

IO 11. Evaluation, replication and recommendations: follow-up of the ODYSSEY project

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Executive summary

This report concerns Intellectual Output 11 **Evaluation, replication and recommendations: follow-up of the ODYSSEY project**. In this document we present the aims and methods used for evaluation of the project's outcomes. Next, the results of post-questionnaires among teachers participating in the testing phase in partners' countries as well as short satisfaction surveys among participants of the multiplier events are presented.

A separate part of the document is dedicated to multiplier events (workshops and final national conferences organised by partners) as well as presentations of the project during various external events. A list of peer-reviewed publications is also presented. In the final part reflections on possible follow-up actions and further dissemination in European countries is discussed.

The manifest conclusion to be drawn is that the ODYSSEY project is definitely of future relevance and the replication of the ODYSSEY method and materials is highly appropriate, as the need for well-educated and able to communicate STEM professionals and applicable educational material and tools at secondary school level is increasing in Europe and globally.

General information about the project

Education systems in most European countries face the same challenge: to raise the level of achievements in the field of basic skills, including reasoning in STEM. In addition, students' rhetoric skills – argumentation, oral presentation – are insufficient, which leads to inaccurate use of language and susceptibility to 'fake news'. Rhetoric education supports critical thinking and the ability to use various sources of knowledge, with an emphasis on verifying their credibility, civic education and contributes to creating the ambiance of tolerance and democratic values.

The main goal of the ODYSSEY project was to increase the reasoning skills in STEM by participating in Oxford debates among 40% of students (13-19 years) taking part in the project from at least 32 schools: in Poland, Estonia, Serbia and Greece, during the project duration.

Additional goals:

- 1) To increase the interest in STEM and encourage students to undertake a scientific career in this area among 40% of students participating in the project during the test phase of the project.
- 2) Development of communication skills in mother tongue, argumentation and public speeches among 40% of students participating in the project during the test phase of the project.

- 3) Development of the ability to use Oxford debates in school practice among 75% of teachers taking part in dissemination events.

In addition, the ambition of the project was to contribute to development of the ability to successfully convince, argue, reason and speak correctly, and to improve the ability to compose texts and use rhetoric apparatus in oral statements, speak in accordance with the rules of language culture, interpret texts. The project was planned to improve following skills: public presentation and presentation of texts, discussions and negotiations, and participation in debates.

Project target groups:

– within the testing phase: students (13-19 years old) and STEM teachers from at least 32 schools, at least 8 from Poland, Estonia, Serbia and Greece, including at least 320 students and 32 teachers

– at the dissemination stage: 300 STEM educators and teachers and their students (about 7,500 people) aged 13-19, from at least 4 countries of Poland, Estonia, Serbia and Greece.

The project includes 5 phases:

- 1) Preparatory phase – development of a desk research report, preparation of project implementation methodology for institutions / scientists, national project implementation framework, guide on the rules of Oxford debates, educational packages for use in STEM school practice (5 packages in Polish, Estonian and Serbian , Greek, 19 packages in English), elaboration of competition regulations for school debates;
- 2) Recruitment of at least 32 schools from 4 countries;
- 3) Testing phase began with a workshop for teachers, during which the rules for conducting the debates were presented and the proposed topics were discussed. Next, the teachers prepared their students for the competition using the prepared materials for the debates. Schools could benefit from “expert mentoring” – meetings with scientists. At the end of the test phase, in each partner country, debate tournaments were organised.
- 4) Dissemination phase, during which national conferences and workshops for teachers in partner countries were organised. The conferences allowed to present the experiences gathered by schools, present materials, discuss the role of the debate in STEM education. During the conference, the final debates of the winners took place. During the workshops, the teachers got acquainted with the materials prepared within the project.

- 5) Wrap-up phase included the preparation of reports on the implemented activities, as well as practical possibilities of using the materials and the proposed method in school practice, including in other European countries.

Evaluation of ODYSSEY impact and its outcomes

General information and criteria of evaluation

The project was subject to evaluation by its participants: teachers and indirectly – students. The aim of the evaluation was to determine the relevance and level of achievement of project objectives, development, effectiveness, efficiency, impact and sustainability. This required involving end-users in the process, collecting and analysing information about project activities, characteristics and outcomes.

Odyssey project's approach is multi-mode data collection: CAWI and FGI:

- ✓ CAWI - Computer Assisted Web Interviewing (for all teachers: involved during the testing and the dissemination phases)

CAWI research technique is an interview in which the participant fills in an on-line questionnaire or survey received via the Internet. Currently CAWI method is one of the most popular and fastest-growing market research methods. Compared to other methods, with a sense of anonymity and the opportunity to participate in the study at time convenient for the respondent, it allows to collect more accurate data.

- ✓ FGI – Focus Group Interviews (ex-ante and ex-post, for teachers involved in the testing phase). Gathering information from respondents takes place during the group discussion focused on a given subject, carried out by a professional moderator. FGI method is based on a dialogue. Participants are encouraged to express themselves freely.

The project was assessed in terms of its efficacy, sustainability and utility of the methodology. Additionally, educational materials were evaluated in terms of their utility in school practice. In the table below you will find information on criteria, main questions, source of information, research methods and tools.

