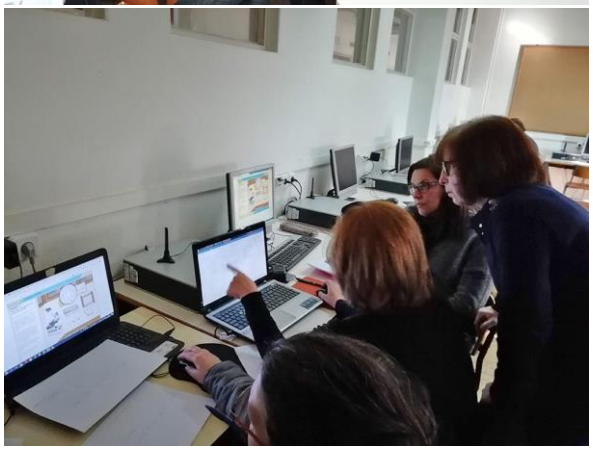
The other workshops were for international science teachers, also middle and high school teachers. Everyone created accounts on Graasp and showed great interest in continuing to explore the Go-Lab Ecosystem.

4.2.3 Outcomes

The teacher training courses has been very successful, not only because teachers implemented ILSs in their classrooms, but also because the number of ILSs in Portuguese has duplicated and now includes more subjects than before. This will lead to more teachers using already made ILSs and/or adapting the existing ones. This is very important because teachers feel that it takes time to create ILSs from scratch and it is much more effective to adapt existing ones that cover the subject there are teaching.

4.2.4 Related materials

Several pictures of teacher training courses and workshops promoted by NUCLIO in 2019.



NUCLIO
NÚCLEO INTERACTIVO DE ASTRONOMIA

GO-LAB

GO-LAB: LABORATÓRIOS ON-LINE E AS COMPETÊNCIAS PARA O SÉCULO XXI

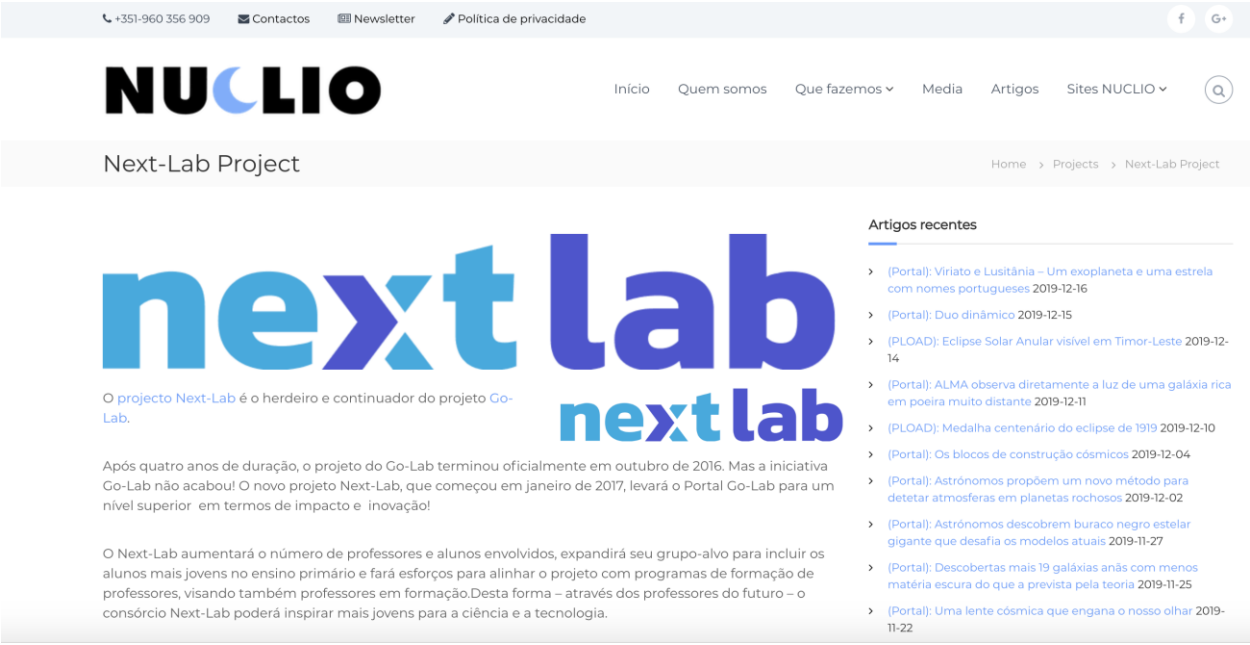
PROGRAMA

1 fevereiro 2019 (sex) - 3h	
8 fevereiro 2019 (sex) - 3h	
22 fevereiro 2019 (sex) - 3h	
2 março 2019 (sab) - 3h	
2 março 2019 (sab) - 3h30	
9 março 2019 (sab) - 3h	
9 março 2019 (sab) - 3h30	
24 maio 2019 (sex) - 3h00	

4.3 Website, Newsletter and Social Media

4.3.1 Website

The projects Next-Lab/Go-Lab appear in NUCLIO's website http://nuclio.org in the section of ongoing projects, with a description and a link to the official project site. We also announce the teacher training courses in our website.



4.3.2 Newsletter

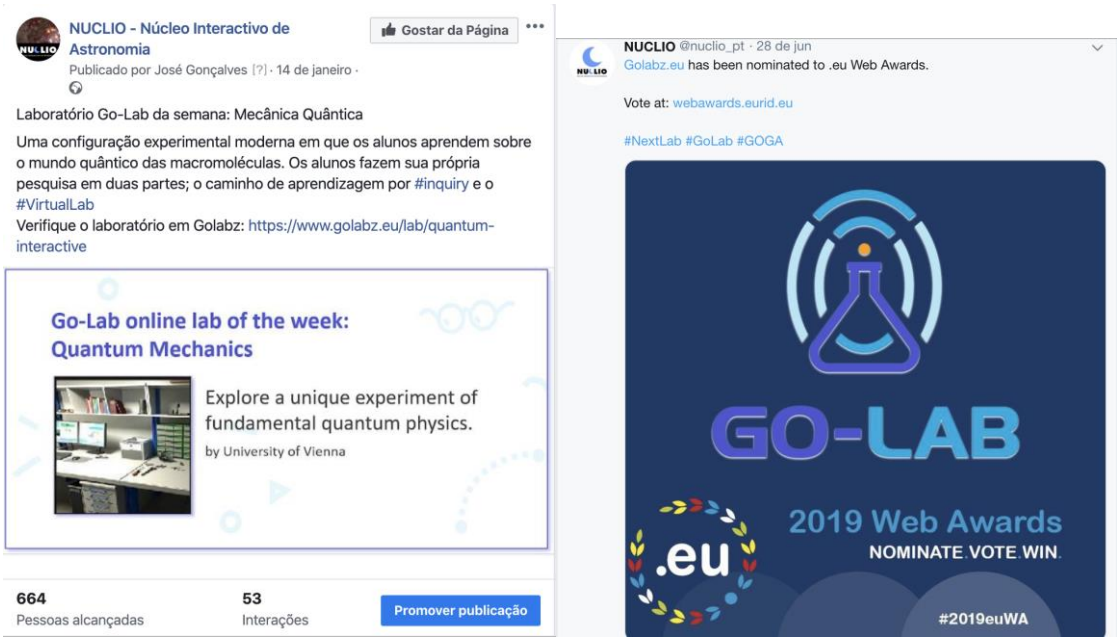
NUCLIO has disseminated the Next-Lab project through its own newsletter, which is written in Portuguese and has 4000 subscribers from not only Portugal but also other Portuguese speaking countries.

NUCLIO has also disseminated the Next-Lab project through the Galileo Teacher Training Program newsletter, written in English and with almost 7000 subscribers from all over the world.

4.3.3 Social Media Channels

Facebook, Twitter and Instagram are used to disseminate the Next-Lab project, including workshops and teacher training courses.

NUCLIO posts the "Resource of the week" which is a resource from Go-Lab (ILS or Lab) that relates to the curriculum that teachers should be teaching at that time of the school year. Teachers that are looking for materials for their upcoming classes will have the right resource from Go-Lab to use the following week(s).



4.3.4 Dissemination Channels Figures

Twitter followers	Facebook fans	YouTube channels view	LinkedIn group members	Newsletter	Website unique visitors	Instagram
100	8000			4000		500

5. National dissemination and implementation report The Netherlands

5.1 Dissemination Activities

5.1.1 Summary of dissemination events

In the table below a summary is given of the dissemination events in the Netherlands.

Table 13. Next-Lab Dissemination Events – The Netherlands

Title	Location	Date	Description
Leren onderzoeken met digitale labs	Noordwijker-hout	15-12-2018	Workshop at a conference for Physics teachers
Teacher training	Oldenzaal	05-03-2019	3-hour workshop
Course Innovative Technology-Based Learning Environments	Enschede	05-02 till 03-04-2019	Course consisting of seven 1,5 hour sessions

5.1.2 Target audience and impact

The Dutch dissemination strategy focuses on reaching new groups of users by means of workshops in combination with a first training in using Graasp on teacher conferences and other events where teachers meet. The main target audience were secondary teachers in STEM subjects, especially physics and pre-service teachers. The Course Innovative Technology-Based Learning Environments consists of several meetings (see Implementation activities). Another target group was researchers and teachers in higher education.

5.2 Implementation Activities

5.2.1 Summary of implementation activities

The main training activity is the course “Innovative Technology-Based Learning Environments” which consists of seven sessions of 1,5 hours. In the first part of these sessions’ information is given about topics like inquiry learning, Graasp, the use of videos, cognitive load etc. In the second part the participants work in groups on their own ILS. In total 34 participants joined the course this year.

Furthermore, there were several small workshops at teacher conferences. See previous chapter.

5.2.2 Target audience and impact

The main target audience were secondary teachers in STEM subjects, especially physics and and pre-service teachers. Another target group was master students in Educational Science and Technology.

5.2.3 Outcomes

In the elaborate course ten ILSs have been developed and tested with students of the target groups. Three of these are published on Golabz.

Team 1: Hydrophobic and hydrophilic properties of amino acids and their relation to protein folding, 5/6 VWO – pre-university education (NL)

http://graasp.eu/ils/5c6d30268e853c8532dc8a91/?lang=nl

Team 2: Balancing act, 2nd grade elementary school (NL)
http://graasp.eu/ils/5ca64faa6c00529224867978/?lang=nl

Team 3: Refracting, 10th grade (EN)
http://graasp.eu/ils/5c62e98f8e853c8532a57104/?lang=en

Team 4: Balancing act, 3rd grade elementary school (German)
http://graasp.eu/ils/5c8b9cb98e853c8532e1678c/?lang=de

Team 5: Electrical circuits, grade 3 and 4 (age 8 to 10) elementary school (NL)
http://graasp.eu/s/d9vsve

Team 6: Shadows, grade 4 (age 9 to 11) elementary school (NL)
http://graasp.eu/ils/5c7e6cee8e853c8532cc9d21/?lang=nl

Team 7: Ph-values, aspiring beauticians ROC level 4 (NL)
http://graasp.eu/s/1x11l0

Team 8: Electrical conductivity, grade 5 (10 to 11 years) elementary school (NL)
http://graasp.eu/s/j9o967

Team 9: Climate change, grade 5 and 6 elementary school (age 9 to 12), NL
http://graasp.eu/s/f0k578

5.2.4 Related materials

Three impressions of ILSs published on Golabz.eu:

