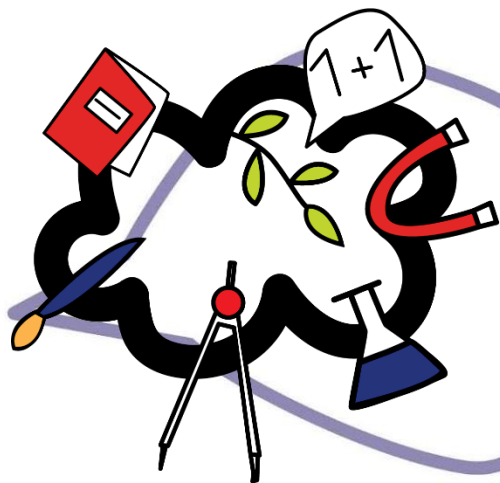




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OTA

ONLINE TEACHING ADVANCEMENT



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OTA - ONLINE TEACHING ADVANCEMENT – SCIENCE THROUGH ART

SYNTHESIS REPORT

(PILOT AND FOCUS GROUPS)

COMPILED BY

IZOBRAŽEVALNI CENTER GEOSS D.O.O. (SI)

WITH

INNOVADE (CY), CESIE (IT), NARODNA GALERIJA (SI), OSNOVNA ŠOLA
LITIJA (SI), HEUREKA – THE FINNISH SCIENCE CENTRE (FI)

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 Narodna galerija
National Gallery of Slovenia

 Heureka

 cesie
the world is only one creature

 innovADE
LEADERSHIP IN INNOVATION





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1 INTRODUCTION

OTA project in its two years of lifetime followed the main objectives set at the beginning:

- *To equip primary / secondary science teachers in formal settings with skills and knowledge that will allow them to work in a diverse online classes, in order to create a safe learning environment for pupils by using different art forms to teach science.*
- *To ease the transition to new learning settings, build confidence and promote children's personal growth after a life-changing event such as studying in online learning environments without the support of friends and peers.*
- *To influence policy makers in all partner countries in order to provide guidance and educational support for an effective online science education.*
- *To allow relevant stakeholders in education to get involved in the project and to use the platform so as to prepare their learning sessions and exchange best practices.*

Following this objectives, OTA project established an interactive and engaging online learning platform, where main project results are available. One of projects' most tangible result is in a form of 101 learning activity, which are all accessible on the platform. Activities on the platform are provided in a way, teachers can use them for their on-line teaching and introduce them to pupils via on-line platforms and in remote environments. One of the basic guidance consortium set while preparing these activities was also to prepare them in a way, they can be implemented also in face-to-face environment. Even though being exposed to Covid-19 pandemic, many on-line encounters are still taking place and people accepted them as an ordinary everyday life companions, times from the beginning of the project to its end changed. Pupils returned to classrooms and classes are back to being implemented face-to-face. For the usefulness and sustainability of the project, it was thus very important to provide thoughtful learning activities with ability to be effective in different learning environments.

In the last phase of OTA project, several activities took place, where partners of the project gathered feedbacks from different profiles of persons to ensure the quality of project results, its usefulness, contribution to an existing situation and potential of the sustainability of the project.

Every participating country conducted focus groups meetings at the beginning of the project as well as in the final phase.

Every participating country organized piloting events to include target groups of science teachers of primary/secondary schools and pupil, aged 12 to 14.



All participating countries tested activities by implementing piloting event in their own or external organizations. They selectively piloted a number of learning activities with different groups of pupils in 4 countries of the project: Slovenia, Italy, Cyprus and Finland. The objective of the piloting was to ensure that OTA activities and online learning platform can be applied in classroom during the formal educational process as well as in non-formal settings, and provide the expected education and motivational results. Through systematic evaluation consortium also wanted to assess the relevance and effectiveness of the OTA activities and online learning platform for the target groups. To achieve this, several piloting activities were organised by the project partners, involving in total 233 pupils of primary/secondary school, aged 11-14 and 60 high schoolers, aged 16, across European countries. All partners reported and evaluated pilot courses they organised. Prior pilot took place, partners had a training event in Cyprus, where they had an extensive look of an overall project's process, walk-through the methodology, presentation and testing of some of the developed activities as well as creating new ones, based on the OTA Methodology. Trained teachers/trainers returned to their home countries and organized the OTA piloting, in both formal and non-formal settings.