CRITERIUM (What aspects are assessed?)	SURVEY QUESTION (What do we want to know?)	SOURCE OF INFORMATION (Who do we want information from?)	RESEARCH METHOD (How do we want to obtain information?)	RESEARCH TOOL
EFFICACY	To what extent has the participation in the project developed	Teachers involved in testing phase	Analysis of interviews Analysis of surveys	CAWI FGI

	competences of logical thinking, reasoning, argumentation			
UTILITY OF MATERIALS	To what extent were the materials shared during the project useful and sufficient to conduct debates?	Teachers involved in testing phase	Analysis of interviews (focused on students feedback – what was confusing, unclear, interesting) Analysis of surveys	CAWI FGI
SUSTAINABILITY	To what extent is it anticipated to use project results after its termination?	Teachers involved in testing phase Teachers participating in multiplier events	Analysis of surveys	CAWI FGI CAWI
UTILITY OF METHOD	What are barriers/limitations of using proposed method in school practice?	Teachers involved in testing phase Teachers participating in multiplier events	Analysis of interview	FGI CAWI

Detailed information on evaluation

In the table below all implemented evaluation activities are presented. The table includes the information on target group, timeline, purpose and form, as well as responsible parties and used methods for each survey or interview.

Target group	Timing	Description and objectives	Responsible for distributing	Type
Teachers involved in testing phase	June-October 2019 <u>During</u> the national teacher preliminary workshop	Focus group outline for testing phase teachers Collects information to feed into the materials for schools and researchers/analysis of needs, mentoring rules and implementation schedule	Partner organising national competition	FGI
Teachers involved in testing phase	September - October 2019 <u>Before</u> the national teacher preliminary workshop	Pre-questionnaire for testing phase teachers KPIs (initial state), analysis of needs, expectations towards project	Partners organising preliminary workshop	CAWI
Teachers involved in testing phase	October 2019-May 2020 <u>After finishing testing of each package</u>	Post-questionnaire for testing phase teachers and National Teachers' board /input to modifications and improvement of packages, based on work with students	Partners preparing educational packages	CAWI
Teachers involved in testing phase	May-October 2020 <u>At the end</u> of the testing phase	Post-questionnaire for testing phase teachers KPIs - impact analysis	Partner organising national competition	CAWI
Teachers during dissemination phase/other participants CONFERENCE	September 2020 - March 2021 After the conferences	Mini Post-questionnaire for participants participant satisfaction survey	Partners organising the national conference	CAWI/ PAPI

Teachers during dissemination phase - WORKSHOPS	November 2020 - March 2021 After each workshop	Mini Post-questionnaire for participants participant satisfaction survey	Partners organising the national teacher training	CAWI/ PAPI
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Pedagogical Advisory Board

An additional element ensuring high quality of products was the appointment of an external International Pedagogical Advisory Board consisting of 4 teachers / STEM educators not directly involved in the implementation of project activities, who provided opinions on educational materials in English in terms of their methodical correctness, attractiveness, opportunities to use in school practice. They may also help in replication of the project after its completion in other European countries.

Results of evaluation

In this section, we are presenting the summary of evaluation results. First, CAWI post-questionnaire results will be discussed. Surveys on the packages are not presented here, as they were conducted in national languages and the results were used for providing necessary changes and updates requested by users. The detailed report on the Focus Group Interviews was included in the report IO10. *Good practices in the use of the Oxford debate as an educational tool within STEM*. Finally, we present the results of the evaluation of the multiplier events.

CAWI post-questionnaire for testing phase teachers

36 teachers from schools in Greece (11 schools), Estonia (8 schools), Poland (10 schools) and Serbia (7 schools) participated in the online post-questionnaire. Teachers were requested to provide information on number of students, who formed debate teams as well as those, who participated in the project activities (not necessary in the preparation for the debate tournament). The results from the survey concern 438 students (256 schoolgirls and 217 schoolboys) aged 13-19, with majority of groups aged 17-18 and total of 952 students, who participated in activities to some extent.

Teachers were implementing the ODYSSEY activities during various regular classes: Biology, Physics, Geography, Chemistry, national language, English, Mathematics, as well as during extracurricular classes: project activities, rhetorical clubs, meetings after regular classes.

In the table below you will find the summary of findings from all 4 countries:



		Strongly disagree	Disagree	Agree	Strongly agree
3.1.1	I was comfortable using debating in my science/technology/engineering/mathematics (STEM) class.	2	6	16	13
3.1.2	I believe I am capable of coordinating a debate project with my pupils to deliver educational content in my teaching.	0	4	25	7
3.2.1	Pupils got closer to science and scientific materials/scientific language	0	2	23	11
3.2.4	Pupils were able to apply theoretical knowledge in practice	0	3	25	8
3.2.5	Pupils developed communication skills	0	2	22	12
3.2.6	Training debates improved pupils' engagement in classes.	0	6	25	5
3.2.7	Training debates increased pupils' motivation to learn the curriculum content	1	9	21	2
3.2.8	ODYSSEY improved my position among my colleagues (other classroom teachers) who are interested in innovating their classroom teaching.	2	8	17	9
3.2.9	It gave me the chance to interact with people outside my usual professional circle.	0	4	14	18
3.2.10	ODYSSEY provided professional (skills) development opportunities useful for my teaching.	0	3	18	15
3.2.11	The ODYSSEY educational materials were useful and sufficient to conduct debates	0	0	7	19
3.2.12	I will use ODYSSEY educational materials and method in future (after the project's closure)	0	0	8	18

Teachers also indicated some **challenges and barriers** in introducing debates in the classroom:

- Insufficient time – 24 responses
- Not sure how to find such projects/materials that can be used in the classroom – 1 response
- Not sure how to use debates in the classroom – 4 responses
- Unclear benefits of using debates in the classroom – 0 responses
- Emphasis on standardized test scores – 5 responses

- Lack of school support – 0 responses
- Lack of parental support – 0 responses
- Other: low student motivation, lack of possibility to use material during regular classes.