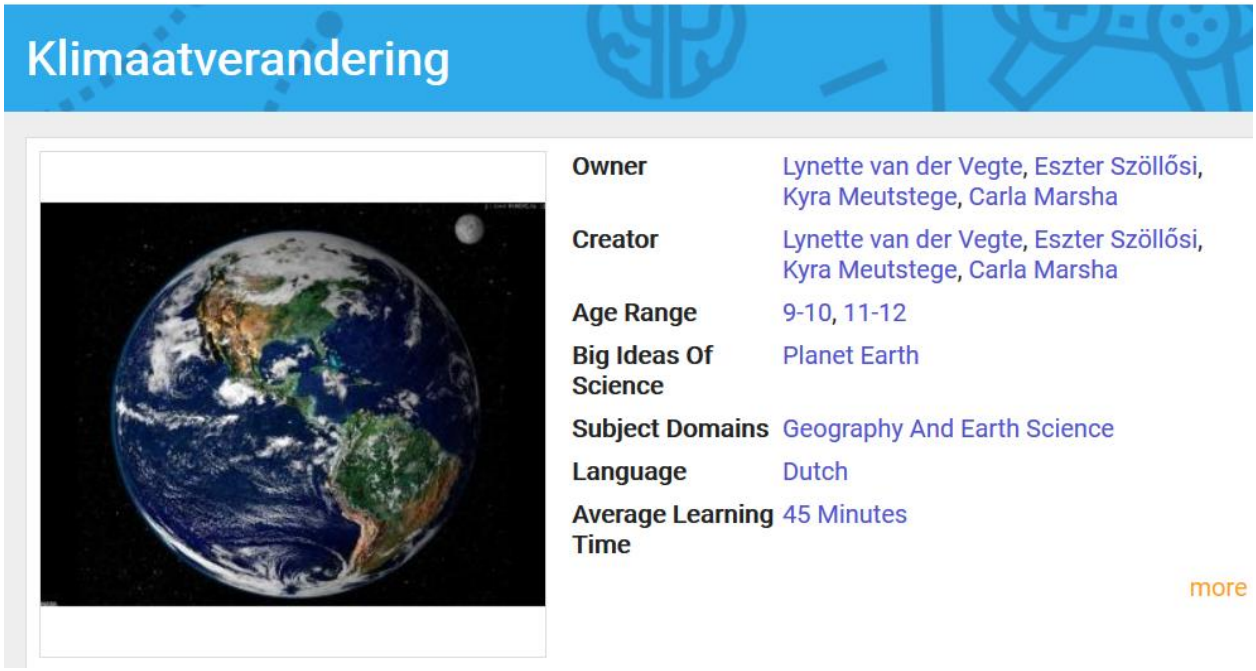


Figure 18: ILS published on Golabz.eu

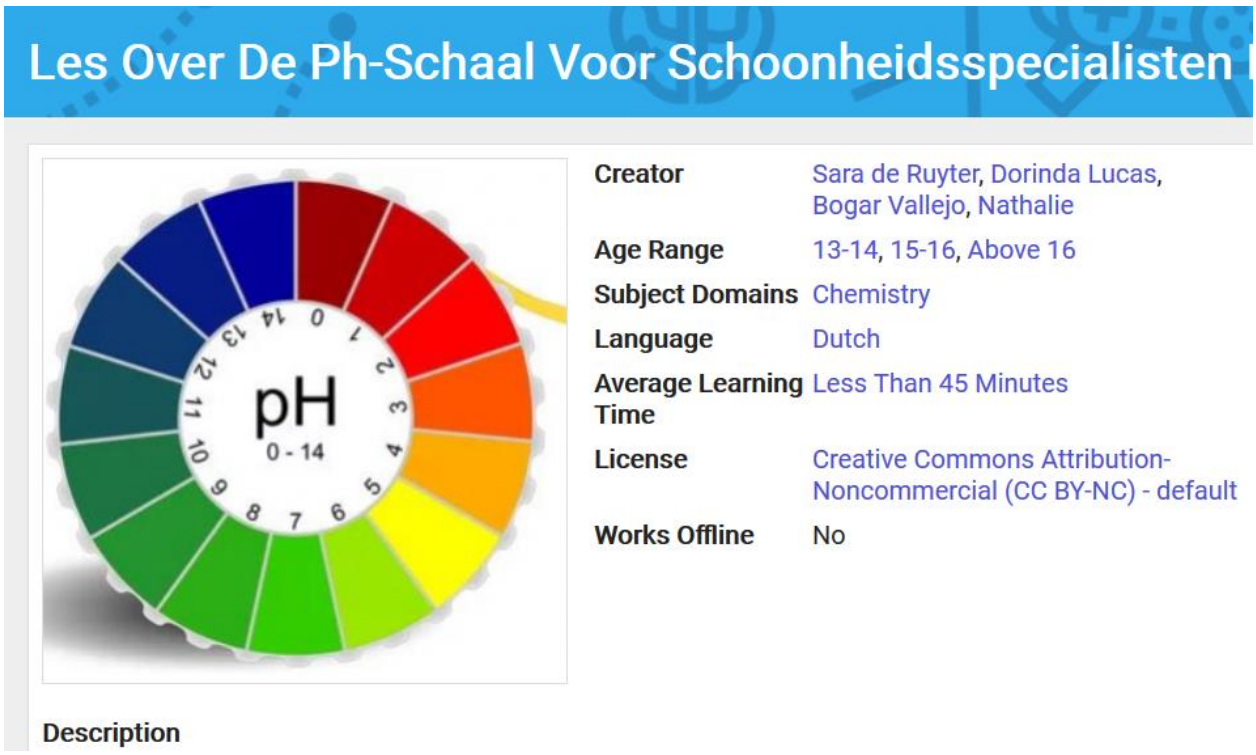


Figure 19: ILS published on Golabz.eu

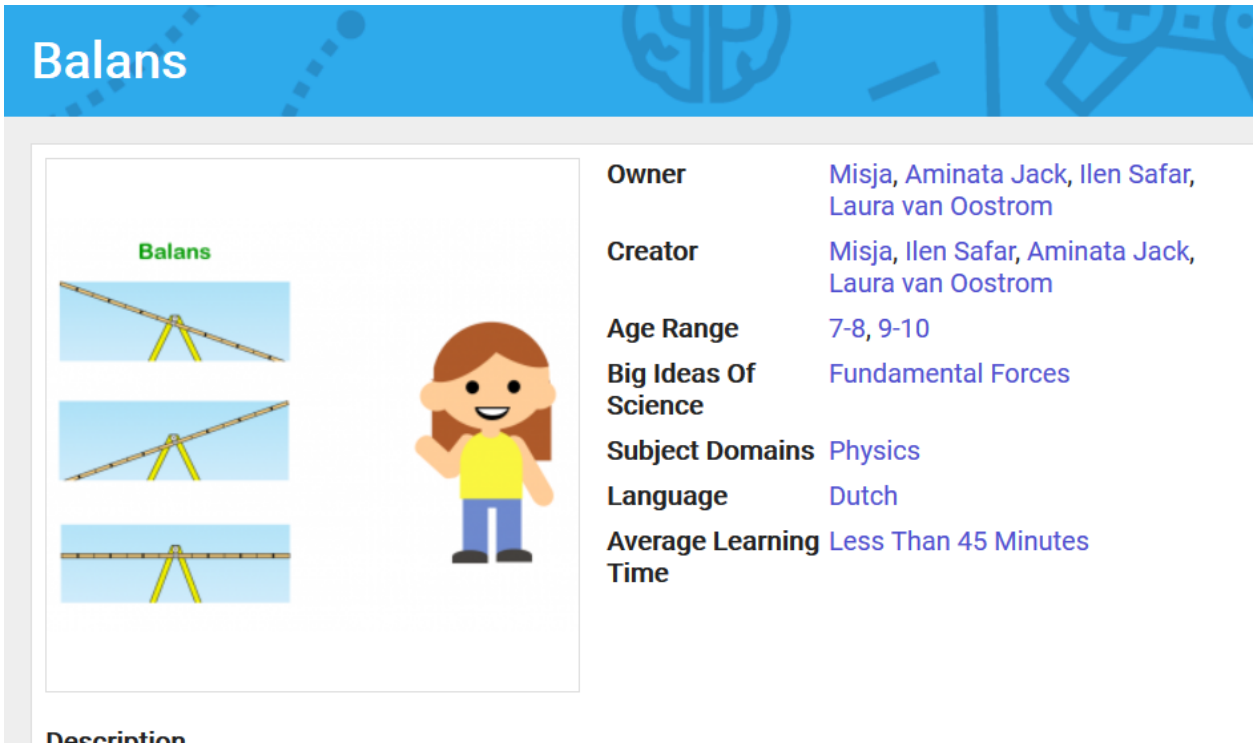


Figure 20: ILS published on Golabz.eu

5.3 Website, Newsletter and Social Media

We do not use specific social media aiming at the Dutch audience.

6. National dissemination and implementation report United Kingdom

6.1 Dissemination Activities

6.1.1 Summary of dissemination events

During the initial two years of the project the Leicester team mainly focused on combining dissemination events with participatory design activities to gather input from users in regard to Go-Lab services and tools.

For the third year of the project, the team conducted various dissemination activities for less experienced users with the main aims of: 1) giving hands-on experience to the participants of the event, or 2) engaging teachers and authorities in the future plans of the project.

Table 14. Next-Lab Dissemination Events – United Kingdom

Title	Location	Date	Description
Participatory Design session with ambassadors	Brussels	09/12/2017	Next-Lab PD workshop as part of the 18th Science Projects Workshop in the Future Classroom Lab.

Title	Location	Date	Description
ASE Conference	Birmingham – UK	10/01/2019	Presentation targeted to science teachers at the Europe's Largest Science Education CPD Conference.
Teacher Training Event	Leicester – UK	11/03/2019	Teacher familiarization with tools and artifacts in the Go-Lab ecosystem.
Next-Lab Training Session	Uppingham – UK	02/04/2019	Teacher familiarization with tools and artifacts in the Go-Lab ecosystem.
Teacher Training Event	Leicester – UK	08/04/2019	Teacher familiarization with tools and artifacts in the Go-Lab ecosystem.
School dissemination event	Biscay – Spain	27/05/2019 – 30/05/2019	Presentation and hands-on activities with Go-Lab resources to support 8 Physics classes at the "Etxebarri BHI" High School. A total of 156 students, 6 teachers and 2 authorities participated in the event.
School dissemination event	Ibarra - Ecuador	03/06/2019 – 07/06/2019	Presentation and hands-on activities with Go-Lab resources to support 8 Physics classes at "Pensionado Atahualpa" High School. A total of 122 students, 4 teachers and 1 authority participated in the event.
Next-Lab sustainability talks	Ibarra – Ecuador	10/06/2019	Demonstration of the functionalities of the Go-Lab ecosystem to a selected group of representatives and presentation about the opportunities for the "PUCE-SI" university with a potential involvement with the Next-Lab project. The event reached 4 lecturers of the university.
Next-Lab sustainability talks	Ibarra – Ecuador	11/06/2019	Demonstration of the Go-Lab ecosystem to several authorities, plus a presentation about the opportunities that the Town Hall could introduce for local schools, teachers and pupils by supporting the sustainability plans of the Next-Lab project. The event reached 2 delegates.
School dissemination event	Ibarra – Ecuador	17/06/2019 – 21/06/2019	Presentation and hands-on activities with Go-Lab resources to support 8 Physics classes at "Colegio Particular Oviedo" High School. A total of 233 students, 4 teachers and 3 authorities participated in the event.
Next-Lab sustainability talks	Quito – Ecuador	24/06/2019	Demonstration of the functionalities of the Go-Lab ecosystem to a selected group of representatives and short presentation about the opportunities for the "Escuela Politécnica Nacional"

Title	Location	Date	Description
			university with a potential involvement in the Next-Lab project. The event reached 3 lecturers of the university.
Next-Lab sustainability talks	Quito – Ecuador	25/06/2019	Demonstration of the Go-Lab ecosystem to several authorities, plus a presentation about the opportunities that the Ministry of Education could introduce for schools, teachers and pupils at a national level by supporting the sustainability plans of the Next-Lab project. The event reached 4 delegates.
School dissemination event	Leicester – UK	01/07/2019 – 12/07/2019	Presentation and hands-on activities with Go-Lab resources to support 8 Physics classes at the "City of Leicester College". A total of 208 students, 5 teachers and 1 authority participated in the event.
Poster presentation at EC-TEL2019	Delft University of Technology	17/09/2019	A scientific poster with research results obtained using Go-Labz online labs for lessons in which UK and Malaysian university students collaborated was presented at the fourteenth European Conference on Technology-Enhanced Learning. In the 1.5h session about a dozen conference participants were reached.
School dissemination event	Uppingham – UK	28/10/2019 – 11/11/2019	Presentation and hands-on activities with Go-Lab resources to support 5 Physics classes at "Uppingham School". A total of 115 students, 4 teachers and 1 authority participated in the event.

6.1.2 Target audience and impact

Most participants of the events organized by the University of Leicester had none or very little prior knowledge about the Go-Lab ecosystem, with the exception of the teachers attending specialized training in March and April 2019. Therefore, we consider having created a positive impact -both in the UK and abroad- by disseminating the project to new users.

The audiences reached with these events were mainly: authorities of schools and governmental institutions, secondary school students, and their in-service teachers.

6.1.3 Outcomes

In result to the school dissemination efforts made by the University of Leicester, there were over 800 students and 30 teachers exposed to the benefits of the Go-Lab ecosystem. Teachers were given an introduction to the features of the software and all students had the opportunity to experiment with an online lesson.

After the Next-Lab presentation at the Association for Science Education (ASE) conference, the ULEIC team was also asked to write a short science article in the School Science Review (https://www.ase.org.uk/resources/school-science-review). This allowed reaching a wider audience through the themed journal for science teachers in 11-19 education beyond the teachers attending the ASE conference.

Additionally, outcomes in regard to possible future collaborations and involvement of Ecuadorian universities and governmental institutions are yet to be confirmed as conversations are still in place.

6.1.4 Related materials

Several materials were produced for the dissemination events organized by the University of Leicester.

An example of the English version of the ILS used for school outreach can be found at:

https://graasp.eu/s/c79w5f

An example of the Spanish version of an ILS used for school dissemination can be found at:

https://graasp.eu/s/5tsez5

An example of slides used for school dissemination purposes is shown below:

Figure 21: Example of slides for school dissemination purposes

An example of slides used for other dissemination purposes is shown below:

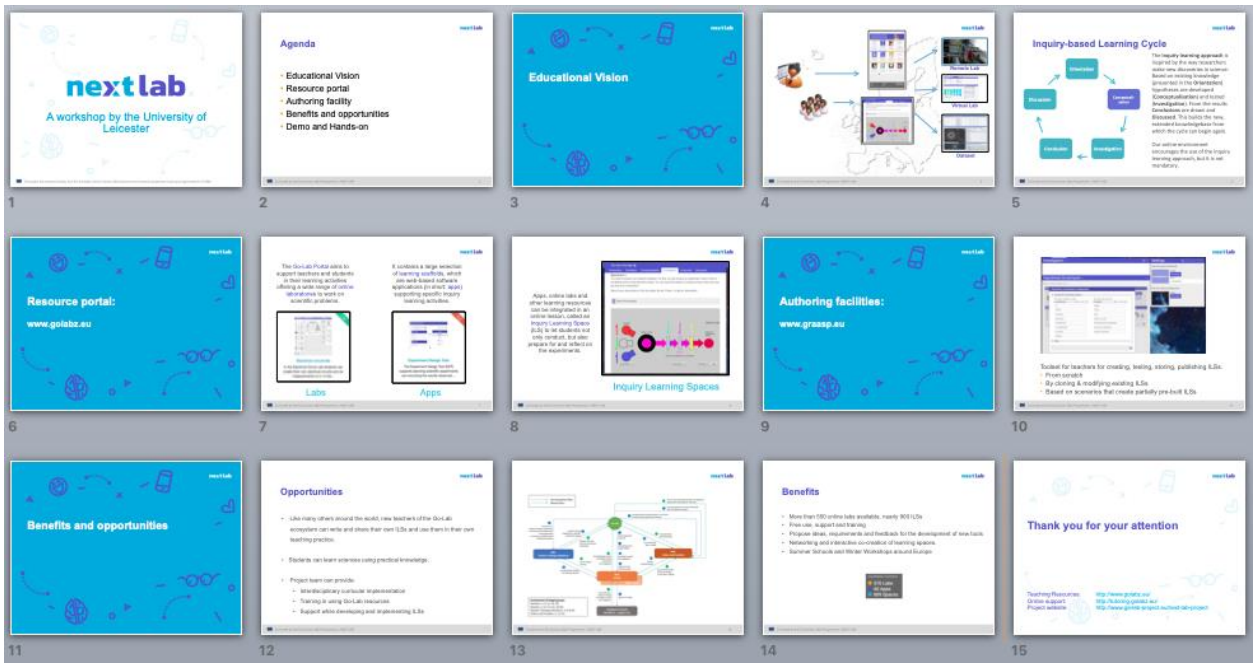


Figure 22: Example of slides for other dissemination purposes

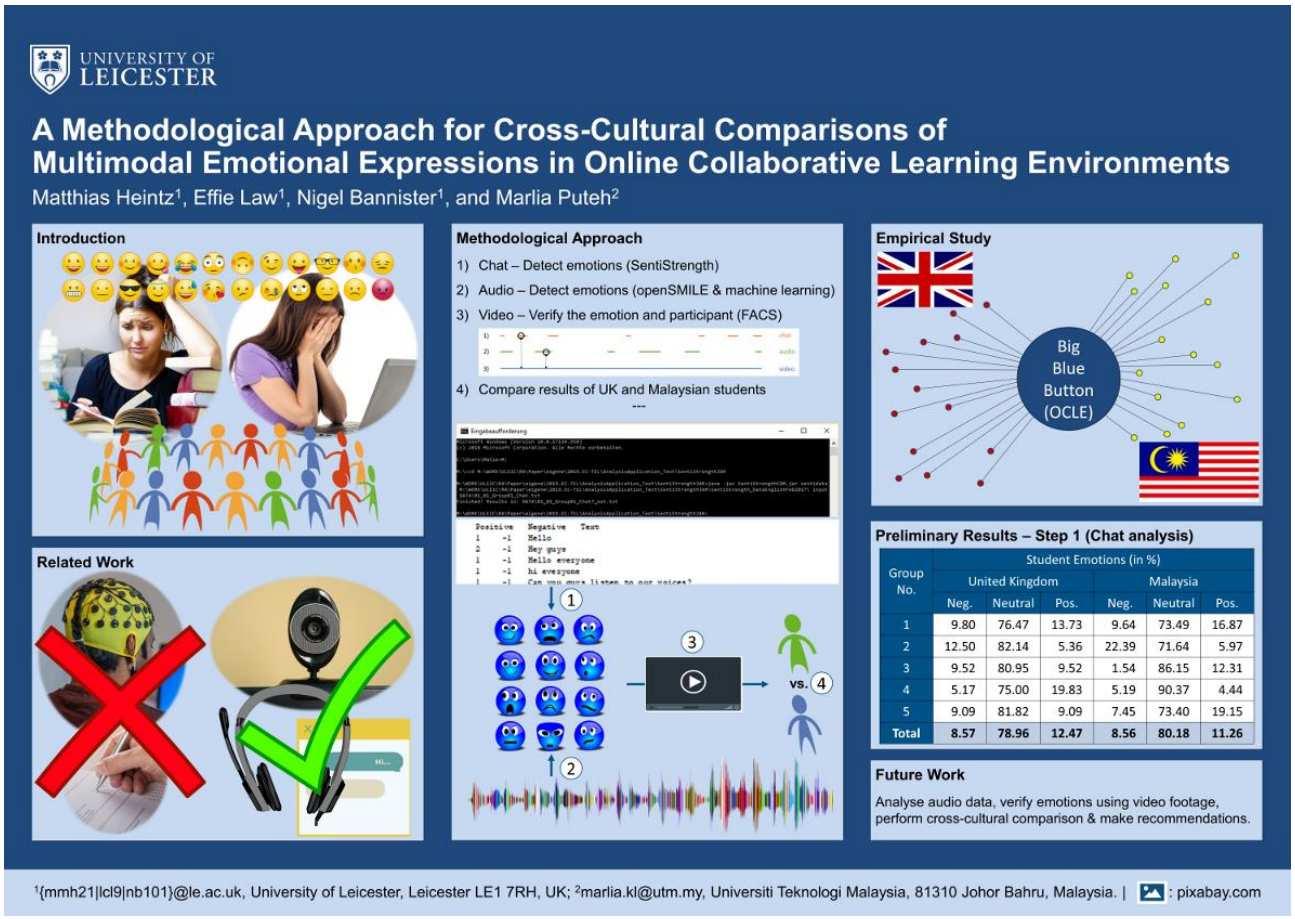


Figure 23: EC-TEL poster

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6.2 Website, Newsletter and Social Media

6.2.1 Website

The University of Leicester website was not used for Next-Lab dissemination purposes during the third year of the project.