2 PILOTING

2.1 EVALUATION FORM

After implementing the activity or activities, teachers were given common evaluation form. The form aimed in gathering feedback for of an overall opinion about the content of the activity/ies they tested and whether it ticks all the key principles of OTA Learning Methodology and other important properties that were outlined in project's process.

Thus, the first part of the evaluation form was gathering feedback on the *clarity of the structure of activities; whether the connection between science and art is good; does the activity help pupils with better understanding; raise their motivation; contains good connection to an everyday topic/topic that is relevant for pupils; encourages pupils to work individually and if it reaches the objectives set.*

Teachers were also asked, if they are planning to use this activity/ies in future and if they would recommend others to use this activity.

The other part of evaluation form was prepared to provide teachers' feedback of the OTA Learning Platform.

Teachers were asked to share their opinion of visual appearance, usefulness, clarity and amount of information on the OTA Learning Platform.



They also had an opportunity to share if they faced any difficulties and to provide suggestions for improvement.

After the piloting some of the facilitators shared additional information beyond evaluation questionnaire.

2.2 SLOVENIA

In Slovenia, piloting was carried out in Primary School of Litija and in National Gallery of Slovenia.

In Primary School of Litija 2 teachers piloted 4 different activities in 4 groups of pupils.

Together 117 pupils were involved in piloting, aged between 12 and 13.

Piloted activities:

Physics:

How much space do chess pieces take up?

Maths:

Flags, flags, flags

How does math help us make cartoons?

The epidemic and attendance at world-famous museums

Both teachers reported that the structure of activities is clear and easy to use and that all of the activities encourage pupils to work independently. Majority of piloted activities contain a good connection between science and art and a good link to interesting topic from everyday life or topic closely connected to pupils general interests. Half of the activities are successful with achieving the learning objectives set and are helping pupils to better understand science topic or raise their motivation. Others are rated as *somewhat* in these categories, while none is rated with *not at all*. While one of the teacher is very satisfied with overall OTA platform appearance (visual appearance, usefulness, clarity, amount of information) the other rated it somewhere in the middle. Both will recommend others to use activities in their classes and both are planning to use other OTA activities in future.



Figure 2: Who doesn't love cartoons?

In National Gallery of Slovenia facilitator of pilot event was gallery's own pedagogue. She piloted one activity in two groups of pupils, aged 16. Together there were 60 pupils present on the piloting event.

Piloted activity:

Chemistry:

Mixing oil paint

Trainer stated that the structure of activities is clear and easy to use. Activity contains a good connection between science and art and a good link to interesting topic from everyday life or topic closely connected to pupils general interests. It helps pupils to better understand science topic and is successful in achieving learning objectives set. It somewhat raise their motivation and encourages pupils to work independently. Trainer is very satisfied with overall OTA platform appearance – visual appearance, usefulness, amount of information, and a little less with its clarity. She will recommend others to use this activity in their classes but does not know at the moment if she will use other OTA activities in future.

2.3 CYPRUS

1 teacher piloted activity in a class of 50 pupils aged 14.

Piloted activity:

Physics:

Finding mass centre II

The teacher found the piloted activity useful to be applied in class. It has a clear structure, proposing an interesting connection between science and art (more specifically pupils explore the centre of gravity through the creation of beautiful balanced crafts). Students had the

chance to practically explore the topic first through investigation, experimentation and observance. Their work and conclusions smoothly led to the theoretical part of the topic. This approach definitely helped them understand the topic better and be more engaged in the classroom. The teacher reported that he will definitely navigate the OTA platform, use more activities in his class and recommend them to his colleagues. Regarding the platform, the teacher finds it user- friendly, visually appealing with a well – organized content.