Next part of the survey was dedicated to assessment of the project's impact on students participating in ODYSSEY activities. Teachers were asked to provide information on the number of pupils:

- Whose skills of reasoning in STEM increased thanks to the participation in the project: **593 out of 952 students (62,29%)**
- Whose interest in mathematical and natural sciences increased thanks to the participation in the project: **569 out of 952 students (59,77%)**
- Who developed communication skills in the mother tongue, argumentation and public presentation skills thanks to the participation in the project: **690 out of 952 students (72,48%)**

CAWI - survey for participants of multiplier events

It was a short online survey filled in by 392 teachers, who participated in the multiplier events. As the survey was not obligatory, not all participants filled it in. With the use of this survey, partners monitored satisfaction of participants of the workshops and final Odyssey conferences organised nationally. The most important question, allowing to assess one of the project's indicators was the question, if teachers developed ability to use the ODYSSEY method in the school practice. As positive answers we treated: *rather yes* and *definitely yes*. Among 392 teachers, who participated in the survey, we obtained following results:

Greece:

- Conference: 66% definitely yes, 34% rather yes, 0% rather not, 0% definitely not;
- workshops: 40% definitely yes, 53% rather yes, 7% rather not, 0% definitely not;

Estonia:

- workshop: 59% definitely yes, 34% rather yes, 7% maybe, 0% definitely not;
- conference: 17% definitely yes, 50% rather yes, 33% maybe, 0% definitely not;

Poland:

- workshop: 82% definitely yes, 18% rather yes, 0% rather not, 0% definitely not;
- conference: 81% definitely yes, 19% rather yes, 0% rather not, 0% definitely not;

Serbia:

- workshop: 39% definitely yes, 57% rather yes, 4% rather not, 0% definitely not;
- conference: 35% definitely yes, 57% rather yes, 8% rather not, 0% definitely not;

Teachers' overall impressions about the training were overall positive. Some of the aspects they valued the most were: quality of material; enthusiasm, preciseness and competence of trainers; examples of good practice; video materials; application of ODYSSEY debate in STEM subjects; concrete examples and explanations. What they most liked was the way the topic was presented, that it was very informative and diverse, the final debate itself, great atmosphere, competence of the trainers, video materials, good examples and teaching materials, etc.

There was also room for improvement, as indicated by the participating teachers. They specified the need for more practical examples and examples of successful debates; a recorded simulation of a debate would be useful; trainings should be held more frequently and could last longer.

The summary of result is that **97% of teachers participating in the survey after multiplier events** assessed that they developed the ability to use ODYSSEY method in the school practice.

Project's KPIs

Four success indicators were foreseen and implemented as follows:

- 1) Increasing the skills in reasoning in the natural sciences through participation in Oxford debates - 40% of students (13-19 years) participating in the project from at least 32 schools: in Poland, Estonia, Serbia and Greece during the project – project's outcome: **62% of students**.
- 2) Increasing the interest in STEM and undertaking a scientific career in this field - 40% of students participating in the project during the test phase of the project – project's outcome: **60% of students**.
- 3) Development of communication skills in the mother tongue, argumentation and public appearances - 40% of students participating in the project during the test phase of the project – project's outcome: **72% of students**.
- 4) Development of the ability to use Oxford debates in school practice - **75%** of teachers participating in multiplier events – **97% of teachers** responding in the surveys after workshops and conferences.

Additional indicators are:

1. Project's website: <https://odyssey.igf.edu.pl/> and Facebook fanpage <https://www.facebook.com/odysseydebates>
2. 4 introductory workshops for teachers – **5 introductory workshops** were organised: one in Greece, Estonia and Serbia and two in Poland
3. At least 4 dissemination workshops – **8 workshops** organised: one in Estonia, three in Greece, one in Poland and three in Serbia
4. 4 Oxford-debates competitions for schools – **4 tournaments** organised: in Greece, Estonia, Poland and Serbia
5. 4 final national conferences – **4 final conferences** organised: on 23.01.2021 online in Greece, on 19.02.2021 in Estonia (hybrid event), on 20.03.2021 online in Poland, on 29.09.2020 in Belgrade, Serbia
6. Number of teachers, who received materials (paper or electronic version): **684**

Replication

During the dissemination phase – from September 2020 till March 2021 all partners organised several multiplier events. Below you will find the list of the ODYSSEY multiplier events

Multiplier events in Estonia

Name of event: ODYSSEY Conference in Estonia “How to support the student's argumentation skills?”

Date and place: 19.02.2021, hybrid (Energy Discovery Centre and online)

Number of participants: 30 at the Centre and 32 registered online. Video reached to 550 unique visitors.