6.2.2 Newsletter

Relying on the general project's outreach channels only. There are no ULEIC specific newsletters to report.

6.2.3 Social Media Channels

The ULEIC team did not use social media to disseminate the project, but some authorities posted content on their own channels regarding their interest in the Next-Lab project. For instance, Uppingham School used Twitter to talk about the presentation there given, and the Department of Informatics of the University of Leicester re-tweeted the post.

7. National dissemination and implementation report Estonia

7.1 Dissemination Activities

7.1.1 Summary of dissemination events

In the third year there were two dissemination events led by the University of Tartu introducing the Go-Lab ecosystem to a wider audience. One of the events was a local domestic event while the other was an international dissemination event.

Table 15: Next-Lab Dissemination Events - Estonia

Title	Location	Date	Description
Scientix Eesti konverents 2019	Tartu, Estonia	28.02.2019	Introduced Go-Lab to Estonian science teachers participating in a domestic Scientix conference.
18th International Conference on Web-based Learning (ICWL)	Magdeburg, Germany	23.09.2019	Presented the results of a study to educational researchers where Go-Lab was used to foster collaborative inquiry learning among 5th grade and 6th grade students (N = 134).

7.1.2 Target audience and impact

The target audience for the Tartu event was Estonian science teachers who were attending a Scientix conference. This conference was organized during school holidays in order to attract a large pool of science teachers from all around Estonia. Participants at the event were introduced to Go-Lab through a presentation and shown demonstrations of working with online labs in Go-Lab. About 20 participants attended. The second dissemination event was at the 18th International Conference on Web-based Learning (ICWL), which was held in Magdeburg, Germany. At this conference, UTE presented the work "Does Group Size Affect Students' Inquiry and Collaboration in Using Computer-Based Asymmetric Collaborative Simulations?" which involved using collaborative simulations from Go-Lab. There were about 60 international researchers in attendance.

7.1.3 Outcomes

Participants at the Estonian Scientix conference asked questions about how to best use Go-Lab in practice and an example inquiry learning space was demonstrated to them, allowing them to observe how an actual ILS was used in practice and see what students actually were asked to do. Participants at the ICWL conference event asked about when group size effects are most likely to moderate learning outcomes and how to best implement Go-Lab activities with large groups of students. The study we presented was implemented in an open-classroom setting where more than 60 students at the same time were working with the Go-Lab activity. Thus, there was an interest in learning about how to manage such a large sized classroom and how to organize the Go-Lab collaborative activity most effectively. The study presented at the conference has been published in the conference proceedings (see https://doi.org/10.1007/978-3-030-35758-0_14).

7.2 Implementation Activities

7.2.1 Summary of implementation activities

In the third year of Next-Lab we have implemented six teacher training activities. Two were workshops aimed at in-service teachers. The other four activities were part of preservice teacher education courses at the University of Tartu that integrated Go-Lab into instruction.

Table 16: Next-Lab implementations - Estonia

Title	Location	Date	Description
Workshop for teachers	Pärnu	03.04.2019	Three-hour professional development course for 15 in-service primary school teachers.
Preservice teacher education course	Tartu	27.02.2019 06.03.2019 03.04.2019	University of Tartu pre-service teacher education course SVHI.01.005 Inquiry Learning (20 registered students).
Workshop for teachers	Tartu	11.10.2019	Three-hour professional development course for 20 in-service primary and secondary biology teachers.
Preservice teacher education course	Tartu	24.04.2019	University of Tartu pre-service teacher education course SVHI.01.056 Õpetamine ja refleksioon (34 registered students).
Preservice teacher education course	Tartu	25.04.2019	University of Tartu pre-service teacher education course SVHI.01.028 Õpetamine ja refleksioon (24 registered students).
Preservice teacher education course	Tartu	27.08.2019	University of Tartu pre-service teacher education course SVHI.06.024 Collaborative learning (30 registered students).

7.2.2 Target audience and impact

The target audience for the workshops was in-service teachers and aimed to introduce Go-Lab to them through hands-on activities. The target audience for the four teacher education courses was preservice teachers who are learning about educational theories at the University of Tartu and must find practical ways of applying theory to classroom practice. They were also introduced to Go-Lab through active learning techniques. In addition, they were given the opportunity in a homework assignment to create an inquiry learning space and present it to their classmates.

7.2.3 Outcomes

The University of Tartu courses SVHI.01.005, SVHI.01.028 and SVHI.01.056 introduced Go-Lab through initial training in creating an inquiry learning space and then provided them with an opportunity to create their own learning space as part of a homework assignment. High-quality inquiry spaces made for the homework assignment were reviewed by us and recommended for publication to the GoLabz repository in order to increase the number of Estonian language inquiry learning space examples. The in-service teacher workshops resulted in the participating teachers creating Graasp accounts and gaining confidence to implement a learning space with their own students.

7.2.4 Related materials

8.

Figure 24: Presentation of Go-Lab at the Scientix Estonia conference on February 28, 2019

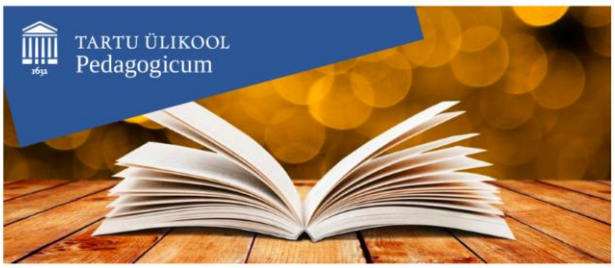
Figure 25: International Master's students at the University of Tartu on August 27, 2019 learning the Go-Lab ecosystem as part of the course SVHI.06.024 Collaborative Learning

8.1 Website, Newsletter and Social Media

8.1.1 Website

In addition to the University of Tartu's Centre for Educational Technology research group website (https://www.ht.ut.ee/en/haridustehnoloogia-keskus), where a description of the Next-Lab project and people involved with this project is provided, Next-Lab was mentioned

by the University of Tartu's Pedagogicum (https://www.pedagogicum.ut.ee/et/pedagogicumist). More specifically, the digital newsletter of the Pedagogicum described the attendance of University of Tartu researchers at the final project meeting and emphasized that the Go-Lab Ecosystem will continue after the end of the project and that training opportunities will still be available. Readers of this newsletter include not only university teaching staff but also alumni from the Institute of Education and teachers who have volunteered to subscribe to this free newsletter.



Õpetajahariduse infokiri

Next-Labi viimane projektikoosolek peeti Hollandis

Tartu Ülikooli haridusteaduste instituudi haridustehnoloogia keskuse inimesed osalesid 14. - 15. novembril https://nextlab.golabz.eu/ viimasel koosolekul, mis toimus Hollandis Twente Ülikoolis. Koosolekut juhatas haridustehnoloogia ja uurimusliku õppe mainekas uurija, professor Ton de Jong, kes on Euroopa Komisjoni rahastatava Horisont 2020 projekti Next-Lab koordinaator.

Projektiga arendati edasi Go-Labi keskkonda, mis võimaldab õpetajatel veebipõhistes laborites ja eri rakendustes koostada uurimusliku õppe digimaterjale. Koosolekul kinnitati, et Go-Lab jääb kõigile õpetajatele ja õpilastele iseseisvaks avastamiseks kättesaadavaks. Jätkuvad ka õpetajakoolitused ja teadustöö.

Info: Leo Siiman, leo.siiman@ut.ee

Figure 26: Snippet from the University of Tartu Pedagogicum's digital newsletter describing the Next-Lab final project meeting and informing readers that Go-Lab Ecosystem will continue after the end of the project and that training opportunities will still be available

9. National dissemination and implementation report Cyprus

9.1 Dissemination Activities

9.1.1 Summary of dissemination events

During the third year of the Next-Lab project, two dissemination events were carried out in Cyprus (see Table 17). Both events had the same overall structure and were held in two local schools (one secondary school and one primary school). Our group was invited to offer a presentation about Go-Lab by the schools' staff. The first event was organized in the

context of a mandatory series of professional development workshops that in-service teachers must do during the school year. During the day of these events, students do not attend school so that teachers can participate in workshops of their preference. The second event was organized in the context of the mandatory weekly staff member meeting of schools. We had been invited to present Go-Lab in this meeting, by a teacher who participated in one of our second-year training workshops. The same primary teacher implemented an ILS in her classroom (see Annex 2, Cyprus).

During these events we briefly presented the Go-Lab platform, highlighting how users can search for online labs, apps and ILSs. Because of the limited duration of the events, we had provided only basic information on how a user can create an account in Graasp and build or adapt ILSs. To do so we presented the Go-Lab support page and we explained what information and supporting materials can be found there. One main difference between the two events was that in the second one we devoted some time to explain the inquiry-based learning and the inquiry cycle. This was a special request of the teacher who invited us to the event.

Table 17. Next-Lab Dissemination Events - Cyprus

Title	Location	Date	Description
Go-Lab: A platform for searching online labs and Inquiry Learning Spaces for Science, Mathematics and Technology	Nicosia, Cyprus	12/12/2018	Participants (10 local secondary school teachers) were introduced to the Go-Lab portal and learned how to search for online labs and inquiry learning spaces through a presentation/demonstration.
Go-Lab: An innovative tool for Science, Technology and Mathematics Teaching and Learning	Limassol, Cyprus	20/02/2019	Participants were 9 local primary school teachers. A presentation of the Go-Lab platform, a demonstration on how to search online labs and apps, an explanation of the inquiry cycle and demonstrations of example ILSs were made.

9.1.2 Target audience and impact

This year our target audience were in-service secondary and primary school teachers. In the first event, the school's science teachers (Biologists, Chemists and Physicists) participated and in the second event, all teachers of the school attended the meeting. The fact that both were invited events is an indicator of the strong network that we built with teachers and schools. The fact that only two events were carried out during the third year can be considered as a result of the small size of the population of Cyprus. Go-Lab is disseminated in Cyprus since 2015 and until today a large proportion of teachers in Cyprus already heard about it and, of course, some of them have been trained on how to use it.

9.1.3 Outcomes

All participants acknowledged the Go-Lab platform as a strong innovative tool for science education. The secondary school science teachers were very enthusiastic with the amount of the available resources and they said that they will definitely use Go-Lab to search for

online labs and activities. However, they expressed their concerns that in order to learn how to create their own activities they need to devote enough time and they agreed that intensive training is needed to do so. In the case of the primary school teachers, not all of them teach STEM-related topics, so they did not feel very comfortable to express their ideas about using Go-Lab in the classroom. However, the teacher who invited us in the event was very motivated to design and implement her own activities, thus, after the event, she was in close collaboration with our group and she received support for her ILS implementation.

9.1.4 Related materials

The Figures below present a selection of slides from the two dissemination events.

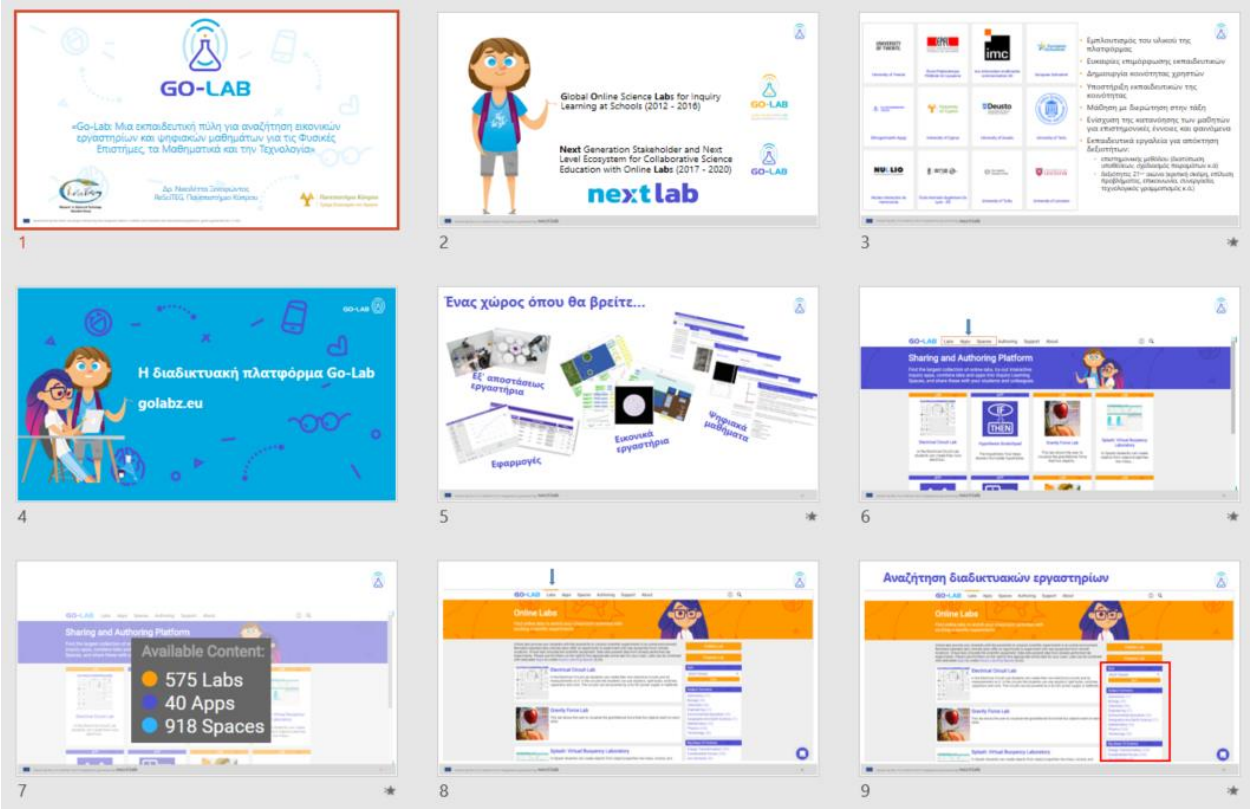


Figure 27: Selection of slides that were presented in the event with the secondary school teachers

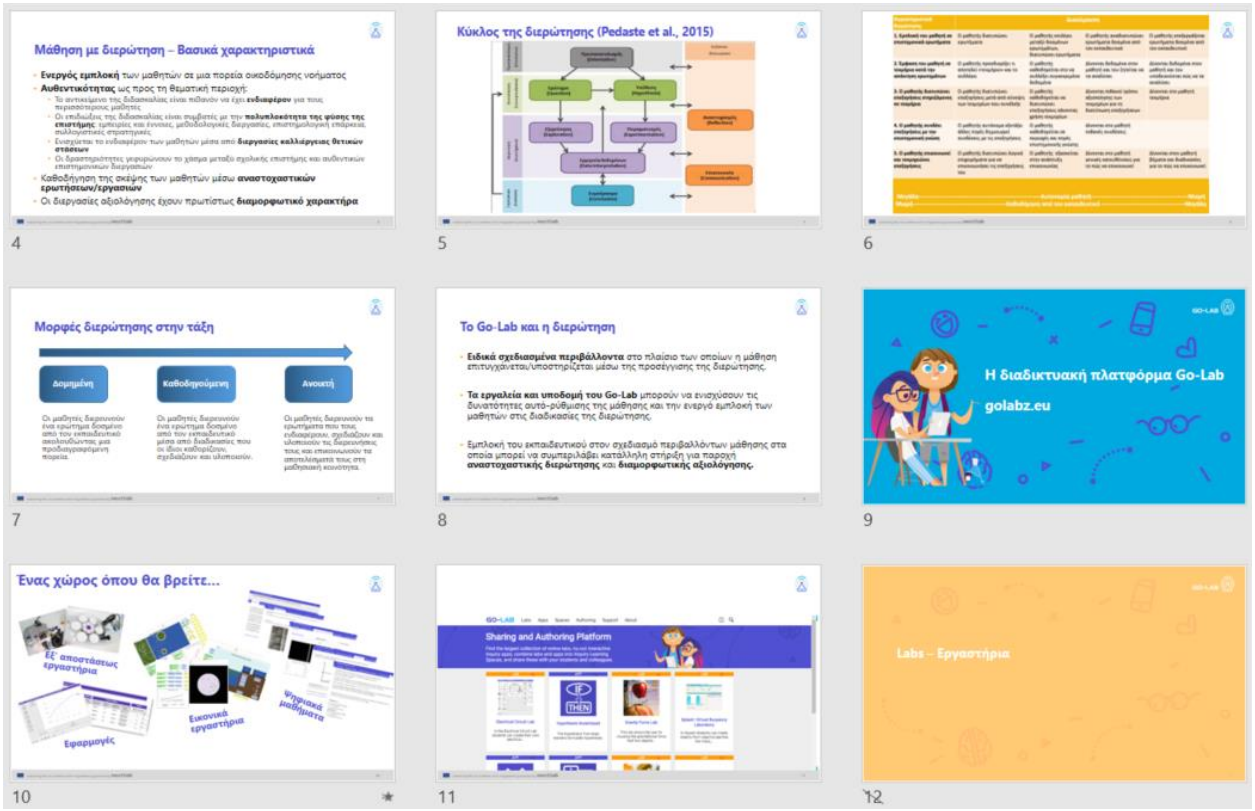


Figure 28: Selection of slides that were presented in the event with the primary school teachers (focus on inquiry-based learning)

9.2 Implementation Activities

9.2.1 Summary of implementation activities

Table 18 below presents the seven training workshops that were carried out by the NEC in Cyprus during the third year of the Next-Lab project. Four training workshops were co-organized with the Cyprus Pedagogical Institute (CPI), which since winter 2019 is a Next-Lab TTI. Go-Lab has been introduced in the context of the Innovative Schools project, which is coordinated by the CPI. Participants of this project are public schools in Cyprus and representative teachers from each school attend seminars and workshops offered by the CPI, in order to introduce and implement new innovative approaches and tools in their schools. Go-Lab was presented as a new innovative technological tool for Science, Mathematics and Technology education. During these workshops, participants learned about the Go-Lab sharing platform and how to search for online labs, apps and ILSs. Then they had the opportunity to explore some suggested ILSs from the student's perspective. In parallel, they learned how they can monitor students' work in an ILS. The last part of the workshop included an introduction to the Graasp authoring platform. Specifically, the participants created their accounts and followed the instructions of a short manual on how to create an ILS from scratch and add content. After the training workshops, the CPI is responsible to offer support to those teachers who willing to use Go-Lab in their schools.