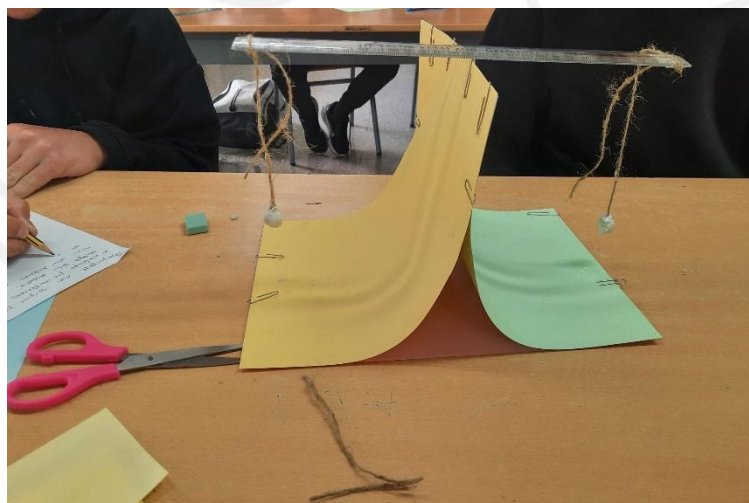


Figure 2: Is it balanced?

2.4 FINLAND

3 teachers piloted 4 activities. They each tested all 4 of the activities. Together 46 pupils aged between 12-13 and 9 pupils aged 11 participated.

Piloted activity:

Physics:

Archimedes experiment

Chemistry:

Money Laundering

Lab Disaster

Find the mistakes

All teachers reported that the structure of activities is clear and easy to use. With an exception of one teacher, who felt that activities somewhat contains good connection with art and somewhat encourages pupils to work independently, all categories were rated with the highest rate, regarding activities or overall appearance of OTA Platform. All teachers are planning to use OTA activities in future and will recommend them to others.



Figure 3: Let's have some money washed

2.5 ITALY

The activities were implemented by a teacher assisted by the project manager who designed the proposed activities.

20 children aged 12 and 13 were trained.

Piloted activity:

Maths:

One day as Leonardo Da Vinci

The perfect fit

The class in which the activities were implemented corresponds to the second year of secondary school. The pupils had already studied the proposed topics. Before the start of the activities, the project manager who followed OTA did an ice-breaking activity, asking them which was their favourite subject and which they did not like.

The majority of the class answered that the most difficult and sometimes boring subject was mathematics and especially geometry, and based on these answers, the two activities that were chosen were precisely geometry and arithmetic.

The pupils were very interested in this new methodology created for learning difficult topics more easily.

In the activity on Leonardo Da Vinci, they reproduced the Vitruvian man and had fun speculating on how Leonardo da Vinci had thought of making that drawing.

Thanks to a discussion with the teacher, they went over the properties of polygons.

The other proposed activity triggered a competition between the different groups, who had fun despite the fact that the activity involved doing operations.

The teacher found the tested activity useful to apply in the classroom and found the link between science and art relevant. She was very satisfied with the platform and will talk to colleagues about using it.

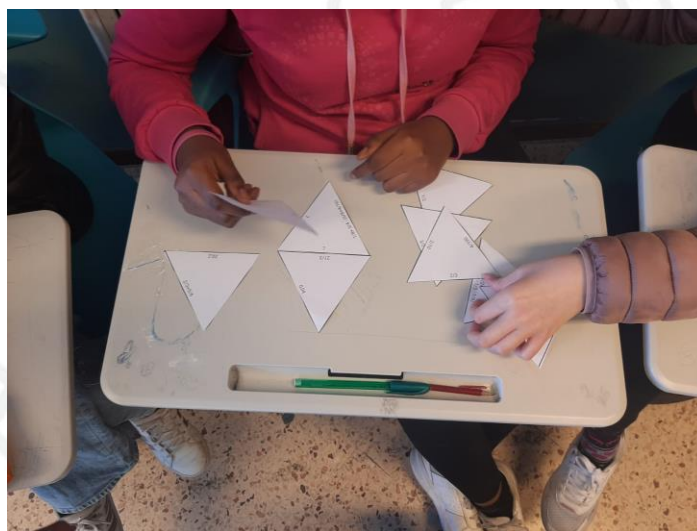


Figure 4: Does it fit?