There were several presentations about debate and how to use this as a method in school, how to use the developed ODYSSEY materials, and pilot school teachers shared their experiences. The final debate on the topic “In Estonia, it is possible to quit using oil shale only if we introduce nuclear energy” took place between the students of Tabivere Põhikool and Merivälja Kool. Estonian Debating Society moderated the conference. Facebook Live (link to the conference: <https://fb.watch/49NDFMlp3U/>). The agenda of the conference can be found here: <https://www.energiakeskus.ee/konverents/>

Name of event: ODYSSEY workshop in Estonia “How to use debate as a method?”

Date and place: 18.03.2021, online

Number of participants: 60

During a 6-hour long online training, the debate trainer and teacher Siim Ruul gave an overview of debate, how to form an argument, etc. and also shared valuable debate exercises to practice with students. Apart from that the overview of thematic packages, teacher materials were presented. All together there were 60 teachers participating from all over Estonia. The agenda of the workshop can be found here: <https://www.energiakeskus.ee/opetajakoolitus/>

Multiplier events in Greece

Name of the event: ODYSSEY Conference in Greece

Date and place: 23.01.2021, online Zoom platform

Number of participants: 194

Description: During the e-conference, teachers and students from the 11 participant schools to the ODYSSEY project shared their experiences and impressions, highlighting the value of argumentation and controversy in the teaching practice of STEM education. The final debate took place between the 6th GEL Kallithea and the Greek-French school Agios Pavlos-DelaSalle on the topic of Nanotechnology. The first prize of the debate won, the team of Agios Pavlos-DelaSalle. It is worth mentioning that we used the mentimeter application for the voting of the audience before and after the debate. Numerous distinguished guest-speakers were present such as Andreas Kondylis, Mayor of Alimos, Giannis Mariolis, Chairman of the Municipal Education Committee of the area of Alimos, the Assistant Professor of the Department of Philology of the University of Peloponnese, Eleni Volonaki, Eleni K. Efthymiadou, Assistant Professor of Bioorganic Chemistry, at the National and Kapodistrian University of Athens, Collaborating Researcher at the Institute of Nanosciences and Nanotechnology, Manuele De Conti, Lecturer at the University of Cattaneo LIUC, President of the National Italian Debate Society / SNDI, Agata Goździk, Coordinator of the European Program Erasmus + KA2 ODYSSEY representing the Institute of Geophysical Polish Academy of Sciences, Barbara Petridou, Head of Environmental Education D.D.E. B' Athens as well as many representatives of environmental education, who honored the event with their presence, highlighting the crucial role of the educational practice of controversy / debate in this area.

Workshops for educators

Name of the event: «Odyssey Debates in STEM Education:» Energy Issue: Nuclear Energy and Renewable Energy»

Date and place: 19.10.2020, online Webex platform

Number of participants: 8

The on-line training seminar was organized by the Directorate of Secondary Education of C' area of Athens, through the Heads of Environmental Education and Cultural Affairs in collaboration with the Hellenic Institute of Rhetorical and Communication Studies (HIRCS). Speakers of the workshop were: i) Panagiota Argyri, author of the package of Energy Issue and b) Foteini Englezou, Coordinator of the project. The duration of the workshop was 2 hours and a half (17.00-19.30). During the workshop educators had the chance to learn the philosophy of ODYSSEY, its objectives and aspirations regarding the cultivation of skills in STEM education. The Odyssey debate model and the Initial findings from the pilot application of the program were presented as well as basic principles for creating scientific arguments were given. Then, the educational guide "Energy Issue: Nuclear energy and renewable energy" was presented, educational materials were shared to the participant teachers and educators prepared arguments for and against the issue.

Name of the event: «Odyssey Debates in STEM Education:" Energy Issue: Nuclear Energy and Renewable Energy» / 2 day-workshop on-line

Date and place: 16.11 and 23.11.2020, online Webex platform

Number of participants: 51

The on-line two-days training workshop was organized by the Directorate of Secondary Education of B' area of Athens, of Imathia (North Greece), of Achaia (Peloponnese), of Cyclades islands and of Rethimno (Crete) through the Heads of Environmental Education in collaboration with the Hellenic Institute of Rhetorical and Communication Studies (HIRCS). Speakers of the workshop were: i) Panagiota Argyri, author of the package of Energy Issue and b) Foteini Englezou, Co-ordinator of the project. The whole duration of the 2days workshop was 5 hours. During the on-line workshop the Odyssey project, its aims and goals concerning the cultivation of skills in STEM Education were presented. After the presentation of the topic "Energy Issue" extended training was conducted concerning the pedagogical character of debates and the value of argumentation and scientific evidence in scientific debates. In more, strategies and structure of rebuttals of arguments were presented as well as emphasis was given to the exchange of questions and the recognition of fallacies. The educational materials were delivered to the participants. During the second day of the workshop two teams among the participants, after the presentation of the debates rules and of the criteria of evaluation, were shared in Webex break-out sessions for the preparation of their argumentation. A debate among the participant teams of educators concerning the Energy Issue followed. After that, feedback was given, questions were answered and the evaluation of the workshop was done.

Name of the event: «Implementation of Odyssey debates in STEM Education:"

On-line workshop.