Two extended workshops were conducted in the context of two university courses, one for undergraduate students and one for postgraduate students, in the Department of Education of the University of Cyprus. The main goal in these events was to train and support the

participants in the creation of their ILSs. Some of these ILSs have been published on the Go-Lab platform (see 2.4 Related Materials).

The NEC in Cyprus also conducted an international training in the context of the MoPED project (CBHE Action, No. 586098-EPP-1-2017-1-UA-EPPKA2-CBHE-JP). University of Cyprus and specifically our research group, ReSciTEG, is member of the MoPED project consortium. The duration of the training was 3 days. During the first day, the participants worked in groups with a set of hands-on inquiry activities which involved real materials for exploration and experimentation. At the end of the day participants reflected on their experiences and discussed about the inquiry processes that were involved in each activity. In the second day, the participants worked in their groups and transformed one of the hands-on activities into an ILS. Before the transformation activity, a brief presentation about the inquiry cycle and the Go-Lab inquiry apps was made. Moreover, a checklist for the creation of a good ILS was distributed and explained briefly. In the last day, a presentation of the Go-Lab apps and other platform functions that foster collaborative and cooperative learning was made. Moreover, some theoretical background on collaboration and cooperation was discussed. After the presentation participants adapted their ILSs in order to incorporate collaboration and at the end of the day all the groups presented their ILSs.

Table 18. Next-Lab Implementation Events - Cyprus

Title	Location	Date	Description
Go-Lab: An innovative technological tool for Science, Mathematics and Technology education	Limassol, Cyprus	16/01/2019	Nine in-service primary school teachers participated in the workshop which was co-organized with the Cyprus Pedagogical Institute. The topics covered during the workshop are as follows: Introduction to the Go-Lab Ecosystem / Presentation of good examples of ILSs / Hands-on activities with some ILSs / Introduction and familiarization with the Graasp Authoring platform
Go-Lab: An innovative technological tool for Science, Mathematics and Technology education	Nicosia, Cyprus	16/01/2019	The same workshop as the above was also organized in Nicosia. In this workshop 38 in-service primary and secondary school teachers participated.
Undergraduate course: Computer Science Applications in the Teaching of Science in Elementary School	Nicosia, Cyprus	23/01/2019, 30/01/2019 and 06/02/2019	Seventeen undergraduate students (prospective primary teachers) participated in 3-day training workshop, as part of their course titled "Computer Science Applications in the Teaching of Science in Elementary School". After the training workshop the pre-service teachers received support from the instructors in order to create their own ILSs.

Title	Location	Date	Description
Postgraduate course: The Process of Inquiry in Natural Sciences	Nicosia, Cyprus	27/02/2019 and 13/03/2019	Six master's students (in-service and pre-service primary and secondary teachers) participated in 2-day workshop as part of their course titled "The Process of Inquiry in Natural Sciences". The participants learnt how to create ILSs in Graasp and after the workshop, they received support to create their own ILS.
Hands-on inquiry activities/ Transformation of the hands-on activities into ILSs/ Collaboration and cooperation with Go-Lab	Odessa, Ukraine	13/05/2019, 14/05/2019 and 15/05/2019	A series of training workshops were organized in the context of the MoPED project by members of the University of Cyprus. The 36 participants (academic and research staff) were experienced Go-Lab users. The focus of the training was on Inquiry-based science education and collaboration. Thus, the workshops included hands-on inquiry activities with real materials, transformation of the hands-on activities into ILSs and familiarization with Go-Lab applications that promote collaboration and cooperation.
Go-Lab: An innovative technological tool for Science, Mathematics and Technology education	Nicosia, Cyprus	26/11/2019	Seventeen in-service primary and secondary school teachers participated in the workshop which was co-organized with the Cyprus Pedagogical Institute. The topics covered during the workshop are as follows: Introduction to the Go-Lab Ecosystem / Presentation of good examples of ILSs / Hands-on activities with some ILSs / Introduction and familiarization with the Graasp Authoring platform.

9.2.2 Target audience and impact

The above training workshops have involved both in-service primary and secondary school teachers and prospective primary school teachers. The general aim of the NEC in Cyprus was to introduce Go-Lab to as many teachers as possible so that to increase the possibility for integrating Go-Lab Ecosystem into teaching practice. Moreover, the close collaboration between the NEC in Cyprus and other authorities, such as the Cyprus Pedagogical Institute, aimed to increase the teachers' Go-Lab community in Cyprus and to create a network for support and exchange of good practices with the Go-Lab ecosystem. Finally, the NEC in Cyprus presented the Go-Lab Ecosystem in the context of the MoPED project in which academic and research staff from Ukrainian Universities have participated.

9.2.3 Outcomes

After each training workshop, participants became familiar enough with the Go-Lab Sharing platform and they were able to search for online labs and ILSs and explore the available apps. Most importantly, they knew where to find support if the decided to use Go-Lab, either from the Go-Lab support page or by contacting the NEC in Cyprus.

9.2.4 Related materials

The materials used during the training workshops were PowerPoint presentations (each time adapted to meet the needs of the target group), the Go-Lab leaflet and a Greek manual on how to use the Graasp for the creation of an ILS. Below, we provide some events' spaces in Graasp, in which the material used can be found:

https://graasp.eu/spaces/5c34aa7553ed11630283c102

https://graasp.eu/spaces/5c5ac84de140ca2478c62c34

https://graasp.eu/spaces/5c7668aeca1f6c2e756cf632

https://graasp.eu/spaces/5dd7a4fb87208732a07b577d

Some of the participants' ILSs that have been published on the Go-Lab platform, are listed below:

Αεροδυναμική: Αρχές της Πτήσης (Aerodynamics: Principles of Flight)

Υδατικά Διαλύματα Ηλεκτρολυτών (Aqueous Electrolyte Solutions)

Πώς παράγεται ο ήχος (How does the sound is produced?)

Finally, we provide some pictures from the event conducted in Ukraine.

Figure 29: Participants are working with hands-on inquiry activities

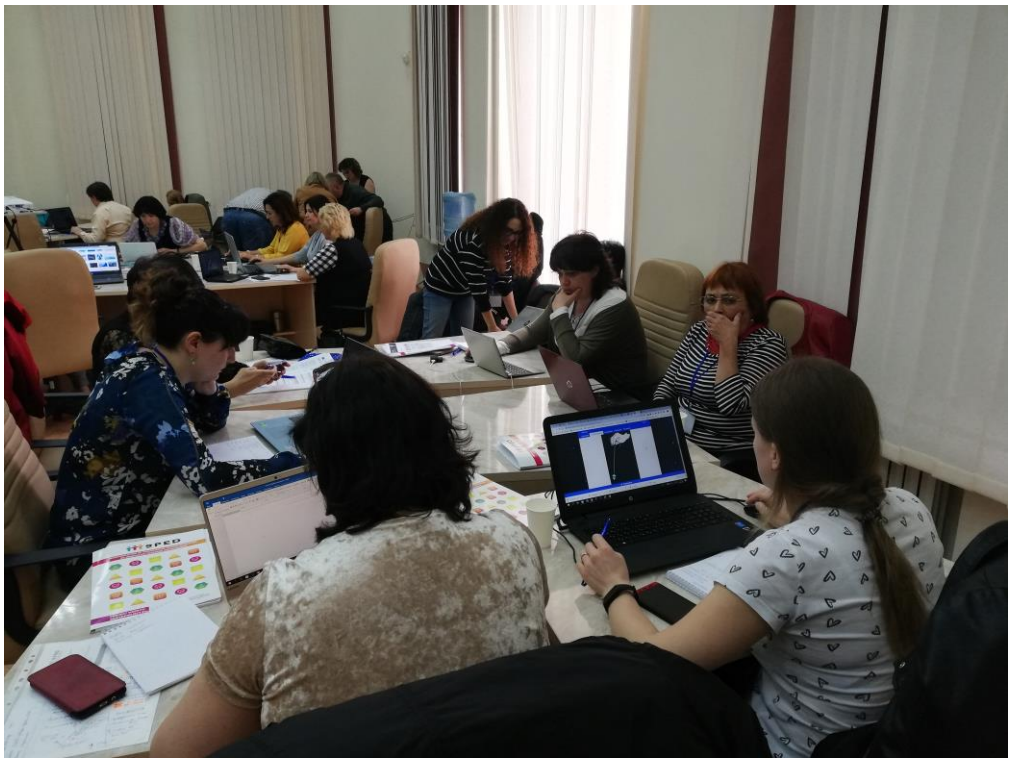


Figure 30: Participants are creating their group ILS

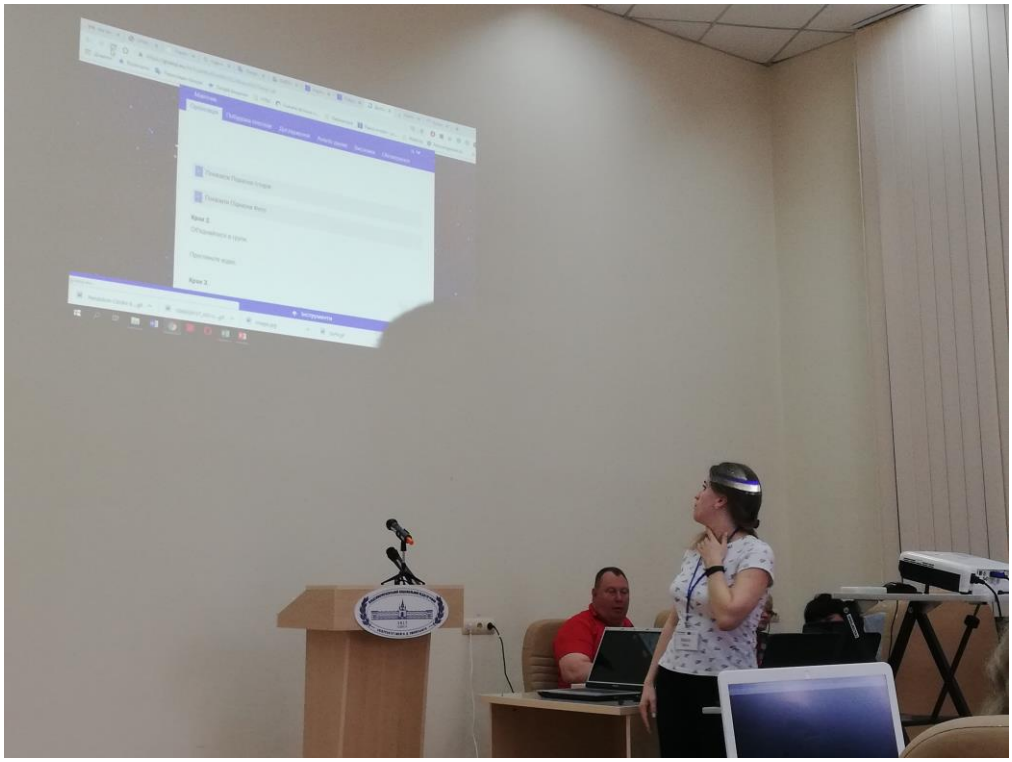
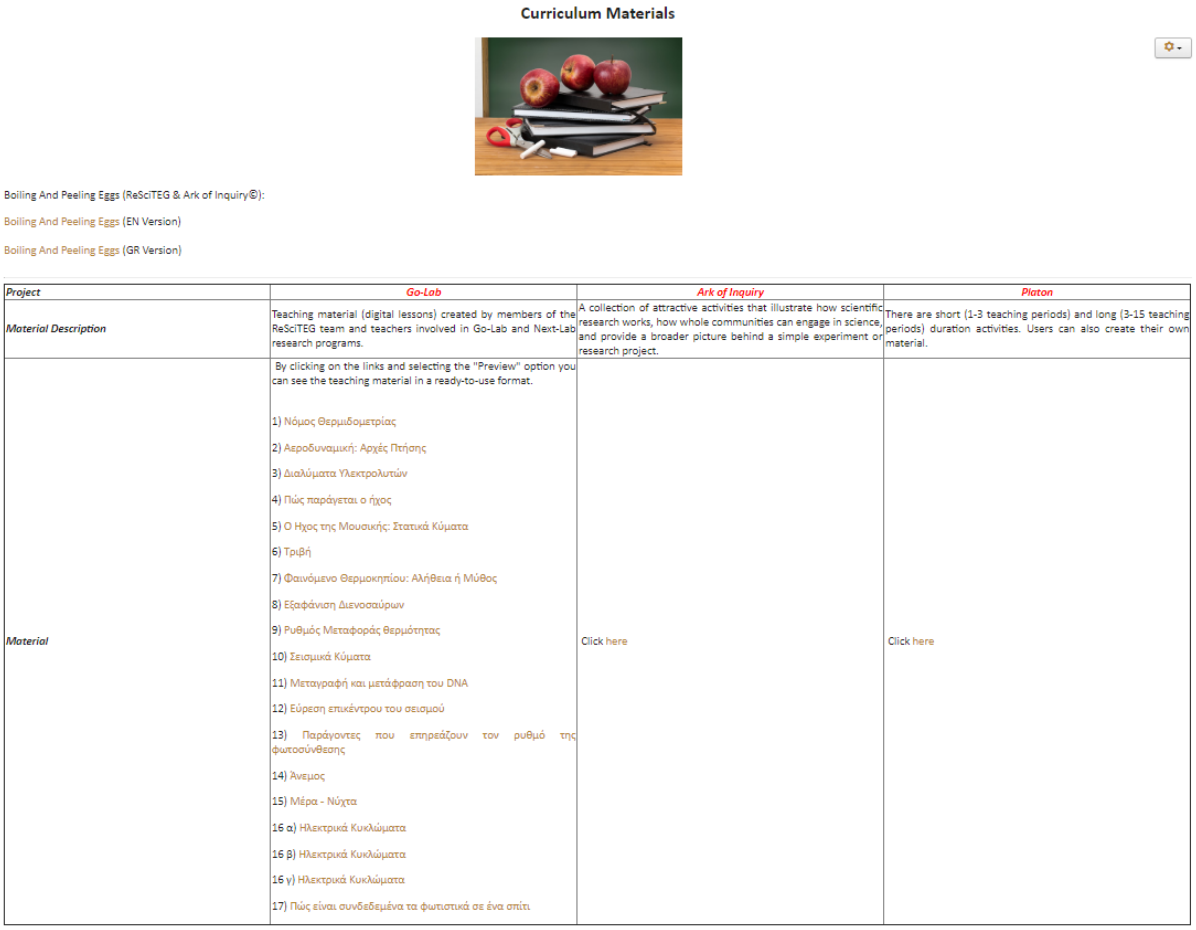


Figure 31: Presentation of participants' ILSs

9.3 Website, Newsletter and Social Media

9.3.1 Website

In the website of ReSciTEG information about the Next-Lab project are included, accompanied by the project's flyers and selected examples of Inquiry Learning Spaces (https://ucy.ac.cy/resciteg/en/research/research-programmes). Since the previous report (D1.4, year 2), more examples of ILSs that have been created and published in the context of our training workshops, either by members of our group or participants, have been added to our website under the section Curriculum Material.