3 FOCUS GROUPS

Each country conducted focus groups meetings to evaluate overall projects' results with special focus on OTA Learning Platform and contents of the activities.

Focus groups were advised to use following questions for the starting point of their debate:

1. Name 3 things you like the most about OTA Learning Platform.
2. What aspects of platform could be improved?
3. Share your thoughts of the structure: is it clear, is the navigation easy, is it user-friendly?
4. What did you expect after first Focus Group meeting in November 2021 and how is the result different in comparison to your expectations?



3.1 SLOVENIA

1. Venue: National Gallery of Slovenia

Date: 20. 3. 2023

Present: Gallery employees from Education, Curators and Conservation-Restoration departments

On the 20th of March, The National Gallery of Slovenia held a focus group meeting. The participants were from different gallery departments: Education, Curators and Conservation-Restoration. The first part of the meeting was dedicated to the presentation of the platform and two lesson plans; the second part was focused on the feedback from the participants.

They appreciated the idea of the project and liked the clear instructions of the lesson plans.

Members of Focus Groups also reported on some issues, that were taken into a count and are being resolved if relevant.

Some of the issues: language on the first page of the platform could be a bit more user friendly, the expressions could be less technical. The first page could be a bit clearer as to what kind of exercises are available.

2. Venue: Primary School Litija

Date: 16. 3. 2023

Present: natural and science teachers, special needs teachers, project manager, primary/secondary school teachers

Teachers reported on positive aspects of the Platform as following:

- + The activity platform is clear, organised by subject and theme, visually appealing, with clear objectives at the start of each activity.
- + We like the drop-down menu icon on the left-hand side, which allows you to jump between the different sections and makes it even easier to navigate through each activity.
- + The design of the website is playful, with attractive icons.
- + The materials are extremely suitable for activity days in Slovenian schools. This week, we also used the Floating metal material in a physics activity day.

Teachers also reported some issues that are being resolved if relevant:

- Some of the materials are very extensive, while others are short and require pre-knowledge.
- Technical error in content.

Teachers who were actively involved also in preparation of the materials are reporting that at first didn't imagine, what will this type of work bring to them, but while digging deeper in the project, the more meaningful it became to them.



Figures 5 and 6: Focus groups meetings in Slovenia

3.2 CYPRUS

Venue: INNOVADE's headquarters

Date: 14. 3. 2023

Present: educational researcher, natural and science teachers

The participants were introduced to the OTA platform and its main sections. A quick overview of the needs analysis and methodology followed and then participants had the chance to navigate the repository of activities and discuss their thoughts.

After the session, participants were given a short online survey to provide their feedback. The feedback for both the design and the content of the platform was positive. Participants believe that the platform is visually appealing, well-structured and user-friendly. The user can easily navigate and find useful material, which is categorised in topics and subtopics according to the curricula. This is really practical for a teacher with limited time, as he/ she can easily find and download an activity tailored to his/ her teaching needs.

The elements participants mostly liked in the platform are:

- + The great amount of activities available.
- + The well-structured and comprehensive content.
- + The categorization of activities into subtopics according to the curricula.
- + The design and interactivity of some activities.

When asked what they would improve, they reported the following:

- A search button could help, as the activities are many.
- The material should be disseminated in ministries and schools – teachers need to be aware of the availability of such useful material online and be encouraged to use it.
- The platform should be easily identified on google.