Date and place: 22.03.2021, online Webex platform

Number of participants: 70

The on-line training workshop was organized by the Peripheral Center of Educational Design of Peloponnese through a pleiad of co-ordinators of primary and secondary education in collaboration with the Hellenic Institute of Rhetorical and Communication Studies (HIRCS). The duration of the workshop was 3 hours. Many STEM educators working in Technological, General and Vocational Junior High Schools and High Schools had the chance to learn about the Odyssey project. The educational package of the Space Exploration was presented through watching the relative educational video while the educational materials were shared to the participants three days before, for helping them participating to an on-line debate that was held. The process highlighted the pedagogical value of the Odyssey debates for the development of interest and knowledge in contemporary scientific topics S.T.E.M. but also for the cultivation of argumentative, communication skills and public speaking. Foteini Englezou was the trainer of the project.

Multiplier events in Poland

Name of the event: ODYSSEY Workshop for Polish teachers

Date and place: 04.03.2021, online

Number of participants: 31 (including 3 organisers)

Description: During the event we presented the method of using debates in science lessons and we discussed the proposed topics for debates. Detailed instructions were also formed by the methodological adviser on how to work with educational packages for debates. In addition, several engaging activities and a group work on formulating arguments were organised.

Name of the event: ODYSSEY Conference in Poland

Date and place: 20.03.2021, online

Number of participants: 45 (including 4 organisers)

Description: During the conference we presented the project's aims and achievements. Additionally to presentations by the project representative we hosted two guest speeches: Konrad Kiljan from the Foundation Debating Poland presented the debates as a tool for improving students' competences. Joanna Wilmańska – a chemistry teacher from the Primary School in Poznań, who took part in the

project testing phase and prepared Taczaki Team for the debate tournament presented the implementation of the project from teacher's perspective. Next part of the event was dedicated to the method of using debates in science lessons and detailed instructions were also formed by the methodological adviser on how to work with educational packages for debates. In addition, during the conference we organized a demonstration debate in which students from the Taczaki and Team Gaja - teams that won the debate tournament took part. Finally, we presented the debate packages – both Polish and English.

Multiplier events in Serbia

Name of the event: Final ODYSSEY Conference in Serbia

Date and place: 29.09.2020, Belgrade, Serbia

Number of participants: 60

Description: On September 29, we organized the national conference attended by more than 50 teachers, as well as student teams that competed in the finals. It was held at the Faculty of Dramatic Arts of the University of Arts in Belgrade, and we chose a large cinema hall with 300 seats of the Faculty for the venue to accommodate such a large number of participants and still comply with all prescribed epidemiological measures. The conference was attended by teachers from more than 10 cities from all over Serbia. During the conference we organised the panel discussion participated by teachers and debate trainers, including a psychology professor who has been involved in the evaluation of educational systems through PISA and PEARLS testing for years. The final debate was great and showcased the practical results of our project in the best way.

Name of the event: ODYSSEY teacher workshops

Date and place: 17.02.2021, Niš; 19.02.2021, Kruševac; 25.02.2021, Šabac, Serbia

Number of participants: 13 (including 2 organisers); 14 (including 2 organisers); 10 (including 2 organisers)

Description: Teacher trainer workshop called "Application of Oxford-type debate in STEM teaching" was held during February 2021 at Centers for professional development in three Serbian towns - Niš, Kruševac and Šabac. The workshops were held by Ivan Umeljić, ODYSSEY coordinator for Serbia, and Maja Keskinov, debate trainer and philosophy teacher. The workshops outlined the goals and ideas of the project and the teachers were given teaching materials for future use. Presenters explained the application of Oxford-type debate in teaching in detail. At the end of the workshop, the participating teachers had a chance to take on the role of position and opposition debate team members.



Presentation of the project during various international and national events

Name of the event: “ERASMUS+ DAY” in Warsaw – Congress organised by FRSE, Poland

Date and place: 08.01.2019, National Stadium, Warsaw, Poland

ERASMUS+ Day was a huge event organised by the Foundation for the Development of the Education System, ERASMUS+ National Agency in Poland. Agata Goździk presented the ODYSSEY project during a session dedicated to Strategic Partnerships in the sector of education. Project’s goals, assumptions and motivations to undertake it were presented. Next, she shared experience related to creation of the consortium and described each partner’s profile and experience in supporting STEM education.

Name of the event: «1st Panhellenic Rhetoric Conference (with international participation): The Art of Speech in Teaching Practice: In Search of Contemporary Forms of Rhetorical Education »

Date and place: 09 & 10.02.2019 Delasalle School, Alimos

Englezou, Foteini presented "Oxford Debates for Youth in Science Teaching". The presentation was realized at the 1st Panhellenic Rhetoric Conference (with international participation): The Art of Speech in Teaching Practice: In Search of Contemporary Forms of Rhetorical Education, organized by Saint Paul-Delasal Schools in collaboration with the Institute of Rhetoric and Communication Studies.(HIRCS) on 9 and 10 February 2019.

Name of the event: “Scientix Conference in Serbia”

Date and place: 22.02.2019, Belgrade, Serbia

Scientix Conference in Serbia was organised as a three-day event with international speakers. The conference was organised by Center for Promotion of Science. Agata Goździk presented the ODYSSEY project: its goals, assumptions and motivations to undertake it. All topics of educational toolkits were briefly presented.

Name of the event: “Educational Fair” in Lublin

Date and place: 15.03.2019, Lublin, Poland

Educational Fair in Lublin hosted ca. 13,000 participants: teachers, educators, school authorities and students. It was the biggest educational fair in this part of Poland. Institute of Geophysics PAS presented the ODYSSEY project at its stand. Teachers visiting the stand were invited to participate in the project and use the educational materials in future.

Name of the event: «Good teaching practices in science»

Date and place: 12 & 13.04.2019 Rallio Gymnasium Peiraieus

Englezou, Foteini presented "Oxford Debates for Youth in Science Teaching" within the context of the two-day conference organized by the 4th and 6th PEKES (Peripheral Center of Educational Design) of Attica in collaboration with the 4th GEL Keratsini, the Rallio Gymnasium and GEL Piraeus on Friday 12 and Saturday 13 April 2019 with the theme: "Good teaching practices in science" .

Name of the event: «International Conference Eden Open Classroom 2019»

On-line participation.

Date and place: 29 & 30.06.2019 Ellinogermaniki School

Foteini Englezou presented “Erasmus KA2+ project ‘Oxford Debates for Youths in Science Education’: The contribution of Oxford Debates in deeper Learning of Science”, within the context of the International Conference Eden Open Classroom 2019 Creating Conditions for Deeper learning in Science”, which was organized by Ellinogermaniki School in Athens on 29 and 30 June 2019. The presentation is published within the volume of the e-proceedings of the conference: https://www.eden-online.org/wp-content/uploads/2019/09/Proceedings_Deepier_Learning2019.pdf

Name of the event: "OSSKO Congress 2019"

Date and place: 01.10.2019, Zakopane, Poland

OSSKO Congress is an annual huge congress dedicated to heads of schools and educational authorities. It hosts usually ca. 800-1000 participants. Agata Goździk presented the ODYSSEY project: its goals, assumptions and motivations to undertake it. She focused mainly on the educational materials dedicated to climate change, as this was the topic of the session.

Name of the event: National Conference on Environmental Education "Nature conservation for everyone"

Date and place: 23 October 2019, University of Tartu Narva College (Narva, Estonia)

The theme and activities of the workshop was driven by the Erasmus+ project ODYSSEY which Energy Discovery Centre is leading in Estonia. During the workshop we introduced the topic biodiversity and discussed how to use debate as a method in classroom. No previous experience on debate was necessary. The workshop was led by the head of the Energy Discovery Centre, Krista Keedus and debate trainer and teacher Siim Ruul, who has been involved to the project from the beginning. 30 people attended in the workshop. Link to conference programme:

<https://keskkonnaharidus.ee/et/vorgustik/keskkonnahariduse-konverentsid-2019>

Name of the event: «3rd International Laboratory: To compete, to cooperate, to decide: for a model of deliberative debate»

On-line participation.

Date and place: 28.03.2020, online

Foteini Englezou, representing HIRCS presented on-line the topic "Odyssey" Scientific Debate: the rhetorical and critical turn in teaching Science» within the context of the 3rd *International Laboratory: To compete, to cooperate, to decide: for a model of deliberative debate*. The event was organized by the Department of Letters and Philosophy in collaboration with the Postgraduate Program "Institutional Advertising, Multimodal Communication and Event Creation" of the University of Florence in collaboration with the Association for the Culture and Promotion of Controversy. Because of COVID-19, the conference was cancelled and was held on line. Her speech may be found in the following link:

https://mediaspace.unipd.it/playlist/dedicated/111349941/1_0dk8dpo8/1_f2zuyitk

Name of the event: «Delivering rhetoric on-line: A roundtable discussion»

On-line workshop.

Date and place: 20.08.2020, online ZOOM platform

Number of participants: 82

On 20.08.2020 at 18.00 p.m. an online presentation of the Odyssey scientific debates, as a good practice of literacy and promotion of rhetorical education was held at an international round table. The event was organized by the International Society of On-line Literacy Educators and the International Rhetoric Workshop. Within this context, Foteini Englezou presented as a good practice the on-line implementation of the semi-finals Oxford Debates in Greece during the pandemic of COVID-19 in June 2020.

The link of the meeting was:

<https://us02web.zoom.us/j/85273706365?pwd=QWd2SXJ0amNsejRYYUtyYm9GbFZzZz09>



DELIVERING RHETORIC ONLINE: A ROUNDTABLE DISCUSSION

Thursday, August 20th at 6pm US PST, 8pm US CST, 9pm US EST, 10pm UTC/GMT, 8pm BR ST/AST

SPONSORED BY: Global Society of Online Learning Educators (GSOLE), International Rhetoric Workshop (IRW)

This free, open roundtable event supports teachers preparing for future rhetorically focused science lessons. Attendees will have an opportunity to:

- learn from speakers with expertise in rhetoric and online learning,
- connect to other online and rhetoric instructors,
- learn strategies for designing engaging online content for rhetoric courses,
- learn activities that help online students grapple with theoretical content,
- engage in thoughtful discussion on online rhetorical pedagogies.

Register at <https://www.igf.edu.pl/news-and-events>

FEATURING...

- Dr. Foteini Englezou** is an Assistant Professor of the Institute of Educational and Communication Studies and Professor of Cultural Heritage of the National Open University of Athens, member of the Greek Academy, researches the integration of technology in the implementation of Education and the development of an educational design, the educational use of rhetoric, the relation of Rhetoric to Critical Pedagogy, Online and online Literacy, and the use of rhetoric in journal articles. She will discuss her work with "Odyssey" as an online science program for high-achievers.
- Dr. Beth Allen** is the Director of English in the Technical Communication and Rhetoric program at Texas Tech University. She teaches and researches composition, rhetoric and business communication courses online, including courses on Rhetoric for the History of Rhetoric, and writing online and in the classroom. Her research interests include rhetorical composition, composition studies, and the impact of the online classroom on rhetorical education. Her research interests include rhetoric, composition, and communication, and she will discuss her work with "Odyssey" as an online science program for high-achievers.
- Dr. Eleni Kaida** is an Assistant Professor of Greek Language and Culture at the Faculty of Education of the University of Ioannina. She has been teaching Greek Language and Culture, writing online courses. Dr. Kaida researches on online education, other pedagogical approaches to online learning, and the impact of online courses on students' learning. She will discuss her work with "Odyssey" as an online science program for high-achievers.
- Roundtable Moderator** is a PhD Candidate of Rhetoric Studies at the University of Illinois at Urbana-Champaign and a member of the Rhetoric and Communication Studies Program. She will discuss her work with "Odyssey" as an online science program for high-achievers.

Name of the event: «Diffusion of Odyssey project within the context of the Conference of the 4th Peripheral Center of Educational Design»

On-line workshop.

Date and place: 21.11.2020, online Webex platform

Number of participants: 170

On Saturday, November 21, 2020, in the context of the online conference of the 4th PE.KE.S. of Attica entitled "Aspects of the modern school: Management of the classroom", Fotini Englezou, President of HIRCS presented the topic: Skills in STEM training. Initial findings "in the context of the European Erasmus + KA2 program" Odyssey: Oxford debates for young people in science teaching". The audience had the chance to acquire knowledge on the pilot implementation of the project, the methodological and scientific educational guides of the project and submit questions on the first findings of its implementation.

Peer-reviewed publications

Partners have prepared four peer-reviewed scientific publications concerning the ODYSSEY project implementation and results.

Three publications have been already published:



1. Englezou, Fotini (2020). Oxford debates for young people in Science teaching. In the e-Proceedings of the 1st Panhellenic Rhetoric Conference *"The art of speech in the didactic practice: looking for modern forms of rhetorical education"*, pp. 69-78 (ISBN 978-618-5074-86-9).
2. Egglezou, Foteini (2019). Erasmus+ KA2 Project "Oxford debates for youths in science education". The contribution of Oxford debates in deeper learning of Science. In the proceedings of the International Conference "Creating Conditions for Deeper Learning in Science" (29th-30th of June 2019). Athens: Ellinogermaniki Agogi. ISBN9789606360657
3. Buđevac, N., Meršnik, M., Umeljić, I (2021): The role of debate in teaching STEM subjects - getting to know students in a different way.

The fourth paper has been submitted and should be published soon:

Egglezou, Foteini (2021) (in publication). "Odyssey" Scientific Debate: Cultivating the skills of Greek students in STEM education.

Recommendations for follow-up of the project

In this section we present various opportunities to further disseminate the projects results – outside the partners' countries. We focus on recommendations from the members of the International Pedagogical Board, support from the Scientix community for science education in Europe and we seek opportunities for continuation of the collaboration of the consortium.

National institutions outside partners' countries

As the International Pedagogical Board Members found the ODYSSEY educational materials very useful for school practice in their countries, it gives opportunity to promote the materials outside the partners countries. PAB members proposed contacting following national institutions, which could help to support implementation of the ODYSSEY method and the packages in their countries:

Czech Republik

The Czech institutions or portal useful for dissemination of ODYSSEY materials were suggested by the PAB member:

- Czech National Agency for International Education and Research
- <https://www.dzs.cz/en> - methodical portal for Czech teachers <https://rvp.cz/>



- Faculty of Natural Science Charles University Prague Agora CE podatelna@natur.cuni.cz the, o. p. s. Petra Rezka 12, 140 00, Praha 4 tel.: (+420) 261 222 914
- Agora Central Europe – foundation, which aims to strengthen the process of democratization of society, improve communication and cooperation between citizens and town halls, and encourage citizens interested in public affairs with the aim of increasing the political culture in the country. www.agora-ce.cz, www.agora-ce.cz/studentskaagora
- Czech Debate Association info@debatovani.cz <https://debatovani.cz/>

Italy:

The Italian institution which could support implementation of the ODYSSEY method is INDIRE (<https://www.indire.it/en/>). INDIRE is the National Institute for Documentation, Innovation and Educational Research, funded by Italian Ministry of Education. More specifically, the Debate methodology is deepened by “Avanguardie Educative”.