Curriculum Materials

Boiling And Peeling Eggs (ReSciTEG & Ark of Inquiry©):

Boiling And Peeling Eggs (EN Version)

Boiling And Peeling Eggs (GR Version)

Project	Go-Lab	Ark of Inquiry	Platon
Material Description	Teaching material (digital lessons) created by members of the ReSciTEG team and teachers involved in Go-Lab and Next-Lab research programs.	A collection of attractive activities that illustrate how scientific research works, how whole communities can engage in science, and provide a broader picture behind a simple experiment or research project.	There are short (1-3 teaching periods) and long (3-15 teaching periods) duration activities. Users can also create their own material.
Material	By clicking on the links and selecting the "Preview" option you can see the teaching material in a ready-to-use format. 1) Νόμος Θερμιδομετρίας 2) Αεροδυναμική: Αρχές Πτήσης 3) Διαλύματα Υλεκτρολυτών 4) Πώς παράγεται ο ήχος 5) Ο Ηχος της Μουσικής: Στατικά Κύματα 6) Τριβή 7) Φαινόμενο Θερμοκηπίου: Αλήθεια ή Μύθος 8) Εξαφάνιση Διενοσαύρων 9) Ρυθμός Μεταφοράς θερμότητας 10) Σεισμικά Κύματα 11) Μεταγραφή και μετάφραση του DNA 12) Εύρεση επικέντρου του σεισμού 13) Παράγοντες που επηρεάζουν τον ρυθμό της φωτοσύνθεσης 14) Άνεμος 15) Μέρα - Νύχτα 16 α) Ηλεκτρικά Κυκλώματα 16 β) Ηλεκτρικά Κυκλώματα 16 γ) Ηλεκτρικά Κυκλώματα 17) Πώς είναι συνδεδεμένα τα φωτιστικά σε ένα σπίτι	Click here	Click here

Figure 32: Screenshot from ReSciTEG's website with the list of the ILSs that have been created in the Go-Lab, by members of our group or teachers that have been trained by our group

9.3.2 Social Media Channels

ReSciTEG has its own Facebook page (https://www.facebook.com/ReSciTEG/) in which several posts are shared. During the third year of the project, 7 posts have been shared. Specifically, the following posts have been shared:

Did you know?/ ILS new interface – Jan/2019

Did you know?/ Updated Quiz tool – Jan/2019

Go-Lab nomination for the .euWebAward – Jun/2019

New Features in Graasp – Jul/2019

Introduction to IBSE by Ton de Jong – Jul/2019

New App: The Hypothesis Scratchpad Basic – Oct/2019

1100 Inquiry Learning Space – Oct/2019

Below is an example of a shared post in ReSciTEG's Facebook page.

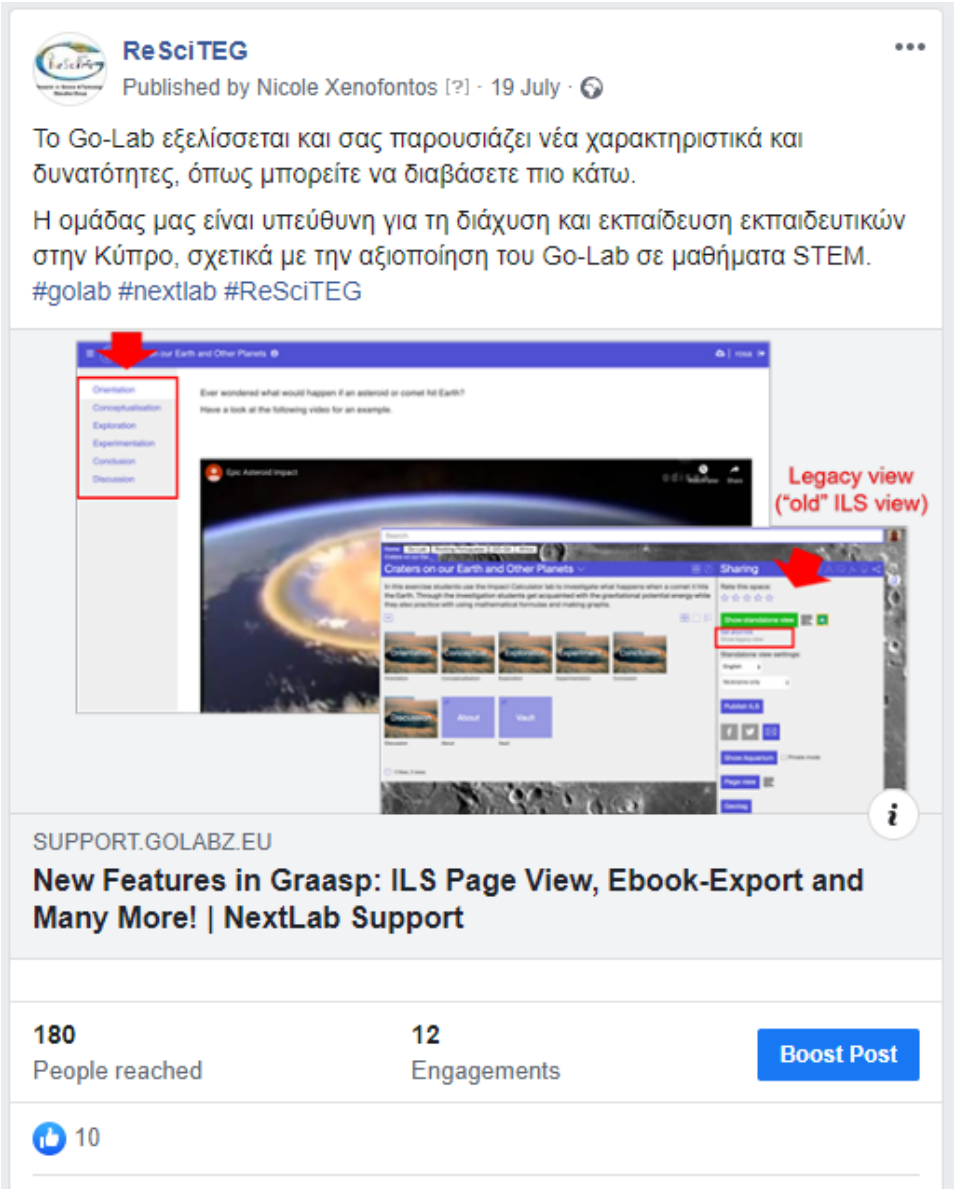


Figure 33: Shared post in ReSciTEG's Facebook page

9.3.3 Dissemination Channels Figures

Facebook fans	Website Popular Items (number of hits)		
	Home page	News	Curriculum Materials
527	6935	7148	3883

Annex 2: Primary implementations

1. Primary Teachers Go-Lab Implementation: Cyprus

1. Background details about

Name: Zoi Kofina

School: Sixth Limassol Primary School

ILS used:

https://www.golabz.eu/ils/%CF%84%CF%81%CE%B9%CE%B2%CE%AE-2

Date: 05/11/2020

Research Themes/Questions

1a. Your teaching background, your school and your students

I have 20 years of teaching experience and among other subjects, I teach Natural Sciences. I have a master's degree in the Learning in Natural Sciences from the University of Cyprus and every year I prefer to include Natural Sciences in my schedule. My school is an urban school in the region of Limassol and counts approximately 300 students. The Go-Lab implementation was carried out in two fifth classes (E1: 21 students and E2: 23 students).

1b. Other staff members in your school using Go-Lab

My colleagues do not know about Go-Lab. This is my second school year in this school and when I first heard about Go-Lab and attended related trainings, I was in another school. However, during the two class implementations, my colleagues were invited to watch the lesson, few of them managed to come, and their comments were very positive.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

I used an ILS that I created with the help of Nikoletta Xenofontos, when I participated in the Go-Lab school in Tallin, Estonia, in 2018. I did not make any changes/modifications before using it, since the activities were designed very carefully. This was the first time that I had the opportunity to implement my own ILS and I was curious to see how it will go and if the activities that we included were suitable.

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

There are some ILSs that are suitable for primary education, but I believe that in order for someone to be able to adapt an ILS and use it in his/her class, a good knowledge of Graasp is needed. In addition, someone needs to work more often with the Ecosystem to feel more confident in using it. For example, after I was trained, I did not spend time to work with Graasp on my own and I needed to refresh some things before being ready to use my ILS in class.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

The implementation of the ILS went very well. Of course, before students arrived in the computer lab, I spent enough time to prepare the computer lab and open the ILS in the computers. Unfortunately, many of our computers did not work and I had to form groups of three students, while the initial plan was to have two students per computer. Nevertheless, this was a great success, since I saw that the students collaborated very well in their groups and they had very nice discussions while working in the environment. Only in some groups,

there were some conflicts, mainly related to who is using the computer's mouse, but after negotiations and support from me everything went well. The groups worked mainly independently and in certain points, we had class discussions. During these discussions, the ILS was projected, and the content of the discussions was about what was done already and why, how to move forward and tips on how to use the apps and lab. I tried to limit the time spent in this kind of class discussions to let the students interact mainly in their groups.

3b. Students' behaviour and response to the practice

Students responded very positively, and they were actively engaged. As I said previously, they interacted very well in their groups, they had fruitful discussions and they completed all the activities in the ILS. The only activity that did not work as planned was the online discussions in the SpeakUp app in the last phase of the ILS. I assumed that this happened because students are not yet very familiar to use chat tools for serious discussions.

4. What was good about the ILS you have used and what were the drawbacks?

The ILS had an excellent flow; the activities were well structured and suitable for students' level. The only thing that I would have changed was the use of the SpeakUp app in the end. I would have preferred if the discussion was made in class. Of course, after I realised that this activity was not working, I switched the discussion in the whole class and I was quite satisfied with the students' participation.

5. Would you do it again and would you recommend it to your colleagues?

5. I will use Go-Lab in the future, and I want to create more ILSs. I am very happy that my students enjoyed the lesson and they are already asking when we are going to do similar lessons in the computer lab. I will recommend Go-Lab to my colleagues and I hope that they will appreciate it as I do. Of course, a couple of colleagues came to watch my implementation for at least a few minutes, and I received positive comments from them.

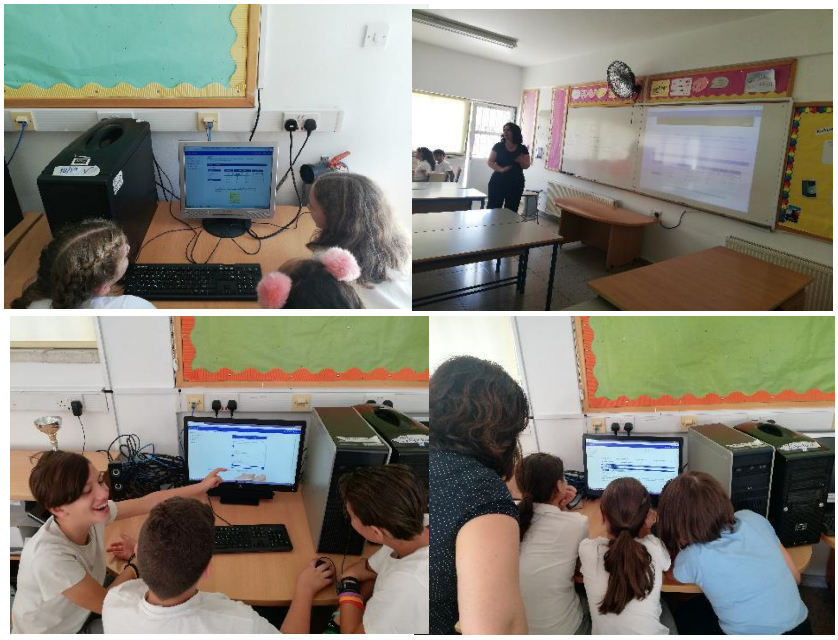


Figure 34: Go-Lab Implementation activities in Cyprus

2. Primary Teachers Go-Lab Implementation: Finland

Case 1

1. Background details about

Name: Nelli Mäkelä

School: Taivassalo comprehensive school

ILS used: Sähköiset synttärit

Date: ILS on 31.10.2019 / Interview on 5.11.2019

1a. Your teaching background, your school and your students

I'm a teacher in Taivassalo comprehensive school, where I teach 2nd grade class of 13 students. The school has one class of students from 1st to 9th grade. I graduated as Master of Arts (Education) classroom teacher with additional qualifications in history about a year ago and have a little over one year of experience as a teacher.

1b. Other staff members in your school using Go-Lab

There are currently no other teachers using Go-Lab in my school and in general the schools are not that ICT-oriented. Many teachers are rather "traditional" when choosing their methods of teacher. However, we have begun using multiple new ICT-programs this year, such as Qridi (student evaluation program). There are also iPads and computers available for use when necessary, but the skills of teachers are lacking.

2. Why did you choose this ILS?

I'm not all too familiar with Go-Lab and became interested in the platform when my friend recommended it to me. With his guidance, I familiarized myself with the Graasp/Golabz -pages and decided to test the system in my classroom. For this I chose "Sähköiset synttärit" ILS as the theme of it seemed suitable for my students and the ILS itself appeared simple enough.

2a. Did you have to adapt the ILS in any way?

With the help of my friend I adapted the ILS a little by adding some learning analytics. I also differentiated the ILS to be a little easier, for instance by changing some instructions and descriptions of concepts.

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

The system is relatively easy to use, but as a whole, it is a little challenging for younger students (in this case age 8–9). I do think I could use the system in primary education with students more extensively, however many of the subjects in the ILSs are not quite suitable for younger students. I could however see myself using the platform in other subjects besides STEM, as the system is really flexible. I especially like the way I can embed almost anything on the platform. For instance, in teaching history it would make it easier for me to control the learning process if I could keep the students on one page while searching information, instead of scattering them over multiple different pages.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

I started the lesson by going through the use of the system with the students. Then we also discussed the different concepts (static electricity, hypothesis) together. Finally, the

students began working on the ILS autonomously, and I helped them where necessary. At the end of the lesson, we also did a short recap on what we learned.

3b. Students' behaviour and response to the practice

At the beginning, the students had some trouble getting started, but once they got familiar with the system, they seemed to enjoy working on the ILS. There was no real trouble keeping students interested, even if there was a little bit of "creative noise" in the process.

4. What was good about the ILS you have used and what were the drawbacks?

Pros

- From the students' perspective the system was easy to use and they learned to use it quickly
- Embedding works really well, which allows the system to be adapted for multiple purposes
- I could see myself using it for project-work or flipped-learning scenarios.
- At a glance the analytics seems interesting, though it is hard to say if they're really useful

Cons

- Technical difficulties with using the platform on iPads. Sometimes the apps or labs would freeze and stop working until refreshing the page. However, this could be the result of the thick protection-cases of the iPads or the sometimes-sluggish internet connection of the school.
- Most of the prior material available on ILSs are too difficult for younger students, thus requiring a lot of work from the teacher to adapt them for use.

5. Would you do it again and would you recommend it to your colleagues?

I would like to test the platform on other subjects, for instance in history or Finnish language. Maybe I could also see myself using it in natural sciences with older students, if the available material fits what I am trying to teach without too much need for adjustment. It would also be nice to try the system in collaboration with other teachers. However, since our school only has one class of each grade, it makes it a little more difficult to find suitable situations for collaboration between teachers.