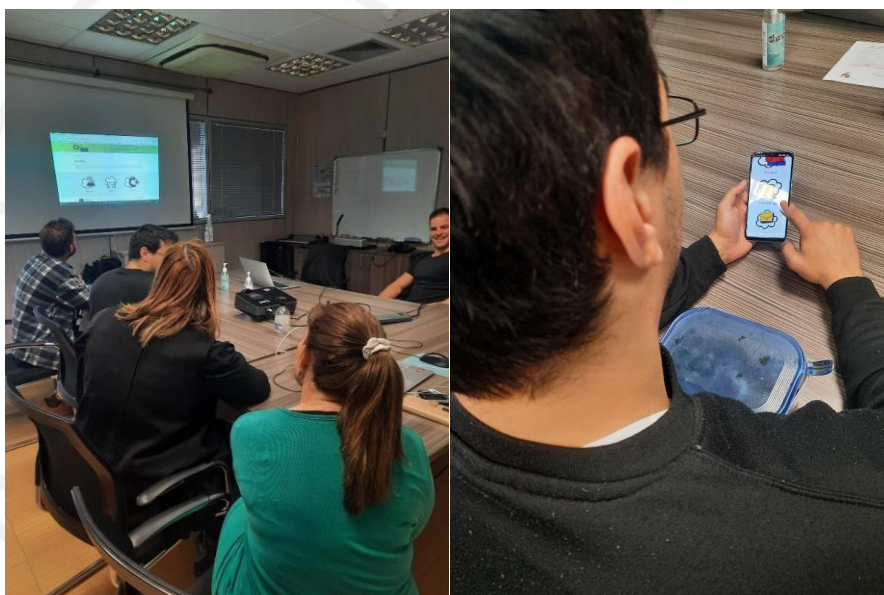


Figure 7: Focus group meeting in Cyprus

3.3 FINLAND

Venue: on-line

Date: 20. 3. 2023

Present: Human Resource Planner, Teacher Students, Audience Development Coordinator, Pedagogical Coordinators, Theme Leader

Members of Focus group reported:

- + They like that the activities have been divided in two ways: 1) school subject and 2) themed inside the subject. It makes it easier for the teachers to find activities that suits for their teaching.
- + It's also nice that methodology and needs analysis can be found on the web page. This gives the interested teacher easy way to learn more about the background of the produced materials.
- + The platform itself it's nice and colorful.
- + I liked how the instructions of the activities are split into separate sections, »step by step« , so that it's really easy to follow.
- + The exercises are fun and innovative.



- + There are loads of exercises to choose from and they are titled informatively.
- + The clarity of the platform, easily downloadable files, flipbooks.
- + The content was easily applicable for many different target groups.
- + The symbols of the subjects etc. are nice.
- + The structure is clear and easy to use.
- + I find the website very easy to use/navigate. It is also very easy to scroll through different activity options and download the ones you want.
- + I think it was a good idea to create separate folders for different topics as it makes it easier to find exercises for a particular subject.
- + Overall, a very good and user-friendly website that I'll happily use!

What aspects of platform could be improved?

- I wish it read in the description of the exercise what grade/age students the exercise is best for.
- Some of activities were too long.
- A search function for different topics and subtopics could have been better.
- The website itself was a bit difficult to navigate (e.g., after finishing with an activity I couldn't find my way back to the front page or the list of all the activities) but I don't know if it's only because of the mobile version I was using.

Members reported that the amount of activities is impressive, they like activities a lot, they are easy to use with useful material. The overall number of activities surprised me. Many of them I like a lot and I think teachers can utilize them in their daily work. Implementing art to science teaching has been a good way to inspire pupils.



Figure 8: Focus group in Finland



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3.4 ITALY

Venue: on-line

Date: 23. 3. 2023

Present: A Graphic designer, An Art teacher, An Educator , An ICT teacher

The participants were introduced to the OTA project, with an overview of the main steps the partnership made in the last 2 years. The analysis phase that preceded all the work was explained and the methodology supporting OTA's work was also analysed. Afterwards, participants were led through the sections of the platform.