<https://www.indire.it/en/progetto/avanguardie-educative/>

In Italy there are some schools that are active in promoting debates, even in English:

- IIS “Luca Pacioli” (Crema), that collaborates with the MIT in Boston, for teachers’ training on Debate: <https://sites.google.com/a/pacioli.net/debate-pacioli/>
- ITE “Enrico Tosi” (Busto Arsizio), <https://lnx.etosi.edu.it/?s=Debate>
- Liceo Manzoni (Caserta), https://www.liceomanzonicaserta.edu.it/pvw/app/CEIM0001/pvw_sito.php?cerca_sito=Debate&page=-2
- Liceo Mazzini (Napoli), <https://www.liceomazzininapoli.edu.it/e-book-del-progetto-debate-for-life-skills/>

Institutions promoting debate methodology in Italy:

- <https://bottaerisposta.fisppa.unipd.it/>
- <https://www.debateitalia.it/>
- <https://www.sn-di.it/rete-wedebate/>
- <https://www.weworld.it/come-e-dove-interveniamo/exponi-le-tue-idee-2020-2021/>
- https://www.iprase.tn.it/progetti-dettaglio/-/asset_publisher/9rs54GqG9Kpx/content/a-suon-di-parole-il-gioco-del-contraddittorio

Malta:

In Malta two institutions may be contacted to request support in dissemination debate toolkits and methodology: Ministry for education and employment and Esplora Science Centre.

North Macedonia

The institutions, which could support implementation of the ODYSSEY method and the packages in North Macedonia are:

- a) Bureau for Development of Education, <https://www.bro.gov.mk/> E-mail: bro.macedonia@bro.gov.mk
- b) Ministry of Education and Science – Republic of North Macedonia. <http://mon.gov.mk/> E-mail: contact@mon.gov.mk
- c) Center for Vocational Education and Training
Bul. Goce Delchev br.18, 1000 Skopje

Spain

Spanish member of the Pedagogical Board suggested three institutions, which could support implementation of the ODYSSEY method in Spain:

- INTEF. Spanish Ministry of Education, website: <https://intef.es> email: scientix@educacion.gob.es
- Consejería de Educación. Comunidad de Madrid. David Cervera Olivares website: <https://www.comunidad.madrid/transparencia/unidad-organizativa-responsable/subdireccion-general-programas-innovacion-y-formacion>
- IES Cervantes de Madrid website: <https://www.educa2.madrid.org/web/centro.ies.cervantes.madrid> email: beatriz.martinvizcaino@educa.madrid.org

Dissemination of ODYSSEY materials in Europe

ODYSSEY project was added to Scientix Projects Repository in order to foster dissemination of its results among European teachers (<http://www.scientix.eu/web/guest/projects/project-detail?articleId=926208>). As Scientix is the community for science education in Europe, it Scientix promotes and supports a Europe-wide collaboration among STEM teachers, education researchers, policymakers and other STEM education professionals. It offers support to STEM projects.

Educational outcomes produced by the ODYSSEY project (Methodological Guide for teachers, Lesson plans for debating, ODYSSEY toolkits in English) were submitted to the Scientix resources repository. They have been accepted and published in the Scientix repository under following links:

<http://www.scientix.eu/resources/details?resourceId=28594>

<http://www.scientix.eu/resources/details?resourceId=28595>

<http://www.scientix.eu/resources/details?resourceId=28596>

<http://www.scientix.eu/resources/details?resourceId=28597>

<http://www.scientix.eu/resources/details?resourceId=28598>

<http://www.scientix.eu/resources/details?resourceId=28599>

<http://www.scientix.eu/resources/details?resourceId=28600>

<http://www.scientix.eu/resources/details?resourceId=28601>

<http://www.scientix.eu/resources/details?resourceId=28614>

<http://www.scientix.eu/resources/details?resourceId=28615>

<http://www.scientix.eu/resources/details?resourceId=28616>

<http://www.scientix.eu/resources/details?resourceId=28617>

<http://www.scientix.eu/resources/details?resourceId=28634>

<http://www.scientix.eu/resources/details?resourceId=28635>

<http://www.scientix.eu/resources/details?resourceId=28636>

<http://www.scientix.eu/resources/details?resourceId=28637>

<http://www.scientix.eu/resources/details?resourceId=28638>

The descriptions of these resources are available in 8 official Scientix languages. Publishing the ODYSSEY educational resources in the Scientix repository is crucial for their exploitation after the project's closure. It helps also to disseminate them wider as Scientix regularly promotes new resources via portal and via **Scientix Digest**, which is being sent out to more than **2500** online subscribers worldwide.

ODYSSEY follow-up

The manifest conclusion to be drawn is that the ODYSSEY project is definitely of future relevance and the replication of the ODYSSEY method and materials is highly appropriate, as the need for well-educated and able to communicate STEM professionals and applicable educational material and tools

at secondary school level is increasing in Europe and globally.

As observed from the overview above and the feedback from teachers described in the report *ODYSSEY Good practices in the use of the Oxford debate as an educational tool within STEM* the importance of communication and argumentation skills, seeking for reliable sources of information, critical thinking is growing fast globally, with consequent policy settings. However, there are not many available programs dedicated to developing these skills within STEM education currently available. This fact underlines the high prospects for the European and even global replication of the project.

The Consortium will put efforts on further dissemination of the project's outcomes. Efforts have been made to ensure the online availability of project outcomes. We will also explore opportunities to seek further funding, enabling to develop additional debate materials, provide mentoring for schools and disseminate the toolkits and methodology.