Case 2

1. Background details about

Name: Santtu Sevon

School: School of Kantokaski

ILS used: Skeittaaja 1, Skeittaaja osa 2, Polkupyörän vaihteisto ja rattaat, various labs

Date: 1.11.2019

1a. Your teaching background, your school and your students

I'm a teacher in School of Kantokaski, where I teach 6th grade students. The school has 370 pupils on grades 1 to 6 (ages 7 to 13). I graduated as Master of Arts (Education) classroom teacher a couple of years ago.

1b. Other staff members in your school using Go-Lab

We have used Go-Lab with one of my colleagues. She is still developing in use of ICT in education and I sort of mentored her in starting of the Go-Lab lessons. The Go-Lab teacher collaboration elements have been useful for this purpose.

2. Why did you choose this ILS?

We have used the Skeittaaja 1 and Skeittaaja 2 ILSs to learn how to use platform with the students. They are coherent materials to learn essential topics with various tools. The other ILSs have been chosen since they fulfil the objectives of the curriculum.

2a. Did you have to adapt the ILS in any way?

We didn't have to adapt the ILSs. They were good and useful as they were.

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

It's now my third year using Go-Lab with my students. Thus, I've been using Go-Lab on grades 4 to 6. Based on my experiences, Go-Lab can be easily used for Primary education needs. You just need to choose ILS including labs that are on a level of Primary education learning objectives.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

I have added the links of the ILSs to Google Classroom, which is the general learning platform we are using in our school. The students have followed the link and logged in with a nickname. During and after the lessons I have assessed the students' learning by using "core tasks". This means that I don't have to check everything students' have done. Instead, I monitor and assess the learning from teachers' view and checking only the pre-chosen apps.

3b. Students' behaviour and response to the practice

Students' have responded well to the practice. They have individual laptops, but they are usually working as pairs. Sometimes the data they have provided to the platform has disappeared during the work, and this has caused frustration. But these have been rare cases.

4. What was good about the ILS you have used and what were the drawbacks?

The major positive side about these ILSs has been students' enjoyment and engagement. As a negative side, the teachers' workload is rather big, if you start creating and adapting the ILSs. So more ready-made ILSs would be needed [ed. in Finnish].

5. Would you do it again and would you recommend it to your colleagues?

It is now my third year using Go-Lab with my students, and based on my experiences I would definitely recommend it to my colleagues.

Case 3

1. Background details about

Name: Simo Haavisto

School: School of Tapanila

ILS used: Skeittaaja 1, Polkupyörän vaihteisto ja rattaat

Date: 6.11.2019

1a. Your teaching background, your school and your students

I'm teacher in School of Tapanila, where I teach 5th grade students. The school has 214 pupils on grades 1 to 6 (ages 7 to 13). I graduated as Master of Arts (Education) classroom teacher couple of years ago. Besides my regular teaching duties, I work as a "Digi Tutor" in my school, meaning that I mentor my colleagues in using ICT in education.

1b. Other staff members in your school using Go-Lab

Since Go-Lab was just introduced to us, there are no colleagues used Go-Lab beside me.

2. Why did you choose this ILS?

First, I chose the ILS Polkupyörän vaihteisto ja rattaat [ed. which is about gears of bikes], since the topic was motivating, and it offered quite an easy way for the students to learn how to use the platform. Bikes, and cycling generally, is familiar for all which makes it interesting topic to learn more about it. Second, I chose the ILS Skeittaaja 1, since that topic was motivating too.

2a. Did you have to adapt the ILS in any way?

I didn't have to adapt ILSs in any way.

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Based on my experiences on using Go-Lab lower grades of comprehensive school, it is suitable for Primary education.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

First, I made a shortened link by using bit.ly. Then I shared it with my students. They logged in by using their first name and the first letter of their last name as a nickname. Everything went well after that. Students proceed in the material and I supported when needed.

3b. Students' behaviour and response to the practice

Students responded well to the use of the platform. Especially, the simulations were engaging and even fascinating! They liked the introductory videos, too. After the lessons, some of them asked if these can be used at home. I said, of course you can continue there.

4. What was good about the ILS you have used and what were the drawbacks?

The simulation in the ILS about gears was nice. However, the drawback was that it didn't save the setting done by students. At some point they would have liked to come back to the experiment phase but they had to start the simulation again from the beginning. The simulation about skateboarding was really engaging! A minor drawback is the sandbox-area, since it causes some disruptions to the focus of the students. Since it proves the attractiveness of the simulation, it can be interpreted as a positive side, too.

5. Would you do it again and would you recommend it to your colleagues?

Definitely, I will use these ILSs later. As a ”Digi Tutor” of our school, I will recommend and support my colleagues to start using Go-Lab. It is an exceptional learning environment with innovative and thoughtful intent.

3. Primary Teachers Go-Lab Implementation: Portugal

1. Background details about

Your Name: Maria Justina Santos &

Carla Barros Pereira

School: Agrupamento de Escolas de Carnaxide – two primary schools from the same association of schools

ILS used: “Ciclo da água” (Water Cycle) & “Como começaram as mudanças climáticas” (How Climate Change Started)

Date: School year 2018/19 – October-November 2018

1a. Your teaching background, your school and your students

We are both primary school teachers and hold master’s degree in Education (which is required in Portugal). We teach in a region near Lisbon where the social economic status is medium-high, at the same Association of Schools, but in two different schools. There has been a growing number of immigrants from Brazil, Angola, Cape Verde and China, but they are a minority in each class (only around 2-3 immigrant students per class). Both schools have about 250 students, from the pre-school to 4th grade

1b. Other staff members in your school using Go-Lab

. We are the only two teachers using Go-Lab in these schools

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

We chose these ILSs because they were the ILSs we created during the Summer School we attended. We only had to translate and do minor changes on the original one because we were going to do the ILS with off-line work too.

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

It was an easy task.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

Our schools don’t have computers for the students, so we chose to project the ILS with the teacher’s computer and work together with the class, separating them in groups when necessary. We introduced the theme (Orientation phase) one afternoon, and the students went home to think about it – the next day they had lots of ideas.

We had online labs, but we also had hands-on investigation. It was a nice mixture. When doing the hands-on part, they worked on groups. But the discussions and presentation of results were for all the class.

3b. Students’ behaviour and response to the practice

The students were very excited throughout the ILS. They were quite noisy, but very participative and inquisitive. They all worked very well on the ILSs and enjoyed it a lot.

4. What was good about the ILS you have used and what were the drawbacks?

We were very happy about the way we were able to follow an activity with the inquiry methodology. The whole activity focused on students, on their participation and discussions. It worked very well albeit the classes being quite numerous (28 students).

There were no drawbacks on using the ILSs. What we fear is that it takes some time to create the ILSs and if we don't use Graasp for a while we feel we might forget how to use it.

5. Would you do it again and would you recommend it to your colleagues?

Yes, we will try to continue working with Go-Lab.

And yes, we recommend it to our colleagues.

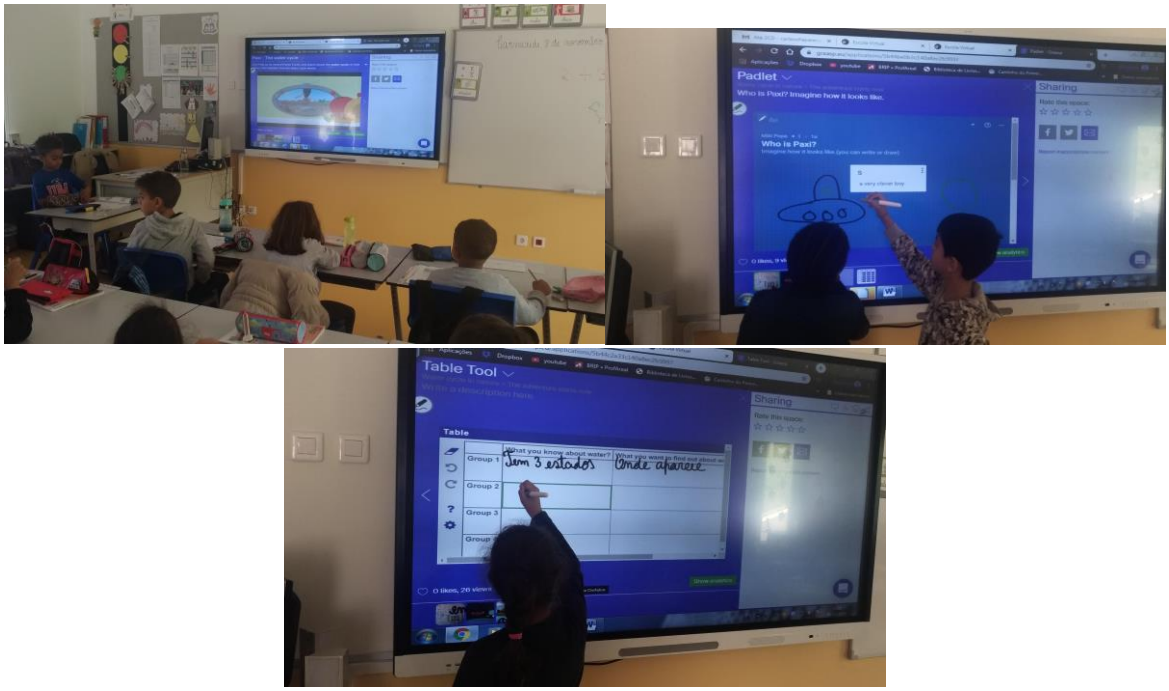


Figure 35 Students from Agrupamento de Escolas de Carnaxide during the class implementation

4. Primary Teachers Go-Lab Implementation: The Netherlands

Case 1

1. Background details about

Your Name: Dayen Zwakenberg

School: KC de Bolster, Raalte

ILS used: http://graasp.eu/s/m4zqzd, http://graasp.eu/s/e89k0x, http://graasp.eu/s/9dbugm

Date: 28-01-2019, 11-02-2019, 25-02-2019

KC de Bolster is a school with 340 pupils. We are an IPC school. IPC stands for International Primary Curriculum. Last school year I was teaching group 8 (11-13 years old). I used three ILSs. I'm the only one in school who used Go-Lab.

1a. Your teaching background, your school and your students

1b. Other staff members in your school using Go-Lab

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

I chose these ILSs because the topics are suitable for group 8 and because I was involved in the development of these ILSs together with others. Because I was involved in the development, I didn't have to adapt the ILSs.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

In the first lesson I used an ILS about plants and light. Because the students were not used to inquiry learning this ILS was very structured and a lot of guidance was given. Many students were not able to finish the ILS in the given time frame. The second one was about electricity and the third one about light. You could see that the students were getting used to inquiry learning because now they were able to complete the ILSs.

3b. Students' behaviour and response to the practice

Students were enthusiastic, they made comments that they liked that they 'could discover a lot of things', they found it 'educational', they enjoyed 'trying out over and over', they found it 'interesting', they learned 'new things' and 'things they did not know before'.

4. What was good about the ILS you have used and what were the drawbacks?

Students were motivated to work on the online inquiry learning environments, also because of the topics that were used. As stated above students have to get used to inquiry learning. In the beginning they needed a lot of guidance.

5. Would you do it again and would you recommend it to your colleagues?

I would like to do it again but this school year I teach group 3 (6 year olds). I think for this age group it is too difficult.

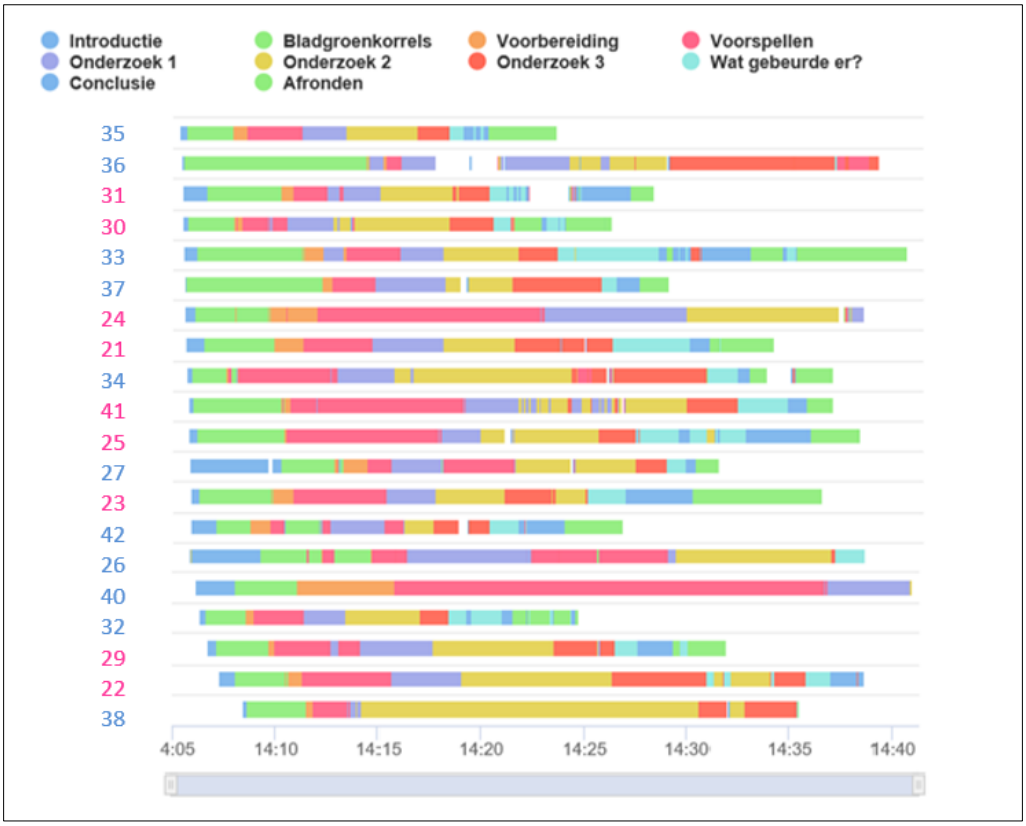


Figure 36. Time the participants spent in each phase of the online inquiry-based learning environment 'Plants and light' (blue number = male student, pink number = female).

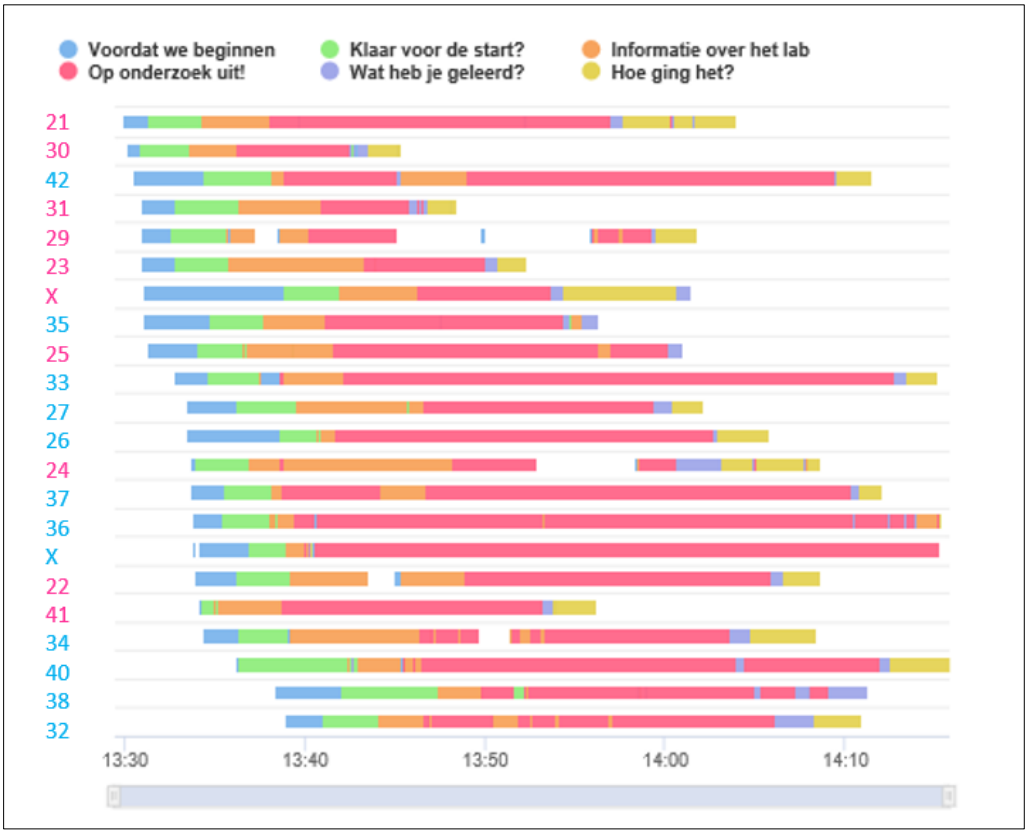


Figure 37. Time the participants spent in each phase of the online inquiry-based learning environment 'Electricity'

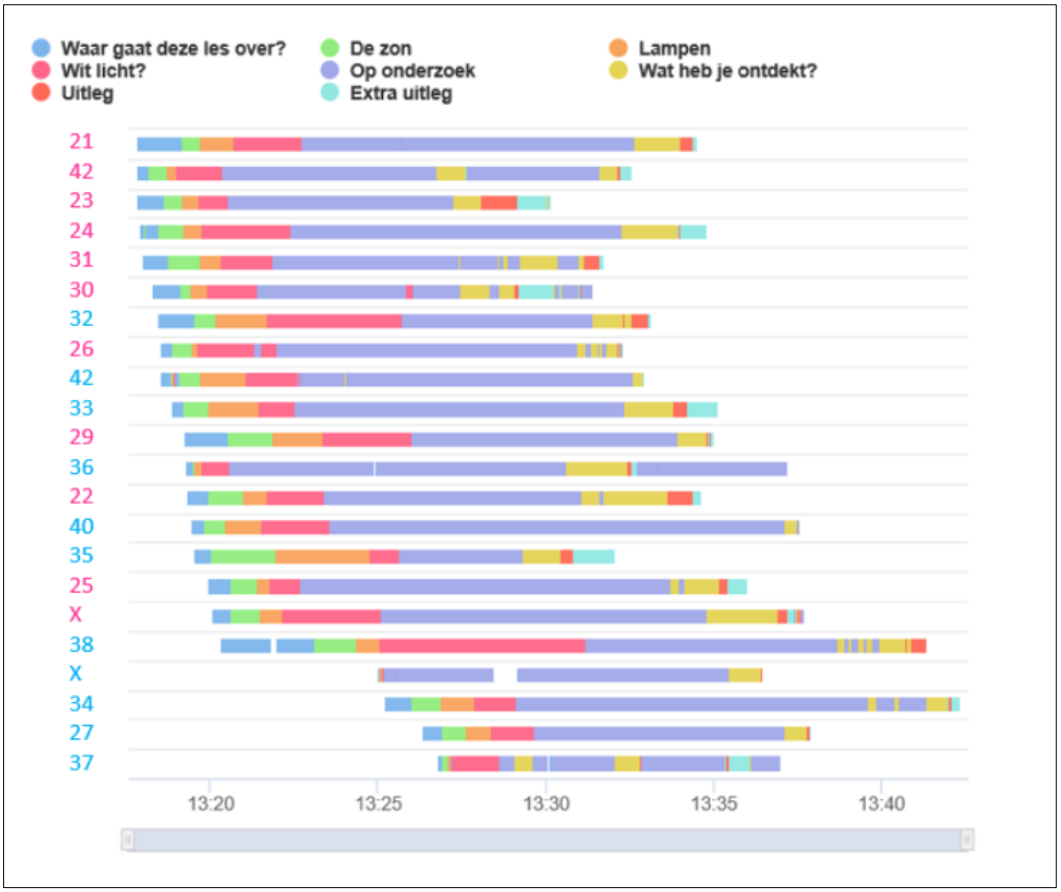


Figure 38. Time the participants spent in each phase of the online inquiry-based learning environment 'The colour of light'

5. Primary Teachers Go-Lab Implementation: Spain

Case 1

1. Background details about

Your Name: Mikel Amezaga

School: Juan Ramón Jiménez

ILS used: Free fall on the Earth and on the moon

https://cloud.graasp.eu/en/pages/5b326032339a9f46ccf2af93/subpages/5b3260e4339a9f46ccf2afaa?previewing=true

1a. Your teaching background, your school and your students

I was trained in UDeusto by NextLab team. Then I introduced my colleagues, Enrike and Amaia, in the NextLab project. They were also trained by UDeusto team.

1b. Other staff members in your school using Go-Lab

Amaia and I went to Summer School

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

I designed by myself the previous ILS. It was designed for primary school and it was selected as an Exemplary ILS by NextLab. My colleagues have also designed their own ILSs.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

3b. Students' behaviour and response to the practice

I used the ILS this year, and my colleagues also.

The students have used the ILSs without problems, and it will be the same next year.

4. What was good about the ILS you have used and what were the drawbacks?

The experience with ILS is good. For me it is one of the ways of teaching English (I am English teacher). Using ILS, the students can combine English and Science in an innovative way.

5. Would you do it again and would you recommend it to your colleagues?

Of course, I recommend ILS to my colleagues and they are using in the classroom.

Case 1

1. Background details about

Your Name: Amaia Tejedor

School: Juan Ramón Jiménez

ILS used: Free fall on the Earth and on the moon

https://www.golabz.eu/ils/free-fall-on-the-earth-and-on-the-moon

https://cloud.graasp.eu/en/pages/5b326032339a9f46ccf2af93/subpages/5b3260e4339a9f46ccf2afaa?previewing=true

1a. Your teaching background, your school and your students

I was a primary school teacher. From 2019 I am a director of the primary school in Baracaldo (Bilbao great area), Bizkaia

1b. Other staff members in your school using Go-Lab

My colleague Mikel Amezaga showed me the ILS and I have started to use it.

I went to Marathon for the summer school.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

I adapted several ILS and created ILS directly for my primary class students in collaboration with Mikel

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Yes, ILS can be designed for primary school. My school is only for primary school students.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

At first, I show them on the large screen how to conduct the activity and then they work in the groups. The ILS was good for students.

This year I am not using the ILS because now I am the director of the school, and do not teach so much.

3b. Students' behaviour and response to the practice

They like such activity. The students were surprised with the "free falling". It was not easy for them.

4. What was good about the ILS you have used and what were the drawbacks?

In my case, it was hard to show the students the scientific experiment because it was against what they thought.

5. Would you do it again and would you recommend it to your colleagues?

I recommend ILS to my colleagues, and others are using them.

Case 2

1. Background details about

Your Name: Enrike Arribas

School: Juan Ramón Jiménez

ILS used: Zirkuito Elektrikoak

https://www.golabz.eu/ils/zirkuito-elektrikoak

https://cloud.graasp.eu/en/pages/5b3266682872521c1f2b6b9d?previewing=trueDate:

1a. Your teaching background, your school and your students

1b. Other staff members in your school using Go-Lab

I am a primary school teacher.

I was trained in UDeusto by Next-Lab team. However, Mikel Amezaga introduced Go-Lab ecosystem to me, afterword I decided to take a Go-Lab training session.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Yes, Go-Lab ILS are adaptable for primary school. I did it and the students completed the ILS. They were very active with the lab.

The ILS was designed to be used in different primary school levels.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

It depends on the students' awareness of the Go-Lab platform. I conduct ILS together with students first time, second or third time of the usage of ILS, students make the activity without my guidance.

3b. Students' behaviour and response to the practice

The students enjoyed the experience. They understood the electricity and the current.

It was difficult for them to manage the hypothesis tool.

4. What was good about the ILS you have used and what were the drawbacks?

Sometimes the apps were too difficult for the students, and not only because to create hypos is hard for them, but also because the tool opens too many options to the students.

5. Would you do it again and would you recommend it to your colleagues?

Yes, I use it in the classroom.

Case 3

1. Background details about

Your Name: Marina Molla

School: 2nd Minority Primary School of Komotini

ILS used: bit.ly/GE2wX

Date: 25 November 2019

1a. Your teaching background, your school and your students

Primary teacher at the 2nd Minority Primary School of Komotini. Have used Go-Lab in my class for 3 years

1b. Other staff members in your school using Go-Lab

Two more teachers use Go-Lab. The headmaster and sub-headmaster are also aware and support the use of Go-Lab in our school.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

I used an ILS I made myself

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Yes, Go-Lab ILSs can be easily adapted/used for Primary education needs

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

I shared my knowledge and experience with my colleague Katerina Chatzopoulou. This year we have used 2 different ILSs in the same classroom. Our students loved it. Go-Lab was used as part of curricular activities in the class.

3b. Students' behaviour and response to the practice

Students were involved in the learning procedure and enjoyed it. They were fascinated by Go-Lab. It triggered their curiosity and imagination. It involved them and motivated them. They had fun and enjoyed it.

4. What was good about the ILS you have used and what were the drawbacks?

Sample of students' work (links, pictures etc.) 4. It was easy to design and use the ILS. The drawback was that we didn't have a proper computer lab to work in.

5. Would you do it again and would you recommend it to your colleagues?

Yes, I already recommended it to other colleagues, and we plan to do training with more teachers this year.

Case 4

1. Background details about

Your Name: Mikel Amezaga

School: Juan Ramón Jiménez

ILS used: Free fall on the Earth and on the moon

https://www.golabz.eu/ils/free-fall-on-the-earth-and-on-the-moon

https://cloud.graasp.eu/en/pages/5b326032339a9f46ccf2af93/subpages/5b3260e4339a9f46ccf2afaa?previewing=true

1a. Your teaching background, your school and your students

1b. Other staff members in your school using Go-Lab

During several months, Javier Garsia-Zubia provided Go-Lab training in the UDeusto. Then I introduced ILS to my colleagues, Enrike and Amaia. They also participated in the workshops provided by the UDeusto team.

Amaia and me participated in the Go-Lab Summer School as well.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

I designed by myself several ILSs, two of them I decided to publish. All of them were created for a primary school. “Free fall on the Earth and on the moon” was selected as an Exemplary ILS by Next-Lab team.

Of course, ILS can be deployed in a primary school.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

I introduce the Go-Lab instruments before work on the ILS. I used the ILS in 2017/2018 and 2018/2019 school years, and my colleagues also. I am also planning to use it next year as well.

3b. Students’ behaviour and response to the practice

Until now, students have used the ILSs without problems.

4. What was good about the ILS you have used and what were the drawbacks?

The experience with ILS is good. For me it is one out of a few ways of teaching English (I am an English teacher). Using ILS my students can combine English and Science in an innovative way.

Maybe some apps are too complex for primary school students.

5. Would you do it again and would you recommend it to your colleagues?

Of course, I recommend ILS to my colleagues; and will use it in the classroom by myself.

6. Primary Teachers Go-Lab Implementation: Greece

Case 1

1. Background details about

Your Name: Fotini Siligardou

School: 2nd Primary School of Voutes

ILS used: t.ly/DEddl; t.ly/ldqqB

1a. Your teaching background, your school and your students

ICT primary school teacher. The 2nd Primary School of Voutes is located on the outskirts of the city of Heraklion. It is a relatively large school which has an ICT (and STEM) laboratory and educational robotics equipment. Over the last four years, the school has focused on the development of interdisciplinary, inquiry-based STEM activities using every day materials, 3d printing and physical computing focused on understanding physics concepts and the development of students' computational thinking.

1b. Other staff members in your school using Go-Lab

1b. Other staff members in your school using Go-Lab

Until now Go-Lab has been used by four school teachers, for 5th and 6th grade students in order to support the implementation of our school's projects.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

I made these ILSs myself in collaboration with my colleagues.

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Yes, Go-Lab ILSs can be easily adapted/used for Primary education needs.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

The use of Go-Lab was done in combination with hands-on activities. Until now, Go-Lab is being used in the ICT lab in teams of two students and in collaboration with the class and the ICT teacher.

3b. Students’ behaviour and response to the practice

The use of Go-Lab in combination with hands-on activities has increased student’s motivation and deeper understanding of even difficult concepts of physics. The students actively followed the process of inquiry-based learning. They enjoyed the activities and actively followed all the implementation phases.

4. What was good about the ILS you have used and what were the drawbacks?

Students became familiar relatively quick with the ILS. The fact that they were exploring what they were going to learn was very effective in learning. Also, the fact that they could go back to any stage, check and modify was also very important for the learning process.

It was less effective when we used it in large groups. The pupils faced some obstacles during their collaboration. So, we ended up working in groups of two.

5. Would you do it again and would you recommend it to your colleagues?

Yes, I have already introduced it to my colleagues.

7. Primary Teachers Go-Lab Implementation: Estonia

Case 1

1. Background details about

Name: Kädi Krillo

School: TartuEraKool - LõunaTERA, https://tartuerakool.ee/lounatera/

ILS used: Mets - Taimed ja Seened [Forest - Plants and Mushrooms] https://cloud.graasp.eu/et/pages/5d92666387fca522948bd6f8/subpages/5d92666487fca522948bd6fb

1a. Your teaching background, your school and your students

Kädi has been teaching primary school children for 15 years. She is currently teaching 2nd grade students at the LõunaTERA branch of TartuEraKool in Tartu, Estonia. The LõunaTERA division is a new and modern school having just opened in September 2019. It provides education to 1st, 2nd and 3rd grade students. There are 16 teachers working at LõunaTERA.

1b. Other staff members in your school using Go-Lab

The 2nd grade class Kädi teaches consists of 35 students (ages 7-8). Kädi co-teaches this class with another teacher. The classroom is furnished with mobile furniture that allows organizing students in round table or row seating arrangements. Kädi and her colleague arrange students in groups according to academic ability, thereby allowing them to provide differentiated assistance to students when necessary. In terms of educational technology, all students have individual tablet computers provided to them by the school and which are kept in a cabinet in the classroom. Additionally, the schools' Wi-Fi internet is relatively fast and there is an interactive whiteboard projector to display the teachers' computer screen at the front of the classroom.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

Kädi created an ILS on the topic of the forest and elements found in the forest such as plants, mushrooms, animals and birds. She created this ILS because the topic is a requirement of the Estonian National Curriculum for primary school children in 2nd grade. Kädis' ILS includes YouTube videos that she created herself and linked to her ILS. By integrating a video into the ILS she is able to minimize the amount of links children have to open to access learning content. A primary school student simply has to open one link to an ILS and all other outside content can be embedded in this single ILS. When working with a class of 35 second graders, then this convenience is very welcome because young students often have trouble opening up multiple links and this leads to delays in delivering the class lesson.

3b.Students' behaviour and response to the practice

In addition to embedding videos, Kädi used several Go-Lab apps with her 2nd graders. In particular, her ILS included the Input Box app, the Teacher Feedback app and the Name

the Frame app. The Name the Frame app was helpful in supplementing textual explanations found throughout the ILS with visual imagery. Kädi applied the Name the Frame app in order to get students to identify the parts of a tree, types of trees and to identify different types of mushrooms. She found that inclusion of this app helps her students to switch from passively reading text to actively engaging with the content since the Name the Frame app requires students to drag-and-drop vocabulary terms to the correct location on an image. Students get feedback from this app and can modify their responses to find the correct answers.

4. What was good about the ILS you have used and what were the drawbacks?

Students were engaged in this digital lesson and by the unique way Go-Lab allows students to interact with content using a tablet computer versus the traditional reading a textbook and solving workbook problems approach. Some pictures below illustrate how 2nd graders in Kädi's classroom worked with Go-Lab (Figure 39.

Figure 39: 2nd graders in Kädi's classroom working with Go-Lab

The ILS was good because students said that working on the assignment was new and interesting for them. They liked different interactive elements that were included in the ILS such as videos, Input Box app, Name the Frame app and Teacher Feedback app.

Some technical issues were encountered when students opened this ILS on their iPad tablets. For example, the terms in the Name the Frame app were not immediately draggable on some tablets. One solution was to click on the check button or do a refresh of the web browser. Then the terms became draggable.

Would you do it again and would you recommend it to your colleagues?

Kädi actually created this ILS to be used again over several lessons and has continued to update it and use it with her students. This also relates to her use of the Teacher Feedback app since she is unable during class time to give immediate feedback to her students with

this app, but afterwards can review student responses and give the appropriate feedback. Then, during the next lesson, students have an opportunity to read her feedback and learn from it. Kädi enthusiastically recommends using Go-Lab to her colleagues and has already helped her co-teacher start using Go-Lab.

Case 2

1. Background details about

Name: Eno Pihla

School: Tartu Hansa Kool, https://www.hansa.tartu.ee/

ILS used: Two collaborative ILSs:

Päikesesüsteem - Versioon A [The Solar System - Version A] https://graasp.eu/s/juqibo

Päikesesüsteem - Versioon B [The Solar System - Version B] https://graasp.eu/s/xr17nj

1a. Your teaching background, your school and your students

Eno has been teaching primary school children for over 10 years. He is currently teaching 4th, 5th and 6th grade students at Tartu Hansa Kool in Tartu, Estonia. The school has been in existence since 1978. Since 2014 it provides education only at the basic school level, i.e. from grades 1 to 9. There are 80 teachers working at Tartu Hansa Kool.

1b. Other staff members in your school using Go-Lab

In one of his classes, Eno teaches science to about 96 fourth graders (average age of 10). He teaches this class together with 3 other teachers. The reason why there are so many students in his science class at the same time is because his school employs an open classroom environment which allows combining four classes of about 24 students each into one large group. Eno is comfortable using educational technology for teaching. His school has purchased iPads and when Eno books them in advance he is able to provide each of the 96 students with their own iPad. The WiFi internet in the open classroom is relatively fast and there is a main projector and two television screens with which Eno can display information from the computer to all of the students in the classroom.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Eno helped create an ILS on the topic of the movement of Earth-Moon-Sun system because this topic is a requirement of Estonian National Curriculum for primary school children in 4th grade science. There were actually two ILSs created because in addition to supporting the learning of science concepts the Go-Lab activity helps students improve their collaboration skills. Both versions of the ILS provide an animated 3D model of the Earth rotating about its own axis while revolving around the Sun. However, in one version of the ILS, the axis of rotation of the Earth is tilted to the same side whereas in another version of the ILS, the axis of rotation changes its tilt. Students formed pairs in which each had a different version of the ILS and they had to discuss, initially without showing their tablet screens, what makes their 3D model different from their partners' 3D model. Then after a brief period of time they were allowed to show their screens to each other. The purpose of this collaborative activity was to draw attention to the fact that the tilt of Earth's axis of rotation is a very important feature to consider. It is responsible for Earth having seasons. By having students collaborate to focus on this feature, they began to form a better understanding of what the axis of rotation means. Eno found that this ILS was suitable for his primary school students as long as a teacher provides the necessary guidance during the classroom implementation.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

Because of the large size of the open classroom and the number of students, it was important for Eno to introduce the topic clearly at the beginning and explain the directions to the students. Thus, he did not immediately distribute tablets to students because he wanted students to pay attention to his introduction. After this brief introduction (about 5 minutes) he distributed one paper slip to a pair of students. The paper slip had two links to the two different versions of the ILS. The links could be opened using a QR code or by typing in a short link.

3b. Students' behaviour and response to the practice

After the introduction, students were eager to get started with the activity. The first phase of the ILS included the "Name the Frame" app in which students had to drag the correct terms to the corresponding picture. This established that students could recognize basic features such as the Earth, the Sun and the axis of rotation of the Earth. Some students could not initially drag terms in the app on their iPad. However, if they clicked on a check mark button in the app, then they could start dragging terms. Eno had to explain this procedure to some other students who had similar issues with the app. But this issue did not significantly delay progress students made in the ILS. The challenging part of the ILS was the collaborative activity in which they had to discuss with one another possible differences in their animated 3D model. For 4th graders, communicating effectively their own perspectives as given by their models was a struggle, especially since they were not permitted to show each other their tablet screens initially. However, once they could look at each other's screens then they started to make progress. Eno would also give hints to pairs of students who continued to struggle. Eventually all pairs completed the task. Although at first students were frustrated with the collaborative task, they began to engage more with it once they realized what the difference between their models was. At the conclusion of the activity, Eno made a summary to show the correct answers to each part of the ILS. He also reinforced their learning using a physical globe in class with one girl holding a representation sun and showed the students explicitly how a constant tilt of the Earth is responsible for the north and south hemispheres experiencing a different angle of incident sunlight depending on the season of the year. Combining digital models with a demonstration of a physical model in class was a good way for Eno to teach the concepts of Earth's rotation, revolution around the Sun and the effect Earth's axis of rotation has in determining seasons of the year. Some pictures below (Figure 40) illustrate how 4th graders in Eno's classroom worked with Go-Lab.

Figure 40: 4th graders in Eno's classroom working with Go-Lab

What was good about the ILS you have used and what were the drawbacks?

For Eno it was good that students could interact with a digital 3D model of the Earth and Sun system to better understand the spatial relationships between them. His students like working with iPads and allowing them to be active investigators using digital models is a good complement to his demonstrations of scientific concepts using physical models. The drawbacks of the ILS included some unforeseen issues specific to the iPad device such as apps initially not responding to drag-and-drop gestures. However, once a work around was discovered by some students, then this issue was quickly solved for all students. Eno initially tested his ILS on a desktop computer and did not experience these technical issues.

5. Would you do it again and would you recommend it to your colleagues?

Eno enthusiastically recommends using Go-Lab to his colleagues. The Go-Lab learning environment is for him a practical way to create digital lessons easily that embed a wide variety of multimedia elements that appeal to young students. His ILS lesson employing digital 3D models and collaborative scenario was particularly useful in supporting students' spatial thinking skills and collaboration skills, two skills that are not often adequately supported in science lessons.

Case 3

1. Background details about

Name: Mario Mäeots

School: Tartu Hansa Kool, https://www.hansa.tartu.ee/

ILS used: Two collaborative ILSs):

Fotosüntees - Versioon A [Photosynthesis - Version A] https://graasp.eu/s/utbb2u

Fotosüntees - Versioon B [Photosynthesis - Version B] https://graasp.eu/s/udnf0l

1a. Your teaching background, your school and your students

Mario has been teaching primary school children for 15 years. He is currently teaching 4th and 6th grade students at Tartu Hansa Kool in Tartu, Estonia. The school has been in existence since 1978. Since 2014 it provides education only at the basic school level, i.e. from grades 1 to 9. There are 80 teachers working at Tartu Hansa Kool.

1b. Other staff members in your school using Go-Lab

In one of his classes, Mario teaches science to about 96 sixth graders (average age of 12). He teaches this class together with 3 other teachers. In fact, one of the teachers he co-teaches with is Eno Pihla, who is the teacher mentioned in Case Study #2. Likewise, similar to Eno's 4th grade class situation, the reason why there are so many students in Mario's science class is because his school employs an open classroom environment which allows combining four classes of about 24 students each into one large group. Mario is a veteran Go-Lab user, having used the Go-Lab learning environment with his students since 2014.

2. Why did you choose this ILS?

2a. Did you have to adapt the ILS in any way?

2b. May Go-Lab ILSs be easily adapted/used for Primary education needs?

Mario was interested in combining teaching of inquiry skills with teaching of collaboration skills in his science class and decided to use Collaborative Labs with his students. There are four Collaborative Labs available on GoLabz: the Collaborative Rate Of Photosynthesis Lab, the Collaborative Rabbit Genetics Lab, the Collaborative Seesaw Lab and the Collaborative Dollhouse Electricity Lab. These labs are simulations that divide information and functionality between two versions. For example, one version of a lab might allow a student to only control the variable of light intensity whereas the other version allows a student to control only temperature. By working together a pair of students can explore the full range of possibilities offered by changing these variables. However, without collaboration and cooperation students are limited to only examining effects of their single variable. Mario wanted to use Collaborative Labs to foster the development of collaboration among his students while also building their inquiry science skills. His main topic for the 6th grade students was related to photosynthesis, and for that he chose to use the Collaborative Rate of Photosynthesis Lab. However, before students would work with this lab, he wanted to get them familiar with a collaborative simulation. Thus, he included in his ILS the Collaborative Seesaw Lab in the first phase of his ILS as a way to show students how to work collaboratively. Students were asked to first work with this lab to balance a seesaw. This simulation allows a student to place objects on only one side of a seesaw, thereby requiring that a pair of students or groups work collaboratively to find a solution. The two versions of this lab were distributed to either pairs of students or to two separate groups of students.

3. How did the implementation of the activity go?

3a. The actual process of using the Go-Lab ILS in your classroom

Careful planning of the Go-Lab activity helped ensure that the implementation went smoothly. Printed paper slips were used to distribute the two versions of the ILS to different members of a student group. The paper slips included a shortened URL link to type in or a QR code to open using the camera app on the iPad. The paper slips also included a login number to ensure that students did not login with the same name and that groups working together would login to the different ILS versions using the same number. This allows the teachers to afterwards compare responses from the same group but entered in different ILS versions. In an ideal collaborative situation, the responses should be very similar or identical. For questions that were different depending on the ILS version, then the responses would reveal whether the groups successfully collaborated with each other, i.e. sharing the unique information and functionality offered by their ILS version to help their partner find a response to their question.

3b. Students' behaviour and response to the practice

Students enthusiastically began work with this digital lesson and quickly became familiar with the Go-Lab learning environment. The collaborative scenario was something new to them and they were challenged to effectively share and contribute to finding solutions to the rate of photosynthesis activity. This was somewhat expected because such a level of collaboration goes beyond simply working together, and instead required them to establish shared understanding by discovering the various perspectives and abilities of team members, negotiating the meaning of the problem, identifying tasks to be completed, and understanding roles to solve the problem. After the collaborative simulation students were asked to submit a written reflection on their collaborative experience and identify what went well and what could have been better. At the end of the lesson there was a comprehensive summary of each task in the ILS and what the correct answers should have been. All the students listened attentively to this summary and for many, seeing a demonstration of how to effectively collaborate to solve the collaborative task provided guidance on how to improve their learning. In general, collaboration was challenging for the students, but their feedback at the conclusion of the Go-Lab activity showed that they appreciated the chance to better their collaboration and communication skills, and even if they did not complete all the tasks correctly, they valued the opportunity to reflect on their mistakes during the end of class summary. Some pictures below illustrate how 6th graders in Mario's classroom worked with Go-Lab (Figure 41).

Figure 41: 6th graders in Mario's classroom working with Go-Lab

4. What was good about the ILS you have used and what were the drawbacks?

The ILS was good according to Mario because its aim was to integrate the development of collaboration skills along with building scientific inquiry skills. It employed an innovative way to incorporate collaboration, namely the use of Collaborative Labs available on GoLabz. These labs come in two versions where functionality of key variables or resources has been divided. Thus, students only have partial control over the simulation and must collaborate with a partner in order to fully explore the simulation. In the present activity, students spoke face-to-face with each other during the collaboration phase. However, collaboration could also occur using a chat messenger app, such as the SpeakUp app found in Go-Lab. Overall the collaboration proved to be challenging but was a desirable difficulty because it compelled students to exert a lot of effort and reflect on what are the key elements of successful collaboration.

5. Would you do it again and would you recommend it to your colleagues?

Mario strongly recommends to his colleagues to use the Go-Lab learning environment. It offers multiple ways of engaging students in inquiry-based science education. He finds using Go-Lab enables him to support 21st century skills like collaboration through innovative collaborative assignments that enhance communication and collaborative knowledge creation among his students.

Annex 3: TTIs Final Networking Meeting Agenda and Participants List

Teacher Training Institutes (TTIs) Final Networking Event, 5-6 December 2019

PROGRAMME

Thursday 5th December 2019

Time	Session
13:00 – 14:00	*Registration & Lunch (European Schoolnet, Comenius room, 4th floor)*
14:00 – 14:30 (30')	**Welcome to EUN and introduction to the Next-Lab and spaceEU projects** Enrique Martin & Anastasiya Boiko
14:30 – 14:50 (20')	**Next-Lab Updates** Enrique Martín
14:50 – 15:20 (30')	**Meet and Greet the other TTIs**
15:20 – 16:20 (60')	**Next-Lab TTIs Implementations - Session 1** *(10' each)* • National and Kapodistrian University of Athens - Department of Biology • Polytechnic Institute of Santarém / School of Education • University of Macedonia • University of Coimbra • Technion-Israel Institution for Technology and Science
16:20 – 16:40 (20')	*Coffee break*
16:40 – 17:40 (60')	**Next-Lab TTIs Implementations - Session 2** *(10' each)* • Vytautas Magnus University Education Academy • ICE-UPC and FCRi • National and Kapodistrian University of Athens - School of Education • University of Turku • Escola Superior de Educação de Coimbra
17:40 – 18:00 (20')	**Recap of the day and practicalities**
18:00 – 19:30	*Free time to visit Brussels*
19:30 – 21:00	**Networking dinner – "Inquiry and ICT in Education"**

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Teacher Training Institutes (TTIs) Final Networking Event, 5-6 December 2019

Friday 6th December 2019

Time	Session	
08:45 – 09:00 (15')	*Registration to the second day (Comenius, 4th floor)*	
09:00 – 09:45 (45')	**Next-Lab TTIs future plans & related activities** *(10' each)* • University of the Aegean • Riga Technical University Distance Education Study Centre • GFOSS (Next-Lab) • University of Extremadura	
09:45 – 10:00 (15')	*Coffee break / Stretch legs*	
10:00 – 11:00 (60')	**New TTIs, spaceEU & Go-Lab** *(5' each)* • Vilnius Gediminas Technical University • Parque de las Ciencias de Granada/ESERO Spain • Meram District Directorate of Education • Municipal center for extracurricular activities • Ecsite • Centro Autonómico de Formación e Innovación • Universitat de València • Science Gallery Dublin • Mary Immaculate College • GFOSS (spaceEU)	
11:00 – 11:15 (15')	*Change rooms / Stretch legs*	
	Comenius (4th floor) **Next-Lab TTIs*	*Curie (4th Floor)* **spaceEU*
11:15 – 12:00 (45')	**EUN Academy & Go-Lab Online** Jelena Milenkovic	**Integration of space topic in TTIs training programmes – Part 1** Anastasiya Boiko

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Teacher Training Institutes (TTIs) Final Networking Event, 5-6 December 2019

Time	Session	
12:00 – 12:15 (15')	*Coffee break / Stretch legs*	
	Comenius (4th floor) **Next-Lab TTIs*	*Curie (4th Floor)* **spaceEU*
12:15 – 13:00 (45')	**Next-Lab Sustainability** Enrique Martin & Evita Tasiopoulou	**Integration of space topic in TTIs training programmes – Part 2** Anastasiya Boiko
13:00 – 14:00 (60')	*Lunch & Farewell*	

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Teacher Training Institutes (TTIs) Final Networking Event, 5-6 December 2019

PARTICIPANTS

	Last Name	First Name	Country
1	Angelopoulos	Panagiotis	12. Greece
2	Boiko	Anastasiya	European Schoolnet
3	Cantó Doménech	José	28. Spain
4	Cavadas	Bento	24. Portugal
5	Cubo Delgado	Sixto	28. Spain
6	D'Arcy	Grace D'Arcy	15. Ireland
7	Filipecki Martins	Suzana	21. Netherlands
8	Galani	Lia (Apostolia)	12. Greece
9	Gentile	Mattia	European Schoolnet
10	Georgiou	Martha	12. Greece
11	Gras	Agueda	European Schoolnet
12	Jokin	Ivo	03. Bulgaria
13	Juskaite	Loreta	18. Latvia
14	Kanychis	Panagiotis	12. Greece
15	Lazauskaitė	Romualda	19. Lithuania
16	Lefkos	Ioannis	12. Greece
17	Liston	Maeve	15. Ireland
18	Magid-Podolsky	Stella	16. Israel
19	Mamčenko	Jelena	19. Lithuania
20	Martin	Enrique	European Schoolnet
21	Milenkovic	Jelena	European Schoolnet
22	Rebelo	Piedade	24. Portugal
23	Santos	Raquel	24. Portugal
24	Şentürk	Filiz	31. Turkey
25	Seoane Bascoy	Javier	28. Spain
26	Tasiopoulou	Evita	European Schoolnet
27	Tsiastoudis	Dimitrios	12. Greece
28	Vaz	Dulce	24. Portugal
29	Veermans	Koen	09. Finland
30	Villacastin	Esther	28. Spain
31	Whittington-Davis	Andrew	02. Belgium
32	Zurita i Món	Sílvia	28. Spain

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