After the session, participants answered some short questions to provide their feedback. Participants found the platform visually appealing, both from a visual and practical point of view. Access to the platform content was easy and all steps very intuitive. The division into topics and subtopics is very useful.

The elements that participants most appreciated about the platform are:

- + The possibility of covering the same topic with several activities.
- + The complementarity, at times, between the different activities proposed.
- + The intuitive use of the platform.
- + The visual aspect, which is very attractive.

Participants didn't report any particular issue.

4 CONCLUSION

Piloting events took place in Slovenia, Finland, Italy and Cyprus. Most of them were implemented in primary/secondary schools environments and facilitated by the teachers of natural/science subjects. All of the teachers who piloted selected activities stated, they **will recommend using the material to others** and the vast majority **are planning to use them in their future work**. Some piloting events also took place outside formal education environment – in the gallery and with a group of older pupils, who are already in high school. Objective of setting pilot events in different environments and with different aged pupils was to show that activities are appropriate for pupils beyond target ages of the project and they can be implemented also in non-formal educational environments.

From the beginning of the project, the situation regarding Covid-19 pandemic changed and pupils returned to their classrooms. Thus, all piloting events were implemented in face-to-face settings. For the activities, which have exercises tight to online programmes, such as GeoGebra, teachers are recommending to organise them in computer classes, so pupils have individual access to computer and internet, when implementing them face-to-face rather than from home.

After piloting events teachers also responded beyond the evaluation questionnaire. They stated they feel that connecting science with art is an appealing way to teach science and that they appreciate being part of this project.

Positive feedbacks from teachers confirmed the effectiveness and appropriateness of the learning activities. Overall facilitators reported that the structure of the activities is **clear and easy to use, contain relevant connections of science and art and are helpful for pupils' better understanding** of presented science topic. They are also good for raising pupils' motivation and encouraging their individual work. Teachers found the connection between science and art aesthetically pleasing and a good addition to the aesthetic education.

Regarding the platform, facilitators reported, they are satisfied with its overall appearance and usefulness.

Aside from piloting events, also focus groups meetings were held in each partners' countries, to gather feedback of overall project results, with special focus on the platform and its content. Focus groups were formed with several different profiles: primary/secondary school teachers of natural and science subjects, art teachers, ICT teachers, museum pedagogues, curators, restaurateur-conservators, human resource planner, teacher students, audience development coordinator, pedagogical coordinator, theme leader. The majority of feedback from focus groups members was positive; they found the platform visually appealing, both from a **visual and practical point of view**. They agree that implementing art to science teaching has been a good way to inspire pupils.



Members also pointed out the usefulness of the categorization of activities into subtopics according to the curricula and liked the clear instructions of the lesson plans, which are divided into “step-by-step” sections.

They also gave some suggestions for the improvement, which were considered and helpful for the revision and finalisation of the platform.

ANNEX

EVALUATION QUESTIONNAIRE

1. Please, write the title of the activity you were piloting:
2. What is your opinion about the structure of the activity?
 - The structure is clear and easy to use.
 - The structure is somewhat clear.
 - The structure is not clear and wasn't easy to use at all.
3. In your opinion, did the content of the activity (please mark):

	Yes, to a great extent	Somewhat	Not at all
Contain a good connection of science and art?			
Help pupils to better understand the science topic?			
Raise pupils motivation?			
Contain a good link to interesting topic from everyday life or topic closely connected to pupils general interests?			
Encourage pupils to work independently?			
Achieve the learning objectives set?			



4. Would you recommend others to use this activity?

- Yes
- No

5. Do you plan to use OTA activities in the future?

- Yes
- No
- I don't know

6. What is your overall impression of the OTA Learning Platform? Please rate.

	1 not satisfied at all	2	3	4	5 very satisfied
Visual appearance					
Usefulness					
Clarity					
Amount of information					

7. Did you face any obstacles when piloting the activity? If YES, please describe:

8. Do you have any suggestions for improvement or any other comment? Please